# When Nudges Are Forever:
# Inertia in the Swedish Premium Pension Plan

*By* Henrik Cronqvist, Richard H. Thaler and Frank Yu*

VLADIMIR: Well? Shall we go?
ESTRAGON: Yes, let's go.
*They do not move*.

---Samuel Beckett, "Waiting for Godot."

In 2000, the Swedish government launched a new defined contribution component of its social security system that was dubbed the Premium Pension Plan. Like any service, whether provided by the public or private sector, this new plan had to have what Thaler and Sunstein (2008) have called a *choice architecture* that organizes how participants interact (if at all) with the system. Will there be choices? If so, how many? Is there a default fund? If so, what should it be? These issues are just some of the design features that are part of the choice architecture.

Research over the last two decades has conclusively shown that features of the choice architecture that would be considered irrelevant in traditional economic analyses can have strong effects on behavior, for better or for worse. For example, the use of automatic enrollment as the default in optional defined contribution (DC) pension plans (as opposed to an opt in system where the default is not to join) has been found to dramatically improve participation rates.

* Cronqvist: University of Miami Business School, 5250 University Drive, 314-E Jenkins Building, Coral Gables, Florida 33146 (e-mail: hcronqvist@miami.edu); Thaler: University of Chicago, Booth School of Business, 5807 South Woodlawn Avenue, Chicago, IL 60637 (e-mail: richard.thaler@chicagobooth.edu); Yu: China Europe International Business School, 699 Hongfeng Road, Pudong, Shanghai 201206, People's Republic of China (e-mail: fyu@ceibs.edu). We thank Anders Anderson, Nicholas Barberis, Nicholas Barr, Shlomo Benartzi, James Choi, Magnus Dahlquist, Eugene Fama, Stefan Lundbergh, Brigitte Madrian, Per Strömberg, Cass Sunstein, and seminar participants at the American Economic Association and the Swedish House of Finance for helpful comments. We thank the Swedish Pension Agency for providing the Premium Pension Plan data, and Roman Chychyla for help with programming. Madeleine Moor Larsson, Désirée-Jessica Pély, Miranda Sun, and Per Wikman provided excellent research assistance. The authors declare that they have no relevant or material financial interests that relate to the research described in this paper.

However, most plans adopt a savings rate that is too low, and some participants are inadvertently nudged to save less than they would have on their own (Madrian and Shea, 2001). To deal with this problem Thaler and Benartzi (2004) created the Save More Tomorrow plan in which people sign up to have their savings rates increased automatically over time. This has proved effective in boosting people's retirement savings rates (Benartzi and Thaler, 2013).

One question that has not received enough attention is whether nudges are long-lasting (though see Allcott and Rogers, 2014). One possibility is that people initially exhibit default behavior for reasons such as status quo bias (Samuelson and Zeckhauser, 1988), laziness, procrastination, and so forth, but over time get around to solve their optimization problem, and make corresponding changes to their initial choices. In such a world, the specific design by the choice architect has only a transitory effect. But if the effects of nudges are persistent then the choice architecture design can be critical with effects lasting decades.

To inform economists and policy makers about whether the effects of nudges are persistent in one specific context, we study the choice architecture of the Swedish Premium Pension Plan, which was launched in 2000. Evaluating detailed post-implementation data enables us to estimate the persistence of the effects of the nudges. The data we study were provided by the Swedish Pension Agency and consist of all initial choices and subsequent rebalancing activities by the entire population of 7,315,209 retirement savers in Sweden during the period 2000 to 2016. Based on our analysis of these data, we conclude that the effects of nudging in this case were surprisingly persistent and seem to last nearly two decades, if not forever.

## I. The Battle of the Nudges

The Swedish choice architect created a public pension system based on standard neoclassical economic principles, with a combination of free entry, unfettered competition, and free choice (Cronqvist and Thaler, 2004). Any fund that met European Union's UCITS Directive was allowed to enter the system, leading to 456 mutual fund options in 2000 for investors, who could select up to five options to form a portfolio. Despite this "pro choice" design, two important nudges were incorporated in the choice architecture:

Nudge #1: "Default Nudge." One fund was designated to be the default for those who did not make a choice on their own.[1] The initial default fund was designed based on standard finance principles, and was a globally diversified, low fee, and largely indexed fund. We call people who invested in the default fund "Delegators," in the sense that they delegated the management of their retirement savings portfolios to the default fund called AP7.

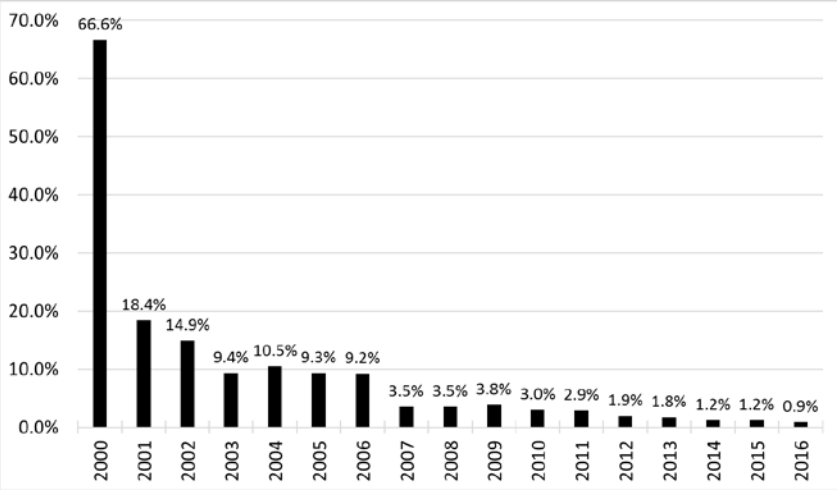
Nudge #2: "Do-It-Yourself Nudge." The government decided to encourage investors to decline the default fund and choose their own portfolios. This suggestion was expressed via public pronouncements as well as a well-funded advertising campaign. In addition, many of the individual funds also advertised extensively to attract people to their funds. Only a small percentage of these individual fund ads could be construed as "informative" (Cronqvist, 2004). We call the people who elected to form their own portfolios "Do-It-Yourselfers" (DIYers).

[1] Some investors "actively" chose the default fund and others simply took it passively, expressing no preference. We are unable to distinguish between these two groups.

## II. Which Nudge Won?

Figure 1 shows that the winner in the "Battle of the Nudges" in 2000 was the Do-It-Yourself Nudge. The advertising had the effect desired by the government as two-thirds (66.6%) of the retirement savers did choose to form their own portfolios. The important lesson that can be learned from these data is although the designation of a default is a powerful nudge it can be overcome by an (expensive) information campaign.

Figure 1 - The Battle of the Nudges: Default Nudge vs. Do-It-Yourself Nudge




*Notes:* The figure shows the proportion of people each year from 2000 to 2016 who choose to form their own retirement savings portfolios as opposed to selecting the default fund when first joining the plan.

After the launch of the pension system, the government reduced its advertising significantly, and so did the individual funds. Whereas the 2000 cohort constituted all 4.4 million people who were in the workforce at the time, more recent cohorts consist of only new entrants into the system, i.e., mostly younger people when they start to earn an income plus immigrants. For example, the 2016 cohort constituted only 183,870 people, not enough to make advertising an economically attractive option for fund managers.

In the absence of public and private advertising the power of the default had its more usual effect as shown in Figure 1. In 2003, i.e., only three years after the new system launched, less than one out of ten (9.4%) became a DIYer, a number that declined to only 3.0% in 2010, and was below 1% in the most recent years.

Another useful lesson from these data is that participants seem to have a "set it and forget it" mindset. When first confronted with a choice they make a decision and most fail to revisit it. That behavior implies that individuals' portfolio choices will depend strongly on the year in which they joined the system. Consider two retirement savers, Madeleine and Per, who were born on January 1, 1982 and were thus 18 when the Premium Pension Plan was launched. They were both attending university at the time but Madeleine had a part-time job when she started school, making her eligible to join the pension system, while Per did not begin working until 2002. Both experienced all the advertising accompanying the launch of the system, but only Madeleine was induced to think about making a choice at that time. Discrete choice regressions show that after controlling for other observable characteristics, the odds of becoming a DIYer are about six times higher for people in the 2000 cohort compared to those in the 2001-2002 cohorts. Thus, the ads only affected the people who were in a "deciding" mindset when the ads ran.

## III. Is Nudging Forever?

To follow-up on the strength of the "set it and forget it" mindset and its impact on the persistence of nudging, we ask the following question: After the initial choices were made in the

pension plan, what proportion of people switched between being a Delegator and being a DIYer, and vice versa? Specifically, we study the choices made by the 4.4 million Swedish retirement savers who joined the system in 2000 and then follow them from the launch until 2016. One proviso: Those who chose the default fund (the Delegators) could switch to being DIYers at any time with no transaction costs, but when the system started if you did not choose the default fund initially you could not switch into it later. This rule was changed in 2009 at which point switches in either direction were permitted and costless.

We find that about a quarter (27.4%) of the initial Delegators changed their minds and decided to become DIYers. The bulk of these switches occurred during the first decade after the initial choices. Some of these switches were "nudged" by third parties who offered to give participants investment advice and, before the rules were changed, could make those changes on behalf of clients easily if they were given a PIN number. Thus, the 27% number represents an upper bound on the number of Delegators who independently decided to start managing their own portfolio. In other words, the effect of the default nudge was quite persistent over 16 years.

Perhaps surprisingly, the effect of the advertising to urge Do-It-Yourself investing was even more persistent. We find that only a tiny percentage (2.9%) of the initial wave of DIYers ever switched to becoming a Delegator. Becoming a DIYer was nearly an "absorbing state."

## IV. Extreme Inertia

We have seen so far that switching between being a DIYer and a Delegator was uncommon.

Most people chose one strategy or the other and stuck with it. Similarly, the DIYers were not very active. The median number of trades over the entire 16 year period was just one.[2]

A natural follow-up question to ask is what it would take to capture the attention of the vast majority of investors who were behaving quite passively. Along these lines, we examine the reaction of investors to two dramatic events, one that affected the default fund and another that concerned one of the individual funds in the pension system.

### *A. Leveraging the Default Fund*

The AP7 default fund has undergone some changes over time. While it has always been a low-fee fund with global diversification, when it was first launched it had some quirky features. For example, it had a substantial "home bias" with 17% of the funds invested in Swedish stocks (as compared to Sweden's approximately 1% share of global GDP), and a 4% allocation each to hedge funds and private equity. Nevertheless, fees just 17 basis points. In 2010 the fund switched to become essentially a global index fund tracking the MSCI-ACWI index extremely closely (correlation 0.95) and fees were reduced further to 11 basis points.[3]

However, in 2010, the Swedish government approved a more radical change: It decided to permit the default fund to employ financial leverage at the discretion of the fund's management. The statute allowed for up to 50% leverage. The AP7 fund took advantage of their new discretion

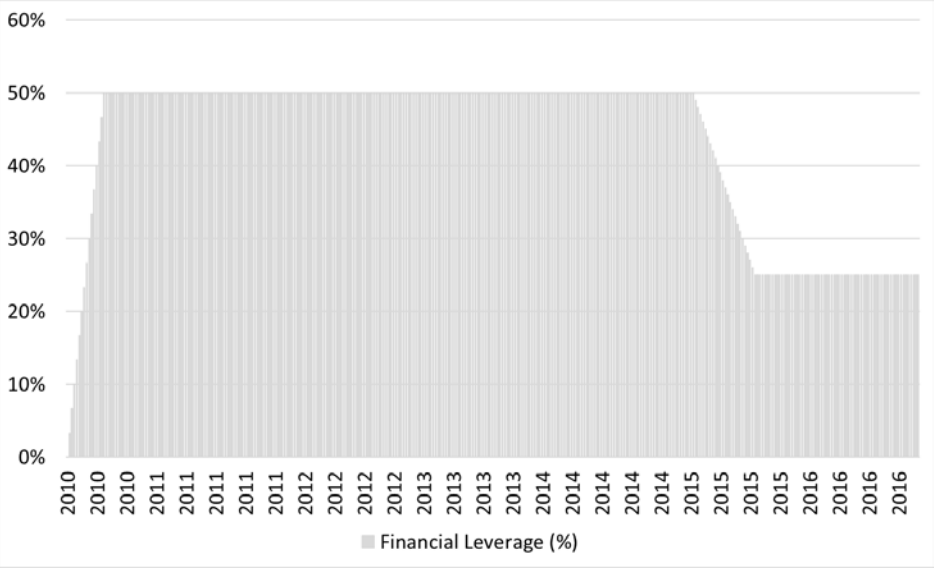
[2] Over the 16 year period, an average of 9% of investors made at least one trade per year. But this figure combines two periods, one between 2008 and 2011, during which outside advisors could make changes to the portfolio and the other years when this activity was prevented. The average percentage of active investors in the two sub periods are 15% and 7%. These numbers are comparable to data from Vanguard's report on *How America Saves 2017* (12% vs. 8%). Similarly, data from the VOYA Institute for Behavioral Finance Innovation show that only 7% of pension plan participants traded at least one time during the year, so the inactivity we document is not unusual for DC plan investors.

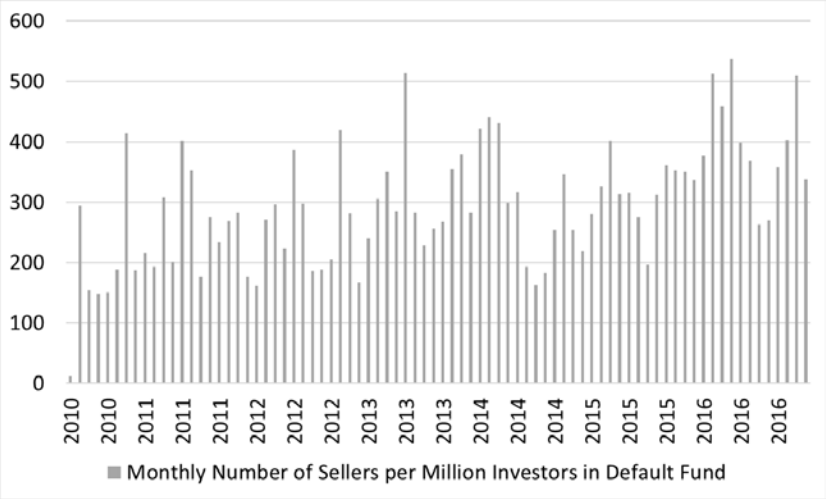
[3] The fund also has an age related rebalancing feature that reduces equity exposure for the elderly. The reasoning for why the default fund should be (at least) 100% equities is that this is a small portion of the social security system (2.5% payroll tax from a total tax of 16%). The remaining part is considered to be more like a fixed income investment.

and chose to employ 50% leverage by using a total return swap.

If the retirement savers in the default fund were satisfied with a 100% equity exposure, we might expect a significant proportion of them to respond by rebalancing their portfolios post-leverage. In contrast, Figure 2 shows that almost no one responded to the very dramatic change of the leverage, and thus risk, of the default fund. The monthly number of sellers of the default fund was about 300 per *million* investors in the default fund. This is particularly surprising given that there existed an unlevered fund that tracked the very same MSCI-ACWI index as the default fund (the return correlation with the default fund was 0.995 and the funds charged similarly low fees). Out of the 1,563 people who switched away from the default fund during the leverage increase months, only 43 opted for the unlevered perfect substitute fund.

Figure 2 – Extreme Inertia: Lack of Responses to Change in Financial Leverage of Default Fund






*Notes:* The upper figure shows the financial leverage of the default fund over time. The lower figure shows the monthly number of sellers of the default fund per *million* investors in the default fund.

An argument that optimizing retirement savers actually desired 150% equity exposure, but had to select a boundary condition with "only" 100% in equities in the pre-leverage period is inconsistent with the results of a recent study by Böhnke and Brüggen (2017), who surveyed a sample of investors in the Premium Pension Plan. They find that the users of the default fund consider themselves relatively more risk averse than average and wanted a safe investment. A leveraged all-equity portfolio clearly seems at odds with such stated risk preferences.

### *B. Alleged Fraud in a Fund Company*

In January of 2017, a leading Swedish business magazine reported that the CEO of Allra, one of the fund companies in the pension system, had purchased the most expensive house in Sweden in the previous year. Furthermore, on January 30, one of the leading Swedish newspapers launched a series of articles pointing to questionable practices by Allra. After a few weeks, the Swedish Pension Agency decided to prohibit people from switching into Allra's funds,

pending a fraud investigation.[4] It is important to emphasize that people were still permitted to shift contributions *out of* Allra to other funds at any time and at no cost.

Before the fraud allegations, Allra participated in the pension system with four different funds. A total of 123,217 investors had picked these funds, with about $2.0 billion of assets under management. Based on the credible news about possible fraud, one might expect a significant portion of the retirement savers who had elected to manage their own portfolio to rebalance away from Allra (in fact, a sudden "run on the fund" might well have been expected), in particular because the government had never reimbursed any investors for losses in frauds in the pension system.[5] However, nothing of the kind occurred. During the week after the revelation of the fraud allegations, only 1.4% of the Allra investors sold their shares. Even after Deloitte, which thereafter resigned as auditor, reported Allra to the authorities, only 16.5% of the start-of-the-year investors had opted to divest.

## V. Conclusions

Critics of the so-called "nudge agenda" sometimes ask, reasonably enough, about how the choice architect is supposed to know how to pick the default, or any other aspect of the design for that matter. Thaler and Sunstein (2008) argue that nudges should be designed to improve the outcomes for those affected "as judged by themselves." The idea is to try to decide how people

[4] Adding to the attention was the fact that a prominent attorney, and Sweden's previous Minister of Justice, served as the Chairman of Allra's board of directors.

[5] In fact, there was not any substantial drop in the fund shares after the announcement since the alleged fraud did not cause the net asset value of the fund to drop, but with hundreds of funds to choose from, one might still think that investors would rule out a fund under criminal investigation.

would choose if they had all the necessary expertise and willpower to make a wise decision. Of course, this is a difficult task for the choice architect, but some choice must be made.

One lesson from this experience is that choice architecture mattered even more than its advocates might have thought. The decision to encourage do-it-yourself portfolio management has strongly influenced 3.2 million Swedish citizens. Similarly, the design of the default fund has had a major impact on the 4.2 million investors in that fund.

The decision to add leverage in 2011 has turned out to be either wise, fortuitous, or both since global stock markets have risen steadily since then. But, of course, if 50% leverage were in place and another financial crisis occurred, the results would be calamitous, and there would be strong pressure on the Swedish Parliament to provide some kind of bail out. The fact that the investors in these funds do not seem to be paying any attention makes the choices made by the portfolio manager especially important.

As of this writing the number of funds in the system has grown to almost 900, a number that is obviously too high. The daunting prospect of choosing a portfolio from so many options may be one reason nearly all new investors are delegating this task to the managers of the default AP7 fund (Iyengar and Kamenica, 2010). Furthermore, it is clearly impossible for a small country like Sweden to adequately monitor such a large number of funds. Reporters, not regulators, discovered the scandal involving Allra. The Swedish Parliament is currently considering reforms. Based on our research, we think the following three changes should be considered.

First, the choice architecture should be revised to have three levels rather than the two

(default fund or menu of funds). We suggest that the default fund return to its strategy of being a simple global index fund with no leverage. If the goal is to guess what informed citizens would choose for themselves, we think it is unlikely to be a fund with 50% leverage. If investors want such an aggressive fund they should be required to actively choose it. To accommodate such preferences as well as that of more cautious investors we suggest offering a small number of "alternative defaults," perhaps just two. One might be an aggressive version that includes some leverage, perhaps capped at 25%. The other might be a more conservative alternative, say with just 75% equities.

Second, the number of funds offered to the DIYers should be substantially trimmed. We do not have a specific number to suggest, but one way to think about it is to choose a number of funds that is small enough that some kind of regulator can monitor their activities to prevent future scandals. All UCITS funds (including Allra) are regulated, but that may be insufficient to prevent fraud. The system may benefit from an overseer who performs quality assurance of the platform from which investors pick their funds.

Third, whatever changes are adopted, be it the ones we recommend or others, they should be introduced in conjunction with some kind of "restart." By the time any reform is adopted it will have been nearly two decades since the system has been in place, and many participants (perhaps most) will have not paid any attention to what they own. The current policy is to send a yearly statement in a brightly colored orange envelope that is intended to attract investors' attention. We suspect that many of the envelopes are discarded, unopened. We suggest that at the launch of the

reformed system there should be a different colored envelope, maybe Swedish blue, which is emblazoned with strong messages to pay attention to its contents. It might also make sense for this to be accompanied by another government advertising campaign. But this time, instead of encouraging people to choose for themselves, perhaps a more modest goal would be to get people to find out what investments they own, and whether changes would be wise.

As to the more general question about the stickiness of nudges, we urge caution in extrapolating the results we find here. The longevity of nudges is inevitably an empirical question and we should expect variability across contexts. Nudges vary from default rules to reminders to the size and color of a font. And environments vary greatly in how much attention is being devoted to the task at hand. Are participants like Vladimir and Estrogen, or do they behave like some drivers who are constantly changing lanes? It seems a good bet that nudges will have the longest life when people are on autopilot. In outer space, an object that has been nudged will keep going in that direction until it is nudged again. Retirement savers appear to resemble such objects.

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