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Abstract

In this paper, we present an example of a model of a hypothetical revised disbursement method of FICA tax with-holding funds (those funds taken in by the social security system via the FICA tax). The first section of the paper outlines and defines the motivation for, and he heuristic elements of, the system and remarks on limitations of the presented model and caveats with regards to the specific example presented. The second section better defines the methodology used, with respect to the data at hand at the time of writing this paper. The second section also gives a calculation based version, using said data ,with respect to the revised disbursement methods used in the model and how that model would look in an early-stage version of the proposed method, and analyzes those results. In the conclusion we offer insight into further development of the research, as well as the current researches' place in a larger (potential) project.

NOTE THE FOLLOWING ABBREVATIONS USED EXTENSIVELY THROUGHOUT THIS PAPER

FICA: Federal Insurance Contributions Act

SSI: Supplemental Security Income

OASDI: Old Age, Survivor, & Disability Insurance

BLS: Bureau of Labor Statistics

* : symbol used to denote the standard multiplication operation

Section 1

1.1: Motivation and Motivating Factors

What follows is a hypothetical model of a revised method of disbursing funds brought in by the FICA with-holding tax. The goal of the model is not to change the system itself on any fundamental level.

Indeed, most aspects of the FICA/SSI/OASDI complex remain unchanged (for example, the standard 6.2% wage tax for non-self-employed wage earners stays at the same rate in this method). The model instead focuses on adjusting the current pay-in-pay-out approach to the pay-go system where, to the best of the author's knowledge, all money taken in by FICA with-holding is immediately dispersed back to the public via a pay-out pool. This hypothetical method proposes, instead, to hold aside a small percentage of the funds taken in by FICA with-holding and placing this portion into personal (not necessarily privatized) funds. The model that will be presented in Section 2 represents an example of of how such a system might work, and is meant to represent an initial-state version of the model. A model such as the one proposed here would obviously have to be implemented gradually, so as to avoid severely disrupting the current system in such a way that would cause those in need of, and receiving, immediate SSI/OASDI payouts to suffer unjustly.

The motivation behind the building of this model is based on 3 primary motivating factors:

1) To create a system where those who are less likely to have any significant corporate-backed personal retirement fund (such as a 401(k), for example) would be afforded that luxury. This especially benefits such groups as part-time workers (including those whose part-time employment at multiple jobs would be other-wise equivalent to a full-time job), as well as those who tend to have many different jobs through-out their work history (those who spend portions of their careers “bouncing between jobs”). A long-term, optimistic (and potentially unrealistic) forecast for the model would give an increase in retirement funds for this group of taxpayers (as well as other taxpayers working full time/salary jobs) via these personal funds by ensuring a lump sum to supplement and SSI/OASDI funds paid out monthly via the current pay-go system. A long term goal of the model is to eventually reach a state where those monthly payments would start to decrease as personal “lumps sums” increase (via increase in tax funds going to personal accounts). The personal, lump sum funds could also be inherited by next of kin (or the tax system, if no next of kin exist) if the personal funds aren't completely used during the

lifetime of the taxpayer.

2) A model such as the one to be presented could also potentially create a type of "closeness to equilibrium" for the SSI/OASDI program over the course of time. This is to say, the model could create a more stable system of intake VS output in such a way that deficits could be decreased, if not eventually eradicated (though any hypothetical deficit eradication only occurs in the most optimistic models, and in much later stages of implementation than the initial state model presented in this paper).
3) The author does not deny a certain bias towards (attempts at) methods which could potentially address inflation. The model presented in this paper could have value as a type of low-impact "check" against potential jumps/aberrations in normal inflationary practices. Since the model assumes that no money may be withdrawn from the FICA tax-generated personal accounts until retirement (with the lowest age for "retirement" status being approximately 65 years old for any individual), we can deduce that all money accumulated and held in these personal accounts would be effectively "out of circulation" for an extended period of time. The author acknowledges that such a "check" against inflation via the proposed method would not "stop inflation", and would only have a peripheral effect on inflation (if any at all). The author also acknowledges that current economic consensus says "a little bit of controlled inflation is a good thing".

Section 1.2: Assumptions and Caveats and Data Restrictions

The model to be presented in Section 2 assumes the following:

1) A younger worker will pay more into the immediate-need funds than they will into a personal fund. This assumption itself is based on an assumption that a younger worker will have more time to build up a retirement fund, and is not yet at their peak level of wage/income earnings. As the worker ages, the percentage of their FICA with-holding tax sent to a personal fund would rise, though it will still be lower than the percentage sent into immediate-need funds.

2) 2016 FICA tax rates and SSI/OASDI pay-out allotments will be constant through subsequent years (though as of mid-January 2017, the 2017 OASDI & SSI Rate Limits report states the SSI/OASDI limits have risen slightly with respect to monthly allotments to benefit recipients from the 2016 rates).
3) There are many assumptions made through out the paper, due to the author's admitted lack of more accurate data. Most, if not all, of these assumptions will be directly addressed through-out the paper. An example of the type of data-based assumption that will be addressed is the assumption that all wage-earners pay a 6.2% FICA with-holding tax. The author recognizes that those tax-payers who are self-employed pay a higher FICA with-holding tax. Due to lack of data on number (or ages) of self-employed wage-earners paying the higher rate, the author simply assumes a 6.2% FICA with-holding tax for all taxpayers. (Note the author is not suggesting such data does not exist. The author simply did not have any relevant/accurate data for this particular nuance of the tax system in his possession at the time of writing this paper).
4) We assume there will be no dramatic rise in unemployment rates on a national level, which would have obvious impact on amount of funds coming into the system via FICA with-holding tax. For example, we assume the current (2016) reported unemployment rate of 4.8% will not suddenly rise to 14.8% within one or two years.

Some caveats worth mentioning:

1) Data used in this model are less than desirable, as alluded to earlier in discussion of tax rates used in the model (strictly 6.2%, no variance) . For instance, the computations used are based entirely on median incomes only, meaning the necessary data regarding wage variance in any age group is absent creating an artificial simplicity in the calculations. Another example of data restrictions is based in the age grouping themselves. The age groups were determined by data derived from [1], which has age groups larger than desirable for this model. It would be

preferable to have singleton age groups, as opposed to the (n>1)-tuple age groups used in the data derived from [1]. Much of this restrictive data was considered when the decision to limit calculations to the 6.2% rate was reached.

2) The annual pre-tax wage figures are derived by taking median weekly wages (derived from [1]) and multiplying these figures by 51 weeks. The choice of 51 weeks was made as a way to represent the full-time, non-salary work year which usually includes one week of unpaid time off a year.
3) Based on the above, values for *(x,y,z)* are chosen arbitrarily, and with a more optimistic bias. The author recognizes that, realistically, initial-state values for *(x,y,z)* would have *z=0* for all age groups, and *x* values would be less (possibly much less) than the assumed values given in the example to be presented in Section 2.
4) The age groups (55 to 64) and (65+) are given especially high *x* values in this paper to represent the authors belief that a dramatic increase into FICA with-holding sent to personal funds should occur at ages where the wage-earners near retirement (the word "retirement" here is defined those either working negligible hours [<15 hours/week] or not at all). This dramatic rise for these groups is meant to represent a more gradual, but still significant, rise in *x* values occurring at individual age intervals occurring within the larger age groups used in the example given in Section 2.

Section 2: Methodology, Estimated Projections, Results, and Analysis

Section 2.1: Methodology

The calculations given in the table comprising Section 2.2 were determined by the following methodology, and uses the following sources.

The given age group divisions are taken from [1], as are the weekly income figures, and the total number of full time wage earning members per age group (noting, again, that data from [1] is based

strictly on full time wage earners).

The 6.2% FICA Income With-holding figure was taken from [2].

For each age group, we calculate annual FICA with-holding as follows:

(.062)(51 weeks)* (weekly income) = (FICA w/h)* (where w/h stands for "with-holding".)

To determine the dollar amounts disbursed between *(x, y, z)* values (private/personal fund, immediate disbursement funds, and reserve funds respectively) , we use the following formulas:

(x%/6.2%)(FICA w/h) = amount to personal fund*

(y%/6.2%)(FICA w/h) = amount to immediate disbursement/public funds*

(z%/6.2%)(FICA w/h) = amount to reserve fund*

noting these figures will represent individual contributions to the 3 different funds (obviously an individual's personal fund is strictly funded by the individual's annual contributions).

For example, if *(x, y, z) = (0, 6.2, 0)* than 0% of FICA with-holding goes to a private fund, 100% of FICA with-holding goes to the public fund, and 0% of FICA with-holding goes to the reserve fund.

The following table gives the *(x, y, z)* values that were arbitrarily chosen for each age group:

Age Group	*(x,y,z)* values
16 to 19	*(0, 6.2, 0)*
20 to 24	*(0.5, 5.7, 0)*
25 to 34	*(0.6, 5.1, 0.5)*
35 to 44	*(1.0, 4.7, 0.5)*

Age Group	*(x,y,z)* values
45 to 54	*(1.5, 4.0, 0.5)*
55 to 64	*(3.1, 3.1, 0)*
65 and over	*(4.2, 2.0, 0)*

Again, we note in a less optimistic initial-state scenario, *z* values would most likely be *0* for all age groups, and *x* values would possibly be lower (if not significantly lower) for all age groups.

Section 2.2: Calculated Approximation of An Initial-state Model of Revised FICA With-holding Disbursement Method

(see spreadsheet)

Section 2.3: Analysis of Results given in Section 2.2

The most important results from Section 2.2 are expressed by the figures derived from the *y* values, especially the figure relating to the total annual funds available for immediate disbursement (approximately $205.8 billion). This particular figure gauges how well the model fits current actual SSI/OASDI system (ie; immediate disbursement fund) need, which we will approximate shortly. Before we approximate this figure, though, we want to note total lump annual funds for the private and reserve funds as well (approximately $73.869 billion and $17.597 billion, respectively).

By the model (with its admitted data limitations) given in Section 2.2, the total FICA with-holding would be approximately $300 billion per year. We note that 65.1 million people currently receive SSI/OASDI funding of some sort [3]. We note from [2] that these SSI recipients fall into two general categories of funding: couples who receive a total of $1100 per month in benefits, or single people receiving a total of $733 per month in benefits. We will use the above figures to calculate an inequality to approximate current total actual SSI/OASDI system need.

First, assume all SSI/OASDI benefit recipients are coupled (in a legal sense, including common law marriage). The total amount of $1100 per month payouts required to meet the annual need of the 33.26 million couples would be $429.7 billion.

Next, assume all SSI/OASDI benefit recipients are single. Then the total amount of $733 per month payouts required to meet the annual need of the 65.1 million individuals would be $572.6 billion.

Since the SSI/OASDI benefit recipient pool is mixed with couples and singles, we can assume the following inequality would describe the real need for the public/immediate disbursement funds:

$429.7 billion < Real Need < $572.6 billion

noting the upper and lower bounds of the inequality are, themselves, approximations.

Recall the earlier figure of $300 billion, which is (according to the limited data available) the actual total intake of FICA with-holding annually, regardless of *(x, y, z)* values. We note this figure itself is over $100 billion short of the lower bound of the inequality, noting the lower bound itself is an

unrealistic figure.

An over-riding theme of this paper has been the limitations of the data at hand. Still, most of the data is derived from median-based information, so it gives a fair approximation of the current system's need and how the hypothetical model stacks against that need. The hypothetical model begs the hypothetical question: Given the choice between a bare minimum $100 billion annual deficit (for current system) and a bare minimum $200 billion dollar annual deficit (given *(x, y, z)* values where most of the arbitrary values of x and z are low, but not zero), would it be worth the risk to try implementing such a revision?

Conclusion

Section 2.3 was meant to be the section that pus a sober lens to the possibly over-optimistic theoretical musings of Sections 1.1 through 2.2. The author fully acknowledges the short-comings of the presented theory not only with respect to data used (which was stated over and over, with apologies for excessive repetition), but also with respect to the theoretical models' ability to be implemented as an actual working plan that complies with tax and disbursement laws without completely overhauling the current system. The author also doesn't claim knowledge as to whether to not a system like the one presented this might be considered to be biased against any specific group in either legal or philosophical terms, or both. For instance, the model presented may be considered by some to be ageist (that is, showing preference in some way to a certain age group).

The author admits to a certain amount of ignorance on his own part with respect to the way money/funds actually circulate within the FICA/SSI/OASDI system. This is to say, between the time the funds are taken in (via FICA with-holding tax) and the time the funds are disbursed (via benefit pay-outs), is there any types of internal cycles/paths the funds circulate through?

One of the goals of this paper was to attempt to create a model that, over time, could help stabilize the current SSI/OASDI by using a percentage of the 6.2% FICA tax paid by individuals to create a kind of personal, universal 401(k). In the authors opinion, the best way to implement a system like that would

be through a method of low-interest CD type accounts (which are usually insured up to $250,000 which is a number far higher than the projected $44,806 (approx.) an individual working until age 75 would have accumulated into said hypothetical account). Whether or not these kind of accounts could be made at a bank of the tax-paying individuals choosing is unknown to the author as, again, the author admits to his own ignorance regarding tax laws (especially in the case where private banks might be involved).

In terms of achieving more accurate/precise calculations and formulations, the author is currently in pursuit of more accurate data. Knowing the upper and lower bounds for wage earnings by age group would help towards creating a more accurate model, especially when weighed against the median wages for each age group (again, the preferable set size for an age group would be a single age, not a set with size of more than one age). In a sense we could create a "wage gradient" for each age group that would allow for variability of *(x,y,z)* values with in each individual age group as well as the current variability we presented between the age groups. The author hypothesizes that the model might have a smaller disparity between annual deficit figures derived from the hypothetical model and the more realistic calculations derived in Section 2.3 when more accurate data is used. This would be the result of the more realistic *(x,y, z)* values we could derive. As mentioned multiple times through out the paper, more accurate data with regards to higher FICA with-holding tax percentages for self-employed wage earners would also go along way towards creating a more accurate, if not better fitting, approximation. Creating higher amounts of variability in *(x,y,z)* values would also be achieved by considering other *(x,y,z)* -detetermining variables aside from age and wage when calculating an individual's *(x,y,z)* values. Variables such as "number of dependents" could also be considered.
In mathematical terms, we're looking for a function (or family of functions) we'll call "f" that act on a variable set consisting of age, wage, and other potential factors (such as dependents, as mentioned above) and outputs an individuals *(x, y, z)* values. In function mapping notation:
f(age, wage, dependents,...) = (x,y,z).

The nature of “f” can be expressed heuristically in the following hypothetical scenerio:

Wage Earner 1 (WE1) and Wage Earner 2 (WE2) both begin working full-time at the age of 22. WE1 makes minimum wage, and WE2 makes a far-above-average wage than the majority of 22 year old' wage earners. Assume neither has any dependents, so the only variables f acts on are age and wage. Assume the average 22 year old full time has *(x,y,z)* values *(0.5, 5.7, 0)*. If WE1's wages are below average, then we would see a rise in the *x* value for WE1 compared to the average 22 year old wage earner where, say, *f(WE1) = (0.8, 5.4, 0)* (noting these values are arbitrarily chosen). WE2 would have a lower *x* value than the average wage earner, possibly *f(WE2) = (0.15, 6.05, 0)*. As WE1 and WE2 age and possibly change careers and either increase or decrease in their wage-earning capacity, their *x* values would rise regardless, but would remain relative to the variable set *f* acts on. This means every *f* would be specific to an age group, as it was in the model calculated for Section 2.2, but an individual *f* would vary within a given age so that income disparity in that group would be addressed. This variability would also help address the retirement savings disparity between full-time/salary wage earners and those wage earners working less than full time. Most of this was discussed within the paper, if not vaguely. Here, the author is simply trying to better define future progress of the research and is attempting to put a more mathematical “spin” on the model that was presented and it's possible future incarnations/revisions.