

# Retirement: Choosing Between Bismarck and Copernicus

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## Otto and Nicolaus: An Introduction

Otto Eduard Leopold, Prince of Bismarck, Duke of Lauenburg, commonly referred to as Otto von Bismarck, was a Prussian, and later German, statesman who dominated German and European political affairs from the 1860s until 1890. He was the driving force behind implementation of the world's first welfare state in the 1880s in the German Empire, through these three laws:

- Sickness Insurance Law of 1883
- Accident Insurance Law of 1884
- Old Age and Disability Insurance Law of 1889

The last law created an old age pension program, equally financed by employers and workers, and designed to provide a pension annuity for workers who reached the age of 70. It also created a disability insurance program intended to be used by those permanently disabled. It was the world's first social insurance scheme, with its key characteristics:

- Public administration
- Premiums and benefits determined by law
- Pay-as-you-go financing

The system provided a uniform design for retirement for all citizens alike. It became in many ways a model for the world, still followed today. Interestingly, it is commonly referred to as **insurance**. The system created by the last law, although in a vastly transformed form, still effectively survives in modern Germany. And many social insurance systems around the world, including Social Security in the United States are, to some degree, modeled on it.

Legend has it that on May 24, 1543, Nicolaus Copernicus, lying on his death bed, was presented with the final printed pages of his life's work, *De Revolutionibus Orbium Coelestium*, allowing him to do the last check of a book that transformed the world, not just because it changed our perspective on the motion of planets and the structure of the solar system but mainly because, through the later work of Galileo, Kepler and Newton, it inspired the creation of calculus and the science of physics, i.e., the intellectual backbone of what fuels our modern standard of living. As the story goes, Copernicus woke from a stroke-induced coma, looked at his book and then died peacefully. He worked till his last breath. Frankly, that's how I want to go. I do not think I can pass away working on a document as historic as *De Revolutionibus Orbium Coelestium*, but maybe while solving some actuarial exams problems?

## Retirement Insurance?

The name commonly used for the system created by Bismarck is, mysteriously, **insurance**. Is it insurance? Does it make sense to lump retirement planning with insurance? What is it insurance against? After all, if you are wealthy enough, you can retire. So save a lot, invest wisely and one day you will be wealthy enough and enjoy retirement. Why the need for any insurance?

Actuaries commonly say: A life annuity is a form of insurance—it is insurance against living too long. Then again, why would living too long be a bug, and not a feature? As long as I am alive, I can still solve old actuarial exam problems and hopefully get paid for this (I know this new generation of actuarial students want all content for free, the way they get their music, but that's why I have a YouTube channel for my work). I can always work and earn money by meeting the needs of my fellow men and women. Why would I need insurance against being able to work too long? Of course, if I became infirm, or worse yet, severely disabled, I may not be able to work. For that I may need insurance. But that is disability insurance, not retirement insurance.

Why do we need retirement insurance? Or do we?

To address this question, let us ask a more fundamental one: What is insurance? The most common answer is that insurance is a contract providing protection from certain financial losses defined in the contract. This sounds reasonable, but let us rephrase the question: What is the social role of insurance? Individually,

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insurance provides protection from certain financial risks. But is there any social benefit to insurance? After all, the protection is provided by redistribution of money from customers to customers, and on top of that, not all money received from customers is redistributed back—the insurance company keeps a large cut to itself, to pay for its expenses, profits and for one especially large and important expense: salaries of actuaries. For customers, this is a negative sum game. Is there a benefit to society at large?

Let me propose to answer this question with a question: Imagine a world with no automobile insurance—in such an alternative world, would people drive more or less than in our existing world with automobile insurance? The answer is clear: They would drive less. This means that the social purpose of automobile insurance is to get people to drive more. And, similarly, the social purpose of the insurance industry is to convince our customers to take on more risks. Let us face it: **The mission of our industry is to get people to do more crazy stuff!** And let us be proud. It is a noble mission. Without risk taking, no innovation would ever take place, and most likely, no industry of any kind would ever take place. The statement: “Captain Kirk, there may be intelligent life on this planet!” is really equivalent to: “Captain Kirk, these creatures appear to be capable of risk taking!”

### Not So Crazy, Please, Said the Actuary

Of course, actuaries immediately think of the phenomenon known as **moral hazard**: the tendency of people or firms insured to assume more risk than they were willing to assume in absence of insurance. But let us be, as actuaries should be, precise about this. The complaint about moral hazard is not about risk taking that was assumed in the pricing of the insurance contract. The complaint is only about the new, not predicted by actuaries, and often greatly unpredictable, change in the behavior of the insured people and firms after they obtain insurance protection. What do actuaries do about this problem? They adjust the pricing of the insurance product. If the additional risk taking results in additional incomes of the insureds, or at least additional happiness, higher premiums are paid with ease and a smile. But if the opposite happens, there is a lot of weeping and gnashing of teeth and, most importantly, complaining about the evil insurance companies.

Under normal market circumstances, however, the overall result of good actuarial pricing work is that additional risk taking is directed toward productive activities, and not risk for the sake of risk itself. In other words, while the mission of our industry is to get people to do more crazy stuff, we also prod people toward practicing risk under actuarial supervision, and this means that at times of important decisions actuaries tell us: **Not so crazy, please, and fasten that seat belt while driving.** Why do I mention the seat belt? Because the pricing response is not just about the level of premium itself, but equally, or even more importantly, about the structure of the contract: Both the price and the type of coverage affect the customer’s pocketbook and, by doing so, customer’s behavior.

Insurance is the most effective mechanism of risk management ever designed in human affairs because it is the only risk management mechanism that speaks directly to the human pocketbook. Actuaries are the speechwriters for that conversation.

### Back to Retirement

Otto von Bismarck told the subjects of the German Empire: When you turn 70 years old, leave the labor force. Work no more. Bismarck, an aristocratic Junker himself, offered the aristocratic lifestyle of leisure to the masses, albeit at a small scale and at advanced age.

Leaving the labor force can be a random event, or can be a conscious, willing choice. Whatever the reason, leaving the labor force is a risk. When a worker stays away from the labor force for an extended period of time, such a worker becomes less of a worker, as his/her skills may deteriorate, becoming less current and less marketable overall. If the extended stay away from the labor force is caused by unemployment or disability, and covered by a scheme insuring against one or both of these risks, this insurance scheme provides protection against the risk of ill-timed withdrawal from the labor force. And that is in fact the risk insured against in retirement schemes as well.

And that in turn implies that the social purpose (intended or unintended) of all these forms of insurance (unemployment, disability and retirement) is to encourage people to leave the labor force. While this encouragement makes perfect sense for people who

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can no longer work, it is at best a strange idea for those capable of working—because leaving the labor force is risky, as explained above, and the resulting loss of human capital is detrimental to the individual involved and to the society.

Otto von Bismarck was a powerful innovator in insurance and left a lasting impact on the way retirement systems are structured. His biggest footprint in history is that a retirement age, and in fact the entire process of transition to retirement, is set by the retirement system, not by the system participants individually. Yet the retirement system protects against individual risk, the risk of leaving the labor force prematurely, with the resulting individual loss of human capital.

Life insurance in general, in any of its forms, i.e., life insurance, life annuity, disability insurance and even health insurance, is, first and foremost, human capital insurance. The “protection” is effectively a mechanism to replace income provided by human capital when a random event named in the insurance contract, resulting in loss of human capital, happens. Retirement “insurance” is the only one where the event is not random, but rather deterministically prescribed by the retirement system. It is the only insurance system in which the system itself causes the insured event to happen.

And, let us remember, the social purpose of insurance is to get people to do more crazy stuff: in this case, to assume the aristocratic Junker lifestyle, even if at limited scale. All this to avoid the supposed threat that the last moments of Copernicus’ life perfectly describe: waking up from a stroke-induced coma, looking at one’s life’s crowning achievement and dying while scribbling corrections on the margin—as if that were a grave threat no matter the individual circumstances.

The Bismarck and the Copernicus models of retirement offer two possible extremes of retirement system design:

- The Copernicus model maximizes the use of human capital, utilizing it till the very last nanosecond, while

- The Bismarck model deems large amounts of human capital of people beyond a prescribed retirement age unneeded and socially undesirable.

A retirement system, by its very nature (as insurance providing income replacement) encourages leaving the labor force, i.e., throwing our human capital away. Yet, in the final analysis, it is the human capital that is the source of our wealth and prosperity. Maximizing its value should be a natural objective of public policy—and of insurance firms serving their individual clients. This may sound challenging, but it is not impossible.

Nearly all retirement systems around the world are now suffering a price shock. The market price of assuming the aristocratic Junker lifestyle is appallingly high, especially, as actuaries point out in numerous analyses, in relation to what the public is willing to pay for them. This is, of course, a consequence of allowing **moral hazard** to roam freely, and of rejection of the actuarial analyses proposing market prices that would sharply reduce or eliminate that moral hazard. The market price system is not allowed to work, and instead price controls on the aristocratic Junker lifestyle have resulted in shortages and rationing of the aristocratic Junker lifestyle. But, as always in insurance, the main social consequence is getting people to do more crazy stuff. In this case, the crazy stuff is throwing their human capital away.

I humbly propose to remember that Nicolaus Copernicus used his human capital till the last drop, and we are all better off for that.

I also humbly propose that we should redirect the future of retirement systems design, in both public policy and private industry, toward the objective of maximizing our customers’ human capital, and not toward assuming the aristocratic Junker lifestyle.

Lord Alfred Tennyson, unwittingly, wrote this on the Copernicus retirement model in the final words of his *Ulysses*:

... (T)hat which we are, we are;  
One equal temper of heroic hearts,  
Made weak by time and fate, but strong in will  
To strive, to seek, to find, and not to yield.

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