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King Billy, Protestant Hero of England

1693: REIGN OF WILLIAM III AND MARY II

In the early days of 1693, at just about the same time American Puritans in New England were burning witches, half a world away, King William III of England (see Figure 1.1) was in the midst of battle with another sort of devil, the Catholic King Louis XIV of France, also known as the Sun King.

The hostility between the English king – who was actually Dutch in origin – and the infamous Sun King extended far beyond the few years since William had ascended to the English throne jointly with his wife, Mary. In fact, before winning the triple crown of England, Ireland, and Scotland, Prince William of Orange had spent the first thirty eight years of his life on the European continent under the constant threat of French aggression. The French and Dutch had been going at each other for centuries. In fact, there was a persistent rumor that King Louis XIV had actually once tried to kidnap King William, back when he was still the Prince of Orange, so there was no love lost between the glamorous Frenchman and the dour Dutchman.

But in early 1693, while basking in the glory of his victory at the Battle of the Boyne in Ireland, King Billy, as he was nicknamed, was atop the English throne. And the forty-two-year-old monarch intended to settle the score with Louis once and for all by combining the best of the Dutch and English fleets. His vision and lifetime objective as the leader of the House of Orange was to secure a protestant Europe for generations.

Now, good intentions, strategic generals, and motivated troops are *necessary* but not *sufficient* conditions for waging a successful campaign against your enemies. Wars need money. In fact, when it comes to military campaigns that can change the tide of history, one requires very large sums of money. And this, alas, was something King William III didn't have in early 1693. To the point, he wanted the English to pay and fund his war, but

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Figure 1.1. King William III. By John Faber, Jr. Copyright © National Portrait Gallery, London. Asset # D9228. Used with permission.

they weren't thrilled about the idea, placing him in a foul frame of mind, I might add.[1]

Indeed, it might have helped his cause if King William III had been a suave and easygoing political charmer, like his predecessor, Charles II – the popular king who was known as the Merry Monarch. Charles II's debauchery made the French court seem tame and boring in comparison. Imagine Bill Clinton as king in the late seventeenth century. But King Billy was callous, aloof, and the antithesis of charming.[2] Moreover, he was

[1] The historical source for information about King William is Claydon (2002) and Kiste (2003).

[2] See Somerset (2012) as well.

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living in a foreign land and reigning under knotty constitutional dynamics. He was a lifelong asthmatic suffering from constant poor health and hated the weather in London. He was also childless and without a legitimate heir. His (mostly political) marriage to his wife, Queen Mary II, by all contemporary accounts, lacked romance and passion. In fact, while we're on the topic of family, William's sister-in-law, Anne, gave him much grief. And his father-in-law, James, would probably have killed William if he could get his hands on him. Actually, as all English schoolboys and schoolgirls are taught, William of Orange invaded (or was invited to) England – triggering the Glorious Revolution of 1688 – and exiled his father-in-law off to France.[3]

In the last decade of the seventeenth century, King William's main priority and existential preoccupation was to secure the funds he needed to pay his troops and continue his campaign against France. William – who was a military commander and master strategist – still had outstanding debts to settle from his previous battles, including the 21,000 men he had hired to accompany him to England in 1688. Money was tight, and King Billy was in a bloody bind.

I must admit that the story of an English monarch in need of money might sound a bit distant and incredulous to anyone in the twenty-first century. But then again, even Queen Elizabeth II, who ascended the throne in 1952 and has a personal net worth of more than £300 million ($480 million), has monarchical financial problems and disputes with Parliament over who should pay for what. In early 2013, a parliamentary committee questioned her household's (over)spending, and for a brief period in 2013, the queen applied for welfare – yes, welfare! – to pay for the upkeep on some of her palaces.[4] Presumably, the future King Charles III (her son), the subsequent King William V (her grandson), or even future King George VII (her great-grandson) will have similar run-ins with Parliament.

But three centuries ago – when the beginning of our story takes place – the Crown's finances were even more precarious, precisely because they were subject to the whims of Parliament, which controlled all the purse strings. Yes, the monarchs owned land and were entitled to live in castles – and the Orange family owned large tracts in the Netherlands – but cash flow and income weren't easy to obtain, especially to finance a war. The now-common practice of making the monarch accountable to the English

[3] More on the Stuarts in Chapter 4.
[4] See the article in the *Independent* from September 24, 2010, "Queen Tried to Use State Poverty Fund to Heat Buckingham Palace."

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Parliament directly – and the English people indirectly – was one of the great constitutional achievements of the late seventeenth century.

Sure, a millennia or two ago, kings could do as they pleased and seize whatever they wanted or desired, whenever they wanted, but not so by the end of the seventeenth century. If a monarch needed more money – whether to wage war or provision mistresses – he needed Parliament to authorize and approve the additional funds. Now, of course, Parliament couldn't really order the "creation" of money by printing, as it does today. Its only source of revenue was taxes, including land tax, custom tax, and excise tax, as well as taxes on salt, wine, spirits, tobacco, and even births and marriages. Requisitioning or raising additional funds today requires increasing taxes, and, naturally, as the elected representatives of (some fraction of) the people, Parliament is reluctant to do so, especially for wars that aren't widely supported.

So, I now get to my main story.

William got his money from Parliament in the end. And in its attempt to raise funds to fight William's war against the French, the English Parliament authorized something virtually unheard of within the empire; something that was to change the economy forever – a financial revolution according to some: *they decided to borrow money by issuing long-term government debt*.

The plan was that creditors would voluntarily lend (aka invest) a minimum of £100 each toward the war effort, and the government – not the king or any one person, the actual *government* – committed to pay interest on this £100 note for the next ninety-nine years. The Act of Parliament authorizing the ninety-nine-year loan was called the Million Act, which, as you guessed, was an attempt to get 10,000 Englishmen to (lend £100 or more each and) contribute £1 million to fund King William's war. To put this number in perspective, £1 million in the year 1693 would be equal to between £100 to £500 million today, depending on wage and price inflation assumptions in 2015.[5] Relatively speaking, this was a large sum of money.

At this point you must be wondering to yourself: "That's it? They borrowed money to fight a war? Is that revolutionary? Heck, the U.S. federal government owes $18 trillion in the year 2015, for heaven's sake!"

Well, part of the answer is that yes, this sort of scheme was a big deal in the last decade of the seventeenth century. Up until 1693, to be precise, the

[5] From a different perspective, the annual cost of supplies for the entire British army of 65,000 men in the year 1692 was £1.8 million. So, the Million Act would raise half the budget for one year of the army (Gregory and Stevenson 2007, 162).

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English *as a people, governed by Parliament* had never borrowed long-term funds the way it is practiced today. Yes, individuals had borrowed money for millennia, kings and queens had borrowed money, and even corporations – which did exist, mind you – had borrowed money, but not a nation.

To be perfectly honest, the real interesting story here is *how* Parliament implemented the borrowing scheme known as the Million Act and the type of debt they issued and committed the country to paying. This wasn't your grandfather's savings bond.

At a broad level – and I'll get into much more detail later – the way the scheme worked was that in exchange for each £100 investment, the government committed itself to pay 7% interest until maturity of the so-called bond. So, the lenders were receiving interest payments of £7 per year for ninety-nine years, which sounds and smells awfully like a very long-term bond. But – *and this is key* – if and when investors owning the individual bonds died, they couldn't – I repeat, could not – bequeath the share or bond units to their children, friends, or loved ones. Instead, the £7-per-year interest they would have been entitled to had they still been alive was forfeited and distributed to the other investors who were still alive. For the sake of example, if twenty years later half of the original £100 investors had died and half were still alive, then each surviving investor would now receive £14 interest in that year, which is double their first year's interest payment. In thirty years, if three-quarters of the original investors had died, then all surviving investors would receive £28 interest (or a payout yield of 28%) in that year alone.[6] And in the end, in theory the longest-living survivors would get all the interest income on the proverbial table. Think of the last hand in a poker game. Winner takes all.

This, ladies and gentlemen, is a *tontine scheme* – and it was the first time it was launched nationally in England. King William III used tontines to fund and pay for his war.

If this is the first time you have heard of a tontine, you might recoil in horror.[7] "Does this mean that your interest or tontine dividends increase as your friends and neighbors die?" Well, the short answer is yes. No doubt you weren't praying for their well-being.

You might be surprised to learn that tontine schemes were extremely popular for about 200 years, from the late seventeenth century – when it was

[6] The £7 interest per share is divided by 0.25, which is the percentage of survivors, resulting in £28 interest paid to all surviving shares. So, when only 10% of the pool remains, survivors receive £70 in interest. I explain the math in much more detail in Chapter 2.

[7] "Tontine" rhymes with "tall queen."

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launched nationally in England – to the late nineteenth century. This was the golden age of tontine schemes. Large tontine schemes were launched in Italy, the Netherlands, Denmark, and France all around the same time. The English Parliament formally joined the tontine festivities – to help King William fund his war – in 1693.

It is worth noting that at just about the same time the first parliamentary tontine was sanctioned and got under way under King William III, across the English channel King Louis XIV oversaw the launching of the first French state tontine (to much greater success, I might add) in Paris.[8] I presume the thinking in London was – just as with French fashion, cuisine, and clothing – if they were popular in France, then why not offer them in England?

Perhaps you can relish the irony here. The English needed money to fight a war and kill Frenchmen. So they engaged the same financing method employed by the French, who were fighting a war trying to kill Englishmen – by borrowing money and paying interest that would grow – as other people died. Macabre, no? If there were bond underwriters at the time, I can just imagine the sales pitch. As long as the investor stayed alive – and away from the battlefields – their investments would yield lively returns. I doubt there was a Goldman Sachs at the time, but I suspect they would have had a hand in this sort of bond business.

But – and here is where I'll join a moral battlefield of sorts – in this book I try to convince you that there is merit in this sort of tontine scheme and that they should be brought back from the dead. Yes, I know this is an uphill battle, and I'm not proposing to resurrect King William's exact version. I'm calling my proposal Jared's tontine in honor of the world's second-oldest literary figure. More importantly, I argue for why these sorts of schemes may make more economic sense than you might think at a first passing.

A Recap

Let me sum up here again. It is little known – even among professional economic historians and central bankers – that less than a year prior to the charter of the Bank of England (which took place in July 1694), the earliest attempt by the government to borrow money for the long run wasn't by issuing bonds, notes, or bills, which is the preferred and familiar method used in the twenty-first century. Rather, the first instrument of English

[8] The first French state tontine was launched in 1689 (Jennings and Trout 1982).

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national debt was in the form of a tontine scheme – a product that today has virtually disappeared from our lexicon and landscape.[9]

This book is about tontine schemes in general, the first English government scheme in particular, and why they may not be as bad as you might initially think.

In broad terms, a tontine can also be viewed as a type of life annuity or lifetime pension where "annuitants" receive "income" as long as they are alive, and the payments increase as other annuitants die and leave the tontine pool. In theory the longest-living survivor gets all the dividends until he or she dies and the obligation or instrument is extinguished.

When I describe tontine schemes to friends and relatives, the first question (or joke) I hear revolves around people killing each other to get their interest payments. In fact, quite a few movies and books have been penned with this plot. The truth is that there is little evidence of any of these sorts of shenanigans taking place. You might be surprised to know that the exact opposite was observed. Tontine nominees – that is, the people on whose lives the payments are based – lived much *longer* than the population average and had *lower* mortality rates compared with individuals who didn't participate in a tontine. It appears as if being a member of a tontine scheme kept them alive! Why this might be the case is a mystery – or perhaps not – that I address later, but for now, rest assured that the incentive to murder was not as great as you might expect, especially since most tontine schemes capped payments at some point.

Still not convinced of the economic soundness of this scheme – or that anyone ever tried to borrow money in this peculiar way? Well, none other than Alexander Hamilton, the first secretary of the U.S. Treasury, suggested a similar tontine scheme in the year 1790 – in a series of letters to George Washington and a proposal to Congress – to help pay off and eliminate the massive debt from the Revolutionary War. I'll get to the American plan later on, as well.

[9] This is not to be confused with the group savings and microcredit policies in French-speaking regions of present-day Africa, called Rotating Savings and Credit Associations (ROSCA). There are also a variety of community-based savings and loan schemes marketed under the tontine label in (present day) Malaysia where they are legal, regulated by the Cooperatives and Consumerism Ministry of Malaysia and referred to as "kootu" or "chit funds." An hour's flight away from Kuala Lumpur, in Phnom Penh, Cambodia, "tontine kittys" as they are known in Cambodia, are quite popular but apparently illegal. Although these unique schemes are interesting and rather complex they have absolutely nothing to do with classical tontines covered in this book. Life and death play no role in the payout function and that is all I have to say on this matter.

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Tontine schemes – like the character in the popular children's book *Where's Waldo?* – exhibit an odd and peculiar habit of appearing in unexpected and critical places over the last few centuries. Some historians have argued that tontine schemes were partially to blame for the bankrupt treasury preceding the French Revolution. In the United States, private tontine schemes managed by insurance companies were accused of fraud and eventually banned by regulators in the early twentieth century, leading to the creation of collective pension plans and Social Security.

Moreover, some of the greatest scientists in the last 300 years, from the astronomer Edmond Halley, the mathematicians Abraham de Moivre, Leonard Euler, and Friedrich Gauss, to the world's first and most famous economist, Adam Smith, opined, wrote about, and made an appearance in the tontine business.

I should add again, however, that this book is more than just an interesting story about a somewhat peculiar insurance product that existed a few centuries ago. For those of you who are appalled by the idea of benefiting from others' deaths, I will ask you to suspend judgment until the very end. Despite the fact that tontines have been extinct or (according to some) illegal for almost 100 years – and I'll get to that, as well – I am going to argue for the resurrection of tontine schemes, or what I prefer to call the tontine sharing principle, or better yet, "tontine thinking."

I will try to convince you that "tontine thinking" might help resolve one of the biggest challenges facing society today – no, not religious wars between neighbors – the challenge of making your retirement funds last for as long as you live. Remember, one of the by-products of a tontine scheme is that members get income for as long as they live. This helps insure against the unexpected and increasing cost of living a long life, which can be just as important as insuring against the devastating damage – to a family – of a short life. I will discuss the demise of Defined Benefit (DB) pensions, the cost of long-term guarantees, and point out that "tontine thinking" is already being used in places you wouldn't expect, but it is hidden and obscure. My point is as follows; Why not bring it back into the open?

I don't seek to resurrect King William's exact version of a tontine since we have learned quite a bit in the ensuing three centuries, but the foundations were there 320 years ago. And some aspects of his design were quite innovative and worthy of reproduction. I'll elaborate on this as well.

But *why* would someone want to do this? Why bring back an investment and insurance product that has lain dormant for centuries? The *Encyclopedia Britannica*, VHS tapes, pagers, and typewriters were all great ideas and innovations in their time, but the world has moved on. Why bring back tontines? Well, let me start with one good reason.

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TAKE LONGEVITY RISK OFF MY BOOKS

If you happened to wander into an industry or academic conference focused on the topic of retirement or pensions – as I do on occasion – you will notice that nowadays, most of the speakers mercilessly and repeatedly pound away on one theme. Notwithstanding the daunting long-term challenges we face in society – from religious warfare, climate change to water scarcity to income disparity – the one phrase that comes up repeatedly at pension conferences is *longevity risk*. This term, which, I confess, I'll use quite a bit, as well, is roughly defined as the fear that a person or retiree will live longer than was expected. I'll offer a much more refined definition later on in the book, but for now think of longevity risk as the symmetric opposite of *mortality risk*, which is the chance of dying at a younger age than expected. The key word here is *expected*.

The presentations at these conferences usually begin with a slew of World Bank or IMF or Society of Actuary statistics that are supposed to surprise and astonish the audience – although, by the hundredth time you see the numbers, the shock factor is gone – namely, that we are living decades longer than our grandparents and parents ever did. You are likely to hear statements claiming that in the early twentieth century life expectancy at birth was fifty years, but by the beginning of the twenty-first century, it had increased to eighty years. This, of course, translates into a growth rate of four months per year or one day more of life for every three days we have already lived. The probability of living to triple digits has gone from close to zero a century ago to a fifty-fifty coin toss today according to (optimistic) demographers. And for a married couple, the odds are closer to three-quarters. So, by the twenty-second century, the experts claim, we will all survive to the age of 122 – which is the age of the oldest verified[10] woman, who lived and died a few years ago in France, Jeanne Louise Calment.[11] I'm not saying I agree with any of these statements. But you do hear them over and over again.

Regardless of the statistical accuracy of these forecasts – which is something else I'll discuss at much greater length later on – any normal person hearing these things would consider it good news. After all, who doesn't

[10] Biodemographers are still awaiting validation of the centenarians listed in the book of Genesis.

[11] There is a cute story about Jeanne Louise selling her apartment in Paris to a (young) lawyer in the 1970s on the condition that she could continue to live in it for the rest of her life. In exchange, the lawyer agreed to pay her a fixed sum per month (a life annuity, in lieu of the purchase price.). Needless to say, he died well before she did and he never got her apartment. Whether Jeanne Louise lived to 122 or "only" 110 is the topic of some controversy, according to professor Leonid Gavrilov and professor Natalia Gavrilova from the University of Chicago. Either way, she did live a very long time.

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want to live longer? But these aren't ordinary audiences. These are pension administrators, insurance company executives, actuaries, risk management experts, and government regulators who – to misquote the great writer F. Scott Fitzgerald – worry about things different from you and I. The common thread linking this band of worriers together is their financial liabilities.

Directly or indirectly, those in attendance are responsible for paying retirees a fixed, known, guaranteed income for the rest of their lives. The longer retirees live, the more they have to pay. So if the longevity forecasts are true and the longevity risk materializes, these responsible and prudent folks will have to set aside more money to pay claims and will require more business capital to support their activities. All this can be extremely expensive.

No matter how you phrase it, a fact that at first hearing should be good news for everyone – hey, isn't a long life a blessing? – is perceived as scary news for the pension and retirement business. But it doesn't have to be. That's my main point, which I'll get to later.

To be specific, DB plans – for example, the pension plans of police officers, firefighters, teachers, and government employees – have promised to pay their retirees a monthly paycheck for the rest of their lives. So longevity risk would imply they are on the hook for longer (than expected). Likewise, life insurance companies have promised to pay annuities for life, and for them, too, longevity risk means they must mail checks for longer (than expected). In fact, even reinsurance companies – which are the entities that insurance companies use to protect and insure themselves – are worried and concerned about longer lives.

All this activity is taking place in an environment in which more and more private sector pension plans – such as Motorola's, General Motors's, and Verizon's – are transferring their longevity risk to insurance companies. These insurers are promising to make the payments to retirees instead of the primary companies where the retirees worked and earned their pensions.[12] So the large corporations might be reducing their longevity risk – but now the insurers have more of it.

Don't get me wrong, these insurance specialists also worry about the other side of the coin, which is excessive and unexpected deaths and epidemics – from something like an Ebola or SARS epidemic – but they have

[12] See, for example, the article by Rob Kozlowski in the industry publication *Pensions & Investments*, on September 29, 2014, "Motorola Wraps Up Buyout at Light Speed," in which this trend of transferring longevity risk from industrial corporations to insurance companies is described in much greater length.

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