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Interview with Martin Bauer

Martin Bauer, FSA

Tell us a little about yourself.

I worked for over 45 years, most recently as Chief Actuary at the I am a "recovering actuary." After having spent about the first 10 years of my professional career as a U.S. pension actuary, I have since slowly but surely drifted towards global benefits topics, both on the retirement and broader health and benefits side. As a result, I am no longer the deep technical expert, but instead very much enjoy witnessing the varied perspectives different countries around the world take on two of the most important risks facing all people: providing health care coverage and ensuring financial security in retirement.

When not at work, I enjoy spending time with my family. I have three boys whose enjoyment of camping and love of the outdoors I support in my role as scoutmaster of the local Boy Scouts troop. Time permitting, I also enjoy spending time sailing on Lake Michigan.

What attracted you to the Essay Contest?

The question of how to best provide financial security in retirement is a critically important one. As a society, I feel we are still not getting the balance right. Ever since DC plans have come to dominate, employees are burdened not only with having to make all the difficult decisions but also with bearing virtually all the risk. I believe that there should be a better model. Who better than actuaries to provide some creative thinking on this topic?

What steps, if any, would help make the ideas in your essay a reality?

I recognize that my idea is a bit far-fetched relative to current practice. As such, it will require a lot more thinking to distill the key thoughts that have merit and to combine them into a truly viable approach and path forward. To that end, I would want to see more discussion on this topic, with an open mind and broad participation from all impacted groups.

What groups would need to be involved?

As mentioned in my answer to the prior question, I'd want to involve all impacted groups. This means legislators, regulators, the financial services industry (banks and insurance companies), employer representatives, employee representatives, actuaries, risk managers, the whole lot.

What else would you like to tell us?

Let's just keep working on this critical topic. It's too important for all of us and we shouldn't contend ourselves with the status quo. ■

Enhanced Risk Sharing Savings Accounts

By Martin Bauer

Current defined contribution pension plans expose participants to investment risk and longevity risk. Individual account owners are ill equipped to deal with either of these risks.

What is therefore needed, and what this paper is trying to explore, are approaches that attempt to:

1. Maintain the zero risk position for plan sponsors
2. Reduce or eliminate longevity risk
3. Reduce investment risk to the individual participant
4. Maximize retirement income by
4a. Maintaining the upside potential associated with risky assets, and
4b. Minimizing administrative expenses

There is no solution that addresses all five of these objectives perfectly. However, it is clear that current approaches in the context of defined contribution plans fall well short of achieving an acceptable balance. The typical "live off your savings" approach, presented in recommendations such as "consume only your interest earnings" or the "4 percent rule," completely fails to address some of the above mentioned goals. Annuities, on the other hand, do a near perfect job at addressing goals 1 through 3—but at the expense of goal 4.

This paper introduces the concept of enhanced risk sharing savings accounts (or ERiSSA plans[1]). Besides admittedly being chosen to remind the reader of the original goals of the now over 40-year-old Employee Retirement Income Security Act of 1974 (ERISA), in particular the "retirement income security" part that it in the end has fallen so woefully short of, the name is deliberately new (so as to not be confused with existing concepts such as "collective DC plans" in the Netherlands) and is meant to suggest the following elements:

- Risk sharing across account holders
- Individual accounts with individual ownership
- Enhanced features by virtue of combination with deferred annuities to address longevity risk

While much of the concept can apply during the accumulation phase of defined contribution plans as much as during the decumulation phase, this paper focuses primarily on the decumulation phase to be consistent with the objective of the call for papers.

THE CONCEPT

ERiSSA plans can be described as follows. There are individual (savings) accounts much like in traditional defined contribution accounts. At retirement, however, a small portion of the assets is used to purchase a deferred annuity, likely to age 85 or 90.

The remainder of the assets is invested based on the individual account holder's preference and risk tolerance. This means there is room for investment in risky assets such as equities.

The difference from traditional defined contribution accounts lies in the approach in which individual accounts are credited with investment returns. Specifically, there is a separate "buffer account" collectively owned by all participants in the plan rather than by any one individual account owner. This buffer account is intended to smooth actual realized investment returns. During years of favorable investment returns, only a portion of those returns are credited to the individual accounts, with the remainder going toward the buffer. Conversely, in years of unfavorable returns, the buffer is available to supplement returns credited to individual accounts. In addition, a one-time "buy in" would likely have to be assessed at the time of joining a fund that would be credited toward the buffer.

The details of what portion of the investment returns flow into the buffer and how the buffer is accessed to subsidize poor investment returns could differ from plan to plan and might be left to the market place to decide. However, a straight-forward example might call for a "central return area," consisting of a target return (likely equal to something close to the historic average return for similar asset classes) along with more or less symmetrical bands around this target return. For example, a fund that invests in equities could have a central return area of 0 percent to 15 percent, centered around a target return of 7.5 percent. In years in which the actual investment return falls within this central return area, the buffer isn't impacted at all. No investment earnings flow into the buffer, nor are there any outflows. However, in years in which investment returns exceed the upper end of the central return area, some or all of the excess returns flow into the buffer. Conversely, when actual investment returns fall short of the lower end of the central return area, the buffer is used to at least partially make up for the shortfalls. The intent and expectation is that in most years, the return that is actually achieved will fall within the central return area and will therefore be acceptable to the account holder. More importantly, we expect that over the long run, the return will exceed that of risk-free assets and will do so with an acceptable level of risk.

Further, there can be rules about what to do in case of a very small or very large buffer. A very small buffer might result in the entire

unfavorable investment return hitting the individual accounts (it would have to in the extreme case of the buffer being used up entirely). Conversely, an unusually large buffer might result in additional "bonus" returns being credited to the account.

However, no one individual account owner owns the buffer, nor even a part thereof. When an account owner dies, or withdraws their assets, any contribution to the buffer that could mathematically be attributed to their account stays behind and will serve to assist other members of the plan.

COMPARISON AGAINST GOALS

The following discusses how ERiSSA plans fare against the above mentioned objectives 1 through 4.

Maintain the Zero Risk Position for Plan Sponsors

This one is easy. Employers can rest easy by knowing that the defined contribution status of their plans is not touched. ERiSSA plans don't oblige them to do anything beyond what they are currently doing. No risk, no higher cost, no adverse accounting implications.

Reduce or Eliminate Longevity Risk

The only practical manner known to the author of how to deal with longevity risk is through insurance. A deferred annuity is comparatively inexpensive yet does a fine job eliminating the potential financial difficulties associated with very long life. Arguably, it deals precisely with the kind of situation insurance is meant for: to deal with the potentially high cost associated with a rare event.

The precise starting point (85 or 90 or maybe even 95) of the deferred annuity is relatively unimportant. It can differ between single men and single women. In cases where a pool of money has to last for the joint lifetimes of a couple, it might be tied to the younger spouse's age. Either way, the objective is purely to eliminate the financial risk of very long life. A challenge to the insurance industry would be to find more effective ways to deal with the inflation risk so as to ensure that payouts 30 or more years in the future are still meaningful in a variety of inflation scenarios.

Note that while long life is the primary concern when discussing longevity risk, when interpreted as the risk of living for a period of time significantly different than average—longer or shorter—then the risk of dying shortly after benefit commencement has to be taken into account as well. The author is convinced that the concern of "wasting" money when buying a traditional annuity (not one with a certain period) and dying young is at least one hurdle which prevents many consumers from annuitizing their DC accounts. ERiSSA plans maintain the individual account balance aspect of DC plans. In cases of an untimely death, the majority of the assets fall to the deceased's estate.

Reduce Investment Risk to the Individual Participant

This is the most difficult objective to address in a satisfactory manner. ERiSSA plans are not free of risk. In the most extreme adverse scenarios, the (then nonexistent) buffer does little to protect the individual account holder.

However, the author believes that some residual risk is acceptable if the overall package is more appealing, i.e., if it pushes out the kind of efficient frontier which balances risk and reward.

ERiSSA plans undoubtedly share risk. They are designed to do so by shifting returns between years, i.e., less return in particularly favorable years balanced with higher return in particularly unfavorable years. They are also designed to do so between individuals and between generations. A large buffer built up throughout a period of high returns will likely be available to help future generations throughout periods of low returns. As such, it stands to reason that from an individual perspective, investment risk is reduced, albeit not eliminated.

Maximize Retirement Income

As indicated above, the objective is to maximize retirement income. This is accomplished in a number of ways:

a. Investment in risky assets—and the corresponding expected higher average returns over the long term—are possible. This means that over the long term, more money is available overall, which means more money goes toward retirement income.

b. Given the knowledge that an annuity kicks in at some point, the account balance does not have to last beyond a predetermined point in the future. As a result, it is acceptable for the money to be significantly depleted at around that time. Conversely, this means that more money is available for retirement income until that point.

c. All money—including the buffer—ultimately goes to the account holders. Excess returns that feed the buffer are ultimately used to supplement lower returns and to prop up retirement income at times when particularly needed.

d. The concept is fairly simple. It does not require a large administrative overhead or any risk charges. In fact, the administrative requirements of the individual account component of ERiSSA plans (as opposed to the deferred annuity aspect) is well within the scope of what fund managers along with 401(k) and IRA providers currently do—for fairly low fees. Low costs translate into higher retirement income.

VARIATIONS

We mentioned above that the specifics of how such arrangements are structured are best left to the market place to determine.

This might mean different smoothing techniques beyond the simple "all or nothing" approach outlined in the central return area shown above. Also, the concept of an initial "buy-in charge" was merely mentioned in passing above. Some charge is needed to build the initial buffer as well as to avoid diluting an already existing buffer by virtue of new joiners. On the other hand, an unrealistically large buy-in charge would discourage individuals from joining in the first place.

Similarly, the use of the buffer could be more sophisticated than a simple "peanut butter" approach for all. For example, account holders who have suffered particularly large losses in the past might get a larger share.

In general, there should also be rules or suggestions around the annual withdrawal amounts. The easiest approach consists of a table that gives percentages by age of the account balance at the beginning of the year, similar to the IRS' current required minimum withdrawal rules. Such percentages can vary based on deferral age, the targeted annual cost-of-living increase, etc. Alternatively, there could be some further smoothing to attempt to maintain a given level of annual withdrawals for as long as possible.

In reality, providers would likely want to perform extensive modeling as well as consumer research to determine the ideal combination of a nearly endless array of possible parameters. It would be up to some regulator or consumer protection agency to determine what illustrations to require to ensure the fair comparison of alternatives offered in the market place.

Regardless, the principles outlined above should hold true regardless of the specific variation.

AN EXAMPLE AND ANALYSIS

To illustrate the mechanics of ERiSSA plans, let's contemplate a simple example:

- $100,000 is invested into an ERiSSA arrangement that invests exclusively in equities. In fact, we assume the equities to mirror the Standard & Poor's 500 index[2] with a 25 basis point (bp) fee charged by the provider.

- The decumulation phase starts at age 65, and a deferred annuity to age 85 is purchased. The cost of the annuity is assumed to be 12 percent of the principal.

- A central return area of 0 percent to 14 percent is chosen. Actual returns within that range are credited to the individual accounts without impact to the buffer. Excess returns go straight to the buffer (with no maximum), and shortfalls are compensated by the buffer to the maximum extent possible (even if it means completely depleting it).

- The initial buy-in premium is 10 percent. However, two variations are considered. In one example, the arrangement is completely new and therefore a buffer equal to 11 percent (i.e., 10/90) of the account balances exists. In the other example, the arrangement has been in effect for a while and a buffer has been built up equal to 33 percent of the account balances.

- Returns are credited annually (at the end of the year), and withdrawals are also made annually (at the beginning of the year). Withdrawal amounts equal what could be purchased for the account balance at any given time if investment returns of 7 percent (the target rate) were to be realized for the remainder of the period until age 85—at which point the capital is exhausted.

Tables 1 and 2 show the development of the relevant balances over time under both buffer scenarios. The investment returns assumed are those of the S&P 500 from 1970 to 1990.

The appendix shows the results of the calculations for the 20-year S&P 500 scenarios from 1930–50 through 1990–2010 in 10-year intervals. The development of the annual retirement income under each of these scenarios is shown in Tables 3 and 4 and Figures 1 and 2.

Overall, even in this simple example (real implementations would likely be more complex), the arrangement does a decent job maintaining reasonably steady retirement income that exceeds what would be available from annuities or via the 4 percent rule.

The exception is the 1930–50 scenario, which starts with catastrophic returns of –25 percent, –44 percent and –9 percent, which deplete the buffer and account balances in a manner that cannot be recovered from. This illustrates the unfortunate reality of the residual risk that exists with risky investments.

OPEN QUESTIONS

We recognize that there are some open questions. Specifically, there are potential questions on how the buffer is generated when a product is first launched. There are related questions about the size of a buy-in premium and about portability rules in general. Such questions, however, go beyond the scope of this paper, and are therefore best left for future research and contemplation. ∎

Editor's Note: The appendix to this article can be found online at https://www.soa.org/Library/Essays/2016/diverse-risk/2016-diverse-risks-essay-bauer.pdf

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Table 1
1970–90 Scenario with Small Buffer

BOY Age	BOY Principal	With-drawal Percentage	With-drawal ($)	Return					Buffer BOY Balance	Buffer In/(Out)	Buffer EOY Balance
				S&P 500	After Fee	To Acct	To Buffer	To Acct ($)			
65	79,200	8.82%	6,987	3.56%	3.36%	3.36%	0.00%	2,426.36	8,800	144	8,944
66	74,640	9.04%	6,749	14.22%	14.02%	14.00%	0.02%	9,504.65	8,944	149	9,094
67	77,395	9.29%	7,191	18.76%	18.56%	14.00%	4.56%	9,828.61	9,094	3,342	12,436
68	80,033	9.57%	7,661	-14.31%	-14.51%	0.00%	-14.51%	-	12,436	(10,356)	2,079
69	72,372	9.89%	7,160	-25.90%	-26.10%	-22.71%	-3.39%	(14,810.78)	2,079	(2,079)	-
70	50,401	10.26%	5,172	37.00%	36.80%	14.00%	22.80%	6,332.11	-	10,403	10,403
71	51,561	10.69%	5,510	23.83%	23.63%	14.00%	9.63%	6,447.20	10,403	4,527	14,930
72	52,499	11.18%	5,871	-6.98%	-7.18%	0.00%	-7.18%	-	14,930	(3,255)	11,675
73	46,628	11.77%	5,487	6.51%	6.31%	6.31%	0.00%	2,596.03	11,675	82	11,757
74	43,738	12.46%	5,451	18.52%	18.32%	14.00%	4.32%	5,360.10	11,757	1,731	13,488
75	43,647	13.31%	5,808	31.74%	31.54%	14.00%	17.54%	5,297.43	13,488	6,713	20,200
76	43,136	14.34%	6,188	-4.70%	-4.90%	0.00%	-4.90%	-	20,200	(1,737)	18,464
77	36,949	15.65%	5,783	20.42%	20.22%	14.00%	6.22%	4,363.19	18,464	2,001	20,465
78	35,529	17.34%	6,161	22.34%	22.14%	14.00%	8.14%	4,111.47	20,465	2,449	22,914
79	33,479	19.61%	6,564	6.15%	5.95%	5.95%	0.00%	1,601.43	22,914	54	22,968
80	28,516	22.79%	6,500	31.24%	31.04%	14.00%	17.04%	3,082.30	22,968	3,796	26,763
81	25,099	27.59%	6,925	18.49%	18.29%	14.00%	4.29%	2,544.30	26,763	816	27,579
82	20,718	35.61%	7,378	5.81%	5.61%	5.61%	0.00%	748.36	27,579	27	27,606
83	14,088	51.69%	7,282	16.54%	16.34%	14.00%	2.34%	952.82	27,606	173	27,779
84	7,759	100.00%	7,759	31.48%	31.28%	n/a	n/a	-	27,779	-	27,779

Note: BOY indicates beginning of year; EOY indicates end of year.

Table 2
1970–90 Scenario with Larger Buffer

BOY Age	BOY Principal	With-drawal Percentage	With-drawal ($)	Return					Buffer BOY Balance	Buffer In/(Out)	Buffer EOY Balance
				S&P 500	After Fee	To Acct	To Buffer	To Acct ($)			
65	79,200	8.82%	6,987	3.56%	3.36%	3.36%	0.00%	2,426.36	26,400	144	26,544
66	74,640	9.04%	6,749	14.22%	14.02%	14.00%	0.02%	9,504.65	26,544	149	26,694
67	77,395	9.29%	7,191	18.76%	18.56%	14.00%	4.56%	9,828.61	26,694	3,342	30,036
68	80,033	9.57%	7,661	-14.31%	-14.51%	0.00%	-14.51%	-	30,036	(10,356)	19,679
69	72,372	9.89%	7,160	-25.90%	-26.10%	0.00%	-26.10%	-	19,679	(16,890)	2,789
70	65,212	10.26%	6,692	37.00%	36.80%	14.00%	22.80%	8,192.85	2,789	13,460	16,249
71	66,713	10.69%	7,129	23.83%	23.63%	14.00%	9.63%	8,341.76	16,249	5,857	22,106
72	67,926	11.18%	7,596	-6.98%	-7.18%	0.00%	-7.18%	-	22,106	(4,211)	17,895
73	60,330	11.77%	7,099	6.51%	6.31%	6.31%	0.00%	3,358.89	17,895	106	18,001
74	56,590	12.46%	7,053	18.52%	18.32%	14.00%	4.32%	6,935.21	18,001	2,239	20,241
75	56,472	13.31%	7,514	31.74%	31.54%	14.00%	17.54%	6,854.12	20,241	8,685	28,926
76	55,812	14.34%	8,006	-4.70%	-4.90%	0.00%	-4.90%	-	28,926	(2,247)	26,679
77	47,806	15.65%	7,482	20.42%	20.22%	14.00%	6.22%	5,645.35	26,679	2,589	29,268
78	45,969	17.34%	7,972	22.34%	22.14%	14.00%	8.14%	5,319.66	29,268	3,169	32,437
79	43,317	19.61%	8,493	6.15%	5.95%	5.95%	0.00%	2,072.03	32,437	70	32,506
80	36,896	22.79%	8,410	31.24%	31.04%	14.00%	17.04%	3,988.05	32,506	4,911	37,417
81	32,474	27.59%	8,960	18.49%	18.29%	14.00%	4.29%	3,291.97	37,417	1,056	38,473
82	26,806	35.61%	9,546	5.81%	5.61%	5.61%	0.00%	968.27	38,473	35	38,508
83	18,228	51.69%	9,422	16.54%	16.34%	14.00%	2.34%	1,232.82	38,508	224	38,731
84	10,039	100.00%	10,039	31.48%	31.28%	n/a	n/a	-	38,731	-	38,731

Note: BOY indicates beginning of year; EOY indicates end of year.

Table 3
All Scenarios with Small Buffer

Year	1930-50	1940-60	1950-70	1960-80	1970-90	1980-2000	1990-2010
1	6,987	6,987	6,987	6,987	6,987	6,987	6,987
2	5,685	6,530	7,444	6,539	6,749	7,444	6,530
3	2,984	5,425	7,931	6,967	7,191	6,957	6,957
4	2,548	5,780	8,450	6,511	7,661	7,412	6,976
5	2,714	6,158	7,897	6,937	7,160	7,897	7,156
6	2,537	6,561	8,414	7,391	5,172	7,819	6,764
7	2,703	6,990	8,964	7,750	5,510	8,331	7,206
8	2,880	6,533	8,984	7,243	5,871	8,876	7,678
9	2,691	6,411	8,396	7,717	5,487	8,761	8,180
10	2,867	6,321	8,946	7,977	5,451	9,334	8,715
11	2,680	6,734	9,352	7,455	5,808	9,945	9,285
12	2,504	7,175	8,752	7,202	6,188	9,294	8,678
13	2,341	7,644	9,325	7,673	5,783	9,902	8,110
14	2,494	8,144	8,715	8,175	6,161	9,929	7,580
15	2,657	7,612	9,285	7,640	6,564	10,186	8,075
16	2,831	8,110	9,893	7,140	6,500	9,627	8,343
17	3,016	8,640	10,373	7,607	6,925	10,257	8,158
18	2,819	8,659	9,695	8,105	7,378	10,928	8,691
19	2,766	8,093	10,329	7,575	7,282	11,643	8,552
20	2,727	8,622	10,677	7,526	7,759	12,404	7,992
Avg.	**3,071**	**7,156**	**8,940**	**7,406**	**6,479**	**9,197**	**7,831**

Table 4
All Scenarios with Large Buffer

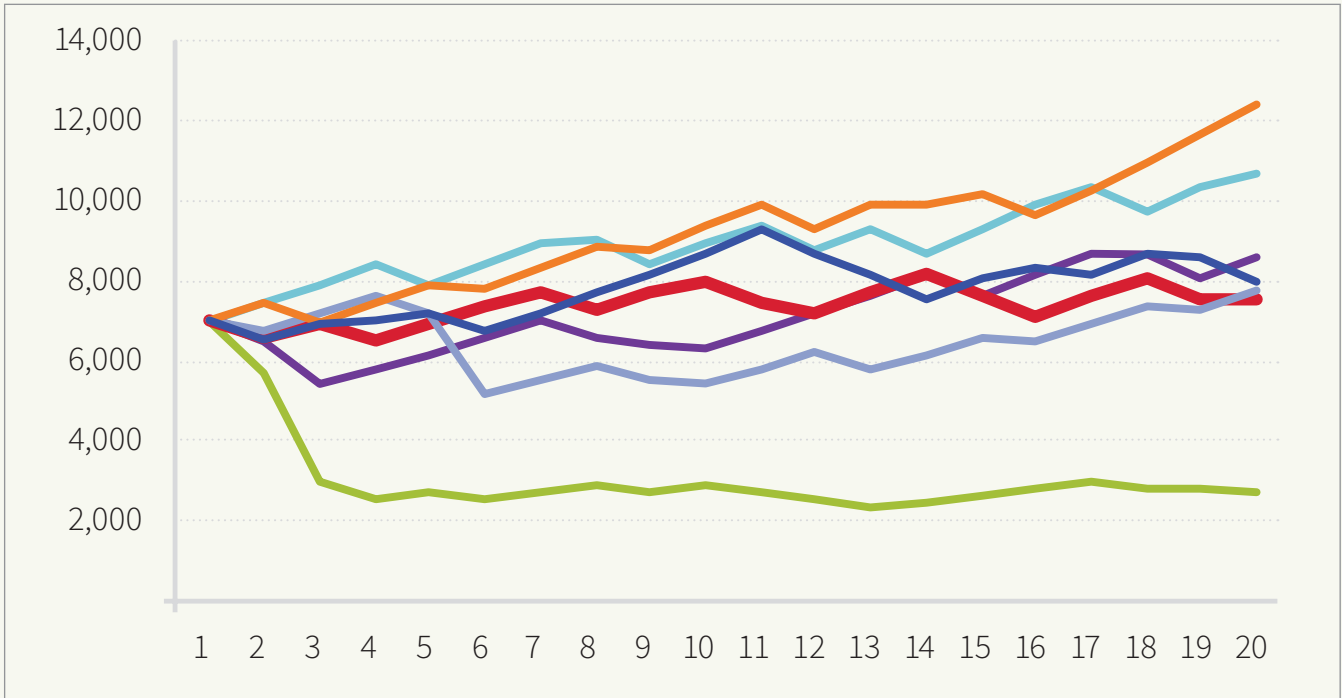| Year	1930-50	1940-60	1950-70	1960-80	1970-90	1980-2000	1990-2010
1	6,987	6,987	6,987	6,987	6,987	6,987	6,987
2	6,530	6,530	7,444	6,539	6,749	7,444	6,530
3	4,195	6,103	7,931	6,967	7,191	6,957	6,957
4	3,582	6,502	8,450	6,511	7,661	7,412	6,976
5	3,816	6,927	7,897	6,937	7,160	7,897	7,156
6	3,566	7,380	8,414	7,391	6,692	7,819	6,764
7	3,799	7,863	8,964	7,750	7,129	8,331	7,206
8	4,048	7,349	8,984	7,243	7,596	8,876	7,678
9	3,783	7,211	8,396	7,717	7,099	8,761	8,180
10	4,031	7,110	8,946	7,977	7,053	9,334	8,715
11	3,767	7,575	9,352	7,455	7,514	9,945	9,285
12	3,521	8,071	8,752	7,202	8,006	9,294	8,678
13	3,290	8,599	9,325	7,673	7,482	9,902	8,110
14	3,506	9,162	8,715	8,175	7,972	9,929	7,580
15	3,735	8,562	9,285	7,640	8,493	10,186	8,075
16	3,979	9,122	9,893	7,140	8,410	9,627	8,343
17	4,240	9,719	10,373	7,607	8,960	10,257	8,158
18	3,962	9,741	9,695	8,105	9,546	10,928	8,691
19	3,888	9,104	10,329	7,575	9,422	11,643	8,552
20	3,834	9,699	10,677	7,526	10,039	12,404	7,992
Avg.	**4,103**	**7,966**	**8,940**	**7,406**	**7,858**	**9,197**	**7,831**

Figure 1
All Scenarios with Small Buffer

Figure 2
All Scenarios with Large Buffer

1930-50 1940-60 1950-70 1960-80 1970-90
1980-2000 1990-2010