Asset Owners

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Abstract and Keywords

Stocks and bonds? Real estate? Hedge funds? Private equity? The conventional way of allocating across asset classes fails to account for the overlapping risks that they represent. Investors must consider the underlying factor risks behind asset class labels, just as eating a healthy diet requires looking through foods to the nutrients that they contain. Factor risks are the hard times that affect all assets, and investors are rewarded for weathering losses during bad times with long-run risk premiums. Optimally harvesting factor risk premiums—on our own or by hiring others—requires identifying our particular set of bad times and exploiting the difference between them and those of the average investor.

Keywords: asset allocation, investment management, life cycle, factor risk premium, illiquidity risk, alpha, delegated portfolio management

Chapter Summary

All asset owners—from the very largest sovereign wealth funds (SWFs) to the smallest individual investors—share common issues in investing: meeting their liabilities, deciding where to
invest and how much risk to take on, and overseeing the intermediaries managing their portfolios.

1. Timor-Leste
The Democratic Republic of Timor-Leste is a small country of a million people in Southeast Asia. It lies northwest of Australia and occupies the eastern half of Timor Island along with an enclave in the western part of the island. The rest of the island belongs to Indonesia.

In the sixteenth century, the area that is now Timor-Leste was colonized by the Portuguese, who introduced Catholicism, which remains the dominant religion, and coffee, which is the mainstay of Timor-Leste’s low-productivity agricultural economy. During World War II, the Australians and Dutch landed in Timor-Leste to fight the Japanese. World War II devastated the country, and recovery under reinstated Portuguese rule was slow.

When Portugal began to withdraw from its overseas colonies, civil war broke out in Timor-Leste. The Revolutionary Front for an Independent East Timor ( Fretilin ) declared independence in November 1975. Fearful of a Marxist state on its doorstep, and with the support of Western governments amid the Cold War, Indonesia invaded less than a month later, and in July 1976, declared Timor-Leste its twenty-seventh province.

Indonesia’s occupation was brutal. An estimated 200,000 Timorese lost their lives to fighting, disease, or famine. In 1996, the Nobel Peace Prize was awarded to two Timorese leaders, Bishop Carlos Filipe Ximenes Belo and José Ramos-Horta, drawing attention to Indonesia’s human rights abuses. After Indonesia’s President Suharto was forced to resign in 1998, his successor held a referendum in Timor-Leste on independence. Four out of five Timorese voted in favor and on May 20, 2002, Timor-Leste became independent.

Timor-Leste is poor. Its annual GDP per capita is less than $900, and four out of ten residents live in poverty. Half the adults can’t read. Unemployment reaches up to 20% in rural areas and 40% among urban youth. There are few paved roads outside the capital, Dili, and many roads become unusable during the rainy season. There is no national electricity grid and even in Dili, power can be uneven and unreliable. Most of
the population lives off subsistence agriculture; slash-and-burn farming methods have contributed to soil erosion and deforestation. The country does not have its own banking system or currency and instead uses U.S. dollars.

At the same time, Timor-Leste is rich. In 2004, ConocoPhillips began production of oil and gas from the nation’s reserves in the Timor Sea, and in 2005, the government established the Petroleum Fund. At the end of 2012 it contained $11.8 billion.

Why did the government of Timor-Leste set up the Petroleum Fund instead of immediately spending the windfall on medical care, education, housing, roads, utilities, and other basic necessities?

We’ll answer that question in the pages to come. For now what’s important is that the Petroleum Fund of Timor-Leste is a SWF, which makes the nation of Timor-Leste an asset owner. This chapter describes the main characteristics of different asset owners—from nations down to individuals. I consider SWFs, pension funds, endowments and foundations, and individuals and families. I do not describe banks, insurance companies, asset management firms, or similar financial institutions, which I treat as intermediaries for these owners of assets. (Part III of the book deals with delegated portfolio management.) The line, however, between asset owner and intermediary is blurry; SWFs and pension funds ultimately serve the owners of the funds, which include individuals, but are managed as separate entities.

2. Sovereign Wealth Funds
SWFs are big gorillas—both because the giant SWFs have some of the largest pools of assets under management (AUM) and also because they represent the largest number of underlying owners, the citizens of their countries.  

(p.5) SWFs are special for me because of my association with Norway, whose SWF is among the world’s largest; at the end of 2012, it managed $685 billion, sixty times more than the Timor-Leste’s Petroleum Fund. (Yet in economic terms Timor-Leste’s is the giant because Norway’s fund is “only” equal to a year’s GDP, while Timor-Leste’s is ten times that nation’s annual output.) I have advised the Norwegian SWF since 2005, and my consulting work for the Norwegians on strategic asset allocation has influenced my research and teaching. I am extremely grateful to Norway for inspiring me—the work on factor investing, especially, has shaped some of the arguments of this book. Through Norway, I have had the privilege of meeting people representing governments and large fund managers from Europe, the Middle East, Asia, Australia, New Zealand, and of course, the United States.
2.1. The Growth of Sovereign Wealth

SWFs are part of overall sovereign reserves, which include central bank reserves, commodity savings or stabilization funds, national pension reserves, government holding management companies, and state-owned enterprises. A working definition of a SWF is an investment fund controlled by a government and invested at least partly in foreign assets. At its most basic level, a SWF is a vehicle for moving a country’s savings from the present to the future. SWFs have been created by many types of governments—from democratic to autocratic—and are managed in a variety of structures, from independent crown corporations to operations within central banks.

The United States has several SWFs, all at the state level. The largest and oldest in the United States is the Alaska Permanent Fund, which was established under the state’s constitution in 1976 and is funded by mineral lease rentals. It had grown to $42 billion as of August 31, 2012. Each year, all residents of Alaska receive a dividend, which in 2012 was $878. The newest SWF in the United States is the North Dakota Legacy Fund, which receives 30% of the state’s taxes on oil and gas and was established in 2011. This fund is projected to rapidly grow alongside the shale oil boom. Then there are the New Mexico Severance Tax Permanent Fund (1973), the Wyoming Permanent Mineral Trust Fund (1974), and the Alabama Trust Fund (1985).

While SWFs are a heterogeneous group of investors, their distinguishing characteristic is government ownership, which makes the management of a SWF different from the management of private sector financial institutions. The biggest SWFs are colossal. Norway has more than half a trillion dollars in assets. China Investment Corporation (CIC) and the State Administration of Foreign Exchange (SAFE), both Chinese, and the Saudi Arabian Monetary Authority (SAMA) are about equally large. Other comparably sized funds include the Abu Dhabi Investment Authority (ADIA) and the Government of Singapore Investment Corporation (GIC), but their size has only been estimated because these funds do not report their AUM. So there is an enormous amount of money in SWFs—estimates put the figure at upwards of $5 trillion and growing.
The line between SWFs, reserves, and national pension funds is blurry, but we do know that all these funds have dramatically increased since 2000. Figure 1.1 graphs world foreign exchange reserves as compiled by the IMF (the Currency Composition of Official Exchange Reserves, or COFER). These are voluntary reports and don’t coincide with the monies in SWFs, but there is some overlap. In fact, some countries, like China and Korea, have created a SWF (or two) by hewing them out of foreign exchange reserves. Figure 1.1 shows a dramatic growth in reserves from less than $2 trillion in the 1990s to more than $10 trillion in 2012. The AUM of SWFs (which we do not directly observe) would mirror this trend. The COFER numbers hugely underreport foreign reserves because China, which holds more than $3 trillion in reserves, does not report to the IMF. Although some developed countries, like Norway, are accruing large amounts of foreign assets in SWFs, the rise in sovereign wealth has been concentrated in emerging markets.

The rise of SWFs over the past fifteen years reflects two broader, related geopolitical trends:

1. The redistribution of wealth from the Western world (especially the United States and Europe) toward emerging countries, especially those in the East. It is not that the West has become poorer—it is that developing markets have rapidly become much richer. Partly this is due to surging commodity prices: oil prices skyrocketed from around $20 per barrel in the late 1990s to a high of $147 in July 2008. Countries like Timor-Leste wished to save some of these commodity revenues in SWFs. The United States has also been running trade deficits, and emerging markets have...
been putting some of their corresponding trade
surpluses into SWFs.

2. An increasing role of governments in managing
sovereign wealth.

The financial crisis highlighted this for developed
countries, but other governments—particularly in Asia
—have played much more active roles in managing
their economy and setting industrial policy than has the
United States. Relevant policies include managing
exchange rates, nurturing export-oriented industries,
and setting import tariffs. Several governments,
including Australia, Singapore, and Korea, have
deliberately run budget surpluses and channeled these
into SWFs.

2.2. Optimal Sovereign Wealth

Perhaps the number one reason sovereign wealth has been
rapidly increasing is simply that the United States told
emerging market countries to save more.

The 1980s was La Decada Perdida for Latin America. The
largest economies all went bankrupt: Brazil, Argentina,
Mexico, and Venezuela. During 1997 and 1998, Thailand,
Indonesia, Malaysia, the Philippines, and Korea were hit by
plunging stock markets and currency collapses. In 1998,
Russia defaulted on its debt.

In an influential 1999 article in Foreign Affairs, Martin
Feldstein, former Chairman of the White House Council of
Economic Advisors and a noted economist at Harvard
University, wrote that “emerging market countries must
protect themselves through increased liquidity” against
episodes like the 1980s Latin American debt crisis and the
1997–1998 Asian crisis:

Liquidity is the key to financial self-help. A country that
has substantial international liquidity—large foreign
currency reserves and a ready source of foreign currency
loans—is less likely to be the object of a currency attack.
Substantial liquidity also enables a country already
under a speculative siege to defend itself better and
make more orderly financial adjustments.
Feldstein also said that emerging markets could not rely on the IMF or other international organizations; emerging markets must save on their own. They did just as he instructed and beefed up their sovereign savings during the 2000s.

In the argot of economists, SWF savings are needed for precautionary reasons and are a form of self-insurance. But perhaps the AUM in SWFs are too high; Lee (2004) reports reserves of 17% of GDP, on average, for emerging market countries. Just as miserly Ebenezer Scrooge initially misses out on the joys of Christmas in Charles Dickens’ novel _A Christmas Carol_, excessive saving by a country reduces consumption. Countries could use this capital more productively elsewhere in the economy, and offer better social insurance, health, or education programs (making life more enjoyable for Scrooge’s poor clerk, Bob Cratchit, and his disabled son, Tiny Tim). The optimal level of sovereign savings is a balancing act between the opportunity costs of consumption and investment, and the value of self-insurance.

2.3. Dutch Disease

Timor-Leste created its SWF not out of precautionary savings motives; it was to avoid the Dutch disease.

The Dutch disease (or resource curse) was a term first used by the _Economist_ in 1977 for the shrinking of the manufacturing sector in the Netherlands after natural gas was discovered in the previous decade. The same effect occurred in Britain in the 1970s when oil was found under the North Sea. Once a country finds natural resources, manufacturing and other traded sectors decline while real exchange rates appreciate, causing the country’s traded sectors to be less competitive. Resource bonanzas also increase corruption and wasteful government spending.

Nigeria is perhaps the worst example of the Dutch disease. Oil prices rose dramatically from the 1960s to the 2000s, but Nigeria has always been among the twenty poorest countries in the world. Between 1970 and 2000, the proportion of the population surviving on less than $1 per day increased from 25% to 70%. A series of military dictatorships have plundered the oil money.
Norway discovered oil in 1969. It experienced many symptoms of the Dutch disease in the 1970s and 1980s. When oil prices fell in the mid-1980s, the economy entered a period of prolonged subdued growth. To facilitate a more sustainable fiscal policy and diversify the nation’s assets away from oil, it created a SWF in 1990, which was originally called the Oil Fund. The government changed the fund’s name in 2006 to the Government Pension Fund—Global (want to bet it was named by a committee?), even though it has nothing directly to do with pensions. By placing money into the fund, the government shields the economy from fluctuating oil prices, and the country can sustainably increase consumption as resources are depleted.

Timor-Leste created its SWF so that its new riches would not overwhelm its small economy and wipe out everything not related to oil and gas. In winning the petroleum jackpot on its doorstep, would Timor-Leste go the way of Nigeria, or could it cure the Dutch disease and find a brighter future?

Timor-Leste got plenty of advice from the Norwegians and other international experts; Tørres Trovik (thank you Tørres for introducing me to the Norwegian SWF) serves on the advisory board of the Petroleum Fund. Timor-Leste faces more challenges than just the Dutch disease: in many poor countries, serendipitous wealth from oil tends to go poof! and disappear into politicians’ (and many others’) pockets. The Peterson Institute for International Economics, a research group based in Washington DC, ranks Timor-Leste’s SWF the third best based on structure, governance, transparency, and accountability. Only Norway and New Zealand rank higher.

2.4. Integration into Government Policy

Timor-Leste has used its SWF as part of an overall policy of economic development, like Botswana, Chile, Korea, and others. The Petroleum Fund Law defines the estimated sustainable income (ESI) as 3% of Timor-Leste’s total petroleum wealth, which is defined as the current Petroleum Fund’s assets plus the net present value of future petroleum receipts. That is, the ESI is 3% of total petroleum wealth—financial wealth in the fund plus oil and gas wealth still to be pumped from the reserves. Given the paucity of other industries in Timor-Leste, total petroleum wealth is essentially the entire worth of Timor-Leste. The ESI serves to guide...
government spending from the oil wealth, but it is a flexible rule.

Norway is similar in that it also specifies a flexible spending rule, in this case 4% of the value of the fund. Chapter 5 will show that Timor-Leste is actually closer to economic theory, which advocates setting a payout rule based on total wealth, rather than just financial wealth. Both countries, however, have well-defined rules for how the funds should be tapped, through which the monies are gradually drawn down.

Constant (proportional) spending rules are not the only way to draw money from a SWF. The precautionary motive for a SWF is to hold adequate reserves to meet unexpected large, negative shocks to a country’s economy. SWFs designed to be drawn upon during such bad times are sometimes called reserve or stabilization funds, and they are special cases of SWFs. Chile’s first SWF (it now has two) is designed to store copper revenues during good times, and be drawn down during bad times. It was originally called the Copper Stabilization Fund. But during bad times some governments draw on SWFs that are not specifically designated as reserve or stabilization funds. When oil prices fell below $10 per barrel in the 1990s, the Saudi government transferred money from SAMA to finance Keynesian-style stimulus spending. The Saudi government also tapped SAMA during the 2008 financial crisis. Transfers from the Kuwait Investment Authority (KIA) allowed Kuwait to rebuild its economy after the 1990 Gulf War, which is the only time that Kuwait’s SWF has been drawn upon.

Spending rules—either proportional payouts each year like Timor-Leste, or contingent payouts during bad times for Chile or Kuwait—are liabilities of SWFs. When SWFs provide funds to governments during downturns, sufficient liquid reserves need to be on hand. A few SWFs have never had payouts—yet. Singapore’s GIC, for example, has never been tapped. But if the reason that GIC exists is a precautionary one, then it would likely be drawn down in the worst possible circumstances—outbreaks of conflict, natural disasters, or economic calamities. And few types of assets retain their value at such times, especially during war. Therefore the
investments of the SWF should reflect the fund’s purpose and the way that monies are to be disbursed.

One criticism of Timor-Leste is that the government has been consistently withdrawing more from the Petroleum Fund than the ESI level: the government spent 3.8% in 2009, 4.8% in 2010, and 4.3% in 2011. According to the Asian Development Bank, most of the recent economic growth in Timor-Leste has been (p.11) achieved from high levels of government spending, which is dependent on the Petroleum Fund.

Timor-Leste is still finding the balance between spending on infrastructure and avoiding the Dutch disease. I met the Finance Minister, Emilia Pires, and other Timorese delegates in Sydney. She is an unassuming woman of quiet determination and is the first Timorese to graduate from an Australian University. Like many civil servants, she studied abroad when her country was in turmoil, and returned to rebuild it. “Right now,” Pires says, “if you don’t invest in the people, what future have we got? There’s not enough schooling, or quality of schooling. We are suffering from dengue, malaria, you name it. Should we take more? Of course, logically we have to; otherwise where is the future generation? For me, it’s just irrational to think otherwise.”

It is amazing that the country can have this conversation while respecting the overall purpose of the SWF and not spend everything immediately. Timor-Leste has money to spend precisely because it carefully set up its SWF to ensure legitimacy.
2.5. Agency Issues

A SWF can only exist in the long run if it has public support. Legitimacy does not mean preservation of capital, but preserving capital may play a part in conferring legitimacy on the management of the SWF—especially at a SWF’s inception. Timor-Leste, as befits a new country finding its way, has so far managed the Petroleum Fund conservatively. At the start, it invested almost all of it in United States and other reserve currency bonds, but Timor-Leste is moving into riskier assets. In October 2010, the government allowed 4% of the fund to be invested in global equities. In 2012, the fund’s equity mandate was increased to a maximum of 20%. In slowly enlarging its portfolio to include riskier assets, it is following its bigger cousin Norway. Now known for its sophistication, Norway started out 100% bonds, and then, only after long public debate, moved its portfolio first 40% and then 60% into equities (1998 and 2007, respectively), and only in 2011 made its first real estate investments (with a modest 5% limit). The Norwegian SWF moved into riskier assets only after it established trust with its citizens and proved it could successfully steward the funds.

To its credit, Timor-Leste recognized it did not have expertise to manage a SWF. But rather than just outsource the job, Timor-Leste made sure its own citizens were getting trained—the fund sends its own portfolio managers to the money centers in Europe and America to trade alongside some of its appointed external managers. Singapore and Korea have also partly managed their SWFs with an eye (p.12) to increasing financial expertise for their overall economies. The worst outcome for Timor-Leste would be just to place its billions with external managers without understanding or learning how these assets are managed. Eventually they should do it all themselves and use their new expertise to develop their own financial system.

For Norway and Timor-Leste, transparency is crucial in maintaining the legitimacy of their SWFs. Transparency per se, however, is neither a necessary nor sufficient condition for countries to establish stable, robust self-restraint mechanisms so that they do not immediately spend their cash. Kuwait and Singapore, for example, operate highly successful SWFs that have long histories (Kuwait’s was the very first one created, in 1953), and broad public support. Both are opaque; they report neither their total assets nor portfolio holdings. In fact,
Kuwait’s SWF makes it clear on its web page that it is against the law to disclose information concerning KIA’s assets and other information about the fund. Part of Kuwait’s and Singapore’s success is that although information is not released to the general public, detailed information is released regularly to certain authorities. There is accountability, if not public accountability, and fund managers are held responsible for their actions.

Large sums of money are very tempting for politicians to spend willy-nilly (especially on themselves). Having a clear outline of how the SWF is integrated into the overall government and economic strategy minimizes this risk. Russia established a SWF in 2004 funded by oil revenues and raided a significant amount of the capital to plug budget deficits in 2009 and 2010, to shore up unfunded state pension systems, and to pay for domestic infrastructure—none of which were contemplated when the SWF was created. Ireland depleted its SWF, the National Pensions Reserve Fund, by bailing out troubled Irish banks. While Ireland needed all the cash it could get during its meltdown, shoring up dodgy banks was not in the fund’s original economic framework and was a terrible investment for pensioners.

So far, Timor-Leste has fared far better than Russia and Ireland in this regard, even though Timor-Leste is much more politically unstable. In April and May 2006, Prime Minister Mari Alkatiri fired six hundred soldiers who had gone on strike over what they regarded as poor pay, working conditions, and discrimination. Violence quickly spread and more than 100,000 people had to flee. President Ramos-Horta survived an assassination attempt in February 2008 organized by the leader of the rebel forces. The opposition Fretilin Party continues to argue that the Ramos-Horta government is illegitimate. Throughout, only the question of deviating from the ESI was debated; the integrity and management of the Petroleum Fund remained unsullied.

3. Pension Funds
The largest pension funds are managed at the sovereign level. In fact, national pension funds can be considered SWFs, although the line is blurry. Australia’s and New Zealand’s SWFs are explicitly designed to meet future national pension liabilities, and they embrace the SWF moniker. On the other
hand, Canada Pension Plan takes great pains to explain why it should not be called a SWF.\textsuperscript{18}

There are four types of pension savings:

1. National pension plans like Social Security;
2. Private \textit{defined benefit plans}, where future certain, or pre-determined, benefits are promised to beneficiaries by companies;
3. Private \textit{defined contribution plans}, where payments into the plan are predefined, but the future benefits are not fixed; and
4. Funds privately managed by individuals—in the United States, these include IRA, Keogh, and 401(k) plans, which have advantageous tax treatments but strict contribution limits (see chapter 12).

Economists often refer to \textit{pillars} or \textit{tiers} of support when talking about the design of pension systems.\textsuperscript{19} Social Security is a first pillar and is designed to provide minimal support for most citizens. The second pillar, consisting of work-related pensions, includes (2) and (3), which capture the bulk of retirement savings in the United States. The third pillar is private voluntary savings, which is (4), but it also includes non-tax advantaged savings used in retirement. And finally there is now a fourth pillar: if retirement savings are inadequate, (great-) grandma may have no choice but to go back to work.

3.1. Defined Benefit versus Defined Contribution

In defined benefit plans, the employer pays a retirement benefit based on worker age, years of employment, and current and past wages. Hence, the benefit is “defined.” A typical payout at retirement is something like “benefit factor \times highest average pay over a three-year period \times number of years of service,” where the benefit factor might increase with age. For example, the benefit factor is equal to 2.0\% for a teacher retiring at age fifty-five under the California Public Employees’ Retirement System (CalPERS), the largest pension plan in the United States. The benefit factor increases to 2.5\% for a teacher sixty-three or older. Since the employee is assured a predictable amount at retirement, the employer (mostly) bears the investment risk.
In defined contribution plans, by contrast, the employer contributes a fixed amount. Hence, the contribution is "defined." The retirement account works like a glorified bank balance and is invested in a variety of asset classes like stocks, bonds, or real estate. Investment choices are made by the employee, but the employer usually chooses the types of funds available. Since returns fluctuate over time, and individuals bear the investment risk, and since some employees put in more of their own money than do others, the amount available at retirement is not fixed.

The biggest development in pensions over the last thirty years is that defined benefit plans are increasingly scarce. "Defined benefit plans are going the way of the dodo," says Olivia Mitchell, a pension and retirement expert at the Wharton School. They are still the mainstay type of plan for government workers, but many corporations have frozen their old defined benefit plans and do not permit new entrants. Companies have also converted defined benefit plans to defined contribution ones.

There are huge sums sitting in pension funds. Total pension assets represent over 70% of GDP in the United States. Pensions are even more important in other countries, including Australia and the Netherlands, where they represent over 90% and 135% of GDP respectively.

Figure 1.2, Panel A graphs the total value of private pension fund AUM in the United States (all data in Figure 1.2 are from the Flow of Funds). At the end of 2012, there were $6.6 trillion of private pension fund assets. Pension assets have been growing at 8.2% a year, but Panel A shows strong dips during the 2000s due to the dot-com bust and the 2008 financial crisis, when pension AUM shrunk by 29%. The large declines in AUM occurred because pension funds have enthusiastically embraced risk and their increased holdings of equities and other risky assets did poorly during these periods.
Panel B of Figure 1.2 shows that the proportion of private pension fund money in non-fixed income assets rose from less than 20% in the early 1950s to exceed 70% in 2012. Most of this diversification was into U.S. equities in the 1960s, with international and emerging market equities added in the 1970s and 1980s. Since the mid-1990s, and especially over the 2000s, pension funds have scrambled to add alternative assets—notably hedge funds and private equity, although chapters 17 and 18, respectively, will show that these are not asset classes and instead are just labels for the type of contract between the asset owner and intermediaries.

The growth in pension assets has been driven mainly by the rise of defined contribution plans. Panel C of Figure 1.2 splits the AUM into the proportions managed by defined benefit and defined contribution plans. Defined benefit plans used to manage nearly 70% of AUM in 1984, but this has declined to 35% in 2012. Most of the increase in defined contribution plans has come from new 401(k) plans at the expense of traditional defined benefit plans. Of this rise in defined contribution plans, most of the money has been in 401(k)
plans. Since 1984, active participants in 401(k) plans have increased from 29% of all defined contribution plans to about 90%.24 Munnell and Soto (2007) identify two main reasons behind the rise of defined contribution plans and the corresponding decline of defined benefit plans. First, individuals wanted to do it on their own (increased demand from employees). Defined contribution plans are portable, which makes them attractive to workers flitting from one employer to another—which is now what happens in the labor market. Moreover, marketing pitched at the little guy by the finance industry has convinced many that they can do a better job investing their own money.25 Second, on the supply side, employers found defined contribution plans cheaper and easier to offer. The cost of providing defined benefit plans has risen since the 1980s: workers are living longer, there has been an increase in real wages over time, and the uncertainty of contributions is costly to firms and shareholders. Regulation governing defined benefit plans has become more burdensome; the government wanted to increase the safety of workers’ money in defined benefit plans, but at the same time the regulation increased their cost. This new regime of regulation is . . .

3.2. ERISA
The Employee Retirement Income Security Act of 1974 (ERISA) provides minimum standards for pension plans: it set minimum benefits that plans had to provide to employees, and minimum funding to ensure those benefits could be paid.26 In addition to ERISA, there has been additional pension legislation throughout the years, the most recent incarnation being the Pension Protection (p.17) Act (PPA) of 2006. The term “ERISA” is used to refer to all laws concerning pension regulation, including legislation subsequent to the original act. ERISA only regulates pension plans after companies create them; it does not mandate that companies form them.

ERISA’s primary purpose is to protect the fund beneficiaries. ERISA specifies that companies with a defined benefit plan set aside sufficient money to meet its liabilities. Under the PPA, the target is that 100% of liabilities (to be made precise shortly) should be met, and if the plan is underfunded, the company must make additional contributions to close the gap
over seven years. For “at-risk” or “critical” plans, which are well under water, there are additional penalties and contributions to be made. (Of course, the funding issue is irrelevant for defined contribution plans.) These contributions are costly: money put into corporate pension plans means less money for the firm to invest and lower payouts for shareholders. Pension expenses have large effects on share prices: AT&T’s pension fund went from a $17 billion surplus in 2007 to a nearly $4 billion dollar deficit in 2008, and this played a major role in the decline of AT&T’s equity over this period.

ERISA came about due to a number of high-profile bankruptcies, particularly in the automotive sector, during the late 1950s and 1960s. The head of the United Auto Workers Union at the time, Walter Reuther, pressed federal policymakers for a mechanism to protect worker pensions similar to the Federal Deposit Insurance Corporation (FDIC), which protects depositors in banks. Since mandating 100% funding does not guarantee that funds will always meet their liabilities because of investment risk, ERISA specifies a safety net to protect beneficiaries of failed pension plans. This safety net is the Pension Benefit Guaranty Corporation (PBGC).

PBGC
The PBGC takes over pension plans of bankrupt companies and can also take over pension funds of companies that have not yet declared bankruptcy but are in financial distress. The PBGC receives the pension plan assets and becomes an unsecured creditor for the unfunded benefits. Beneficiaries of failed pension plans administered by the PBGC receive their pensions, up to an annual maximum, which in 2012 was $55,841. This covers most workers’ pensions: for the 16% of workers who lose benefits when the PBGC takes over their plans, the average benefit reduction is 28%.

In return for this guarantee, pension plans pay premiums to the PBGC, which in 2012 were $9 per member for multiemployer plans and $35 per member for fully funded single-employer plans. Underfunded plans pay more. As is so often the case when governments provide insurance, PBGC premiums are way below the true cost of the coverage. The Congressional Budget Office estimates that premiums should be increased by more than six times to cover the shortfall from
projected future claims, and this does not even include underfunding on the existing claims covered by the PBGC.\textsuperscript{32}

PBGC protection is a \textit{put option} for employers: when things are going really badly, you let the government pick up the tab.\textsuperscript{33} The PBGC floor leads to an \textit{incentive problem}: the pension fund manager can take \textit{excessive risk} and the firm has an incentive to \textit{underfund} because taxpayers ultimately bear the pension risk. If the bets work out, that’s wonderful—the company gets a \textit{contribution holiday} and in some cases can even extract money from the pension plan.\textsuperscript{34} If things turn out disastrously, you let the PBGC mop up the mess. Many companies, like United Airlines and American Airlines, entered bankruptcy partly to shed their pension liabilities. These didn’t disappear—the taxpayer picked up the tab.
3.3. Pension Underfunding

The big drop in asset prices during 2008–2009 was not kind to pension funds. Milliman, a pension consulting firm, tracks the one hundred largest defined benefit plans sponsored by American public companies. Figure 1.3 plots the funding status of the Milliman 100 from 1999–2011. The health of these plans has suffered twice in the last decade, mostly due to steep declines in asset values (see also Figure 1.2). In fiscal year 2011, the Milliman 100 companies had a record funding deficit of $327 billion, corresponding to a funding ratio of 79%. The funding ratios in 2007 were positive, at 105%, and despite equity markets recovering post-2009, pension funds did not fully bounce back—partly because pension liabilities grew faster than recovering asset values.

Underfunding of public pension plans is much, much worse than their corporate counterparts. Finance professors Robert Novy-Marx and Joshua Rauh estimate the underfunding problem of states and municipalities in a series of papers. As of June 2009, states had accrued $5.7 trillion of retirement liabilities to their workers, yet assets in state pension plans totaled less than $2 trillion. This is a black hole of over $3 trillion, which is more than three times larger than the total outstanding publicly traded debt issued by states. Things are even worse for municipalities. Examining the largest pension plans of major cities and counties, Novy-Marx and Rauh estimate a total unfunded obligation of $7,000 per household.

Social Security, the pillar one U.S. retirement scheme, is itself underfunded. The Social Security Administration estimates that the fund will be empty in 2033, after which payroll taxes will cover only 75% of its promised obligations. The additional money required to pay all scheduled benefits is $8.6 trillion. This is equivalent to 80% of total U.S. Treasury debt ($11 trillion at year-end 2012). Pension promises can be extremely
expensive, especially when payouts are linked to inflation, as they are with Social Security. MetLife estimates that an annuity (p.20) paying out the maximum Social Security benefit for a couple at age sixty-sixty would cost almost $1.2 million.38

So even though U.S. pension assets amount to 70% of GDP, they should be considerably larger to fully meet pension liabilities. Either that, or pension promises are too generous. In the long run, one way or another, assets and liabilities have to be equal.

3.4. Agency Issues

The agency issues in national and defined benefit pension funds are grave. Economists and lawyers have not even settled on what the appropriate objective of a pension fund is.39 This is because several parties have a claim on a private pension fund’s assets, or have obligations to meet a pension fund’s shortfall, and their claims often conflict. The parties include (i) beneficiaries who are current employees of the firm, (ii) retired beneficiaries who no longer work for the firm, (iii) the sponsoring firm, and (iv) the government—through the PBGC, taxpayers have a stake in all company pension plans, and the government also grants tax benefits to pension savings. Furthermore, the sharing rules are path dependent and asymmetric. If the pension fund performs well, the company may be pressured to improve benefits, which only increases its liabilities. Thus, the claims of beneficiaries increase in good times. In contrast, the cost to taxpayers through the PBGC increases during bad times.

Liability-Driven Investment

How should pension money be managed? The obvious thing would be to manage the fund to meet its liabilities. Martin Leibowitz, then an analyst at Salomon Brothers, introduced this liability-driven investment (LDI) framework in 1986.40 Under LDI, the pension fund manager should manage surplus, which is the difference between the pension fund’s asset values and liabilities, and maximize surplus returns for a given level of risk.41 The risk aversion incorporated in this (p.21) optimization could reflect a reluctance to take risk on the part of beneficiaries, the firm, or both.42
This is easier said than done. Several liability measures are computed by actuaries; the two most common are the Accumulated Benefit Obligation (ABO) and the Projected Benefit Obligation (PBO). The ABO is the value of the benefits currently earned by employees and retirees. This is the contractual liability if the firm shut down immediately. Healthy firms, however, are going concerns, and so the PBO also counts the future expected salaries of current employees. (Thus the PBO is larger than the ABO.) But even the PBO is incomplete: firms generally grow over time, and the PBO does not count the future benefits of new hires. ERISA’s measure of liabilities is the ABO. The true economic liability valuation probably exceeds even the PBO.

Public pension plan liabilities are hugely underestimated because the valuation methods assume that the pensions are very risky, while in reality state pension benefits are close to risk free. The pension benefits should therefore be valued, like safe government bonds, using low discount rates, rather than with the high discount rates implied by risky equities. To see the problem with using high discount rates, consider a couple with a mortgage. This is a liability, and its value does not change whether they hold equities or bonds in their retirement accounts. Yet in public pension plans, their actuarial liabilities magically become smaller if they hold more equities in their 401(k). This is pure fiction in economic terms, of course, because the mortgage liability is not affected by the rate the couple earns in their 401(k) plan.

It also matters whether the ABO or the PBO is used. If the fund’s liabilities are measured by the ABO, then the best liability-hedging portfolio is a portfolio of bonds with the same cash flows or duration (the average time the liability outflows come due). This implies the optimal asset allocation for a pension fund (p.22) should be primarily bonds. But if the fund’s liabilities are the PBO, then stocks might be a more appropriate inflation hedge in the long run because wage growth, like economic growth in general, is correlated with stock returns (see chapter 7). ERISA has caused many large plans to de-risk partly because it emphasizes the ABO. Milliman reports that the one hundred largest pension plans have reduced their equity allocation from 80% in 2005 to below 40% in 2011. The ideal, from the beneficiaries’ point
of view, is to match the factor exposures of the assets and liabilities, so that the promised pensions can be met in most economic environments.

Management

Pension funds share many of the management problems of SWFs—even though pension funds in the private sector should theoretically be able to find competent people, fire incompetent people, and build optimal management structures.

The pay and skill of people working for pension funds resembles a pyramid. At the top of the pyramid, the board gets paid the least, and some board members often have little or no investment knowledge. Public pension plan boards, especially, can be dominated by politicians or union members with little financial expertise. In the middle of the pyramid sit the pension fund managers. Their pay often increases with the AUM they are responsible for, rather than the actual value they generate. The bottom of the pyramid is where most of the money is paid out in compensation—particularly to external managers in the form of fees.

The biggest decisions that affect the pension fund’s portfolio resemble an inverse pyramid. The most important decision for the fund is how much risk to take and which factor risk premiums to collect. This is a decision made by the board members—usually the least compensated and least informed parties involved. At the bottom of the pyramid, the highest paid fund managers trying to find elusive alpha (outperformance relative to a benchmark, see chapter 10) generate returns that have the smallest impact on the fund. They get paid the most, yet what they do matters least.

Public pension plans, and many private ones as well, are too often inefficient bureaucracies. They are hampered in what they can pay; the talent and expertise are on the wrong side, making them inviting prey for the predators of Wall Street. Building an organization of skilled investment professionals is hard. Compensation does matter. But most important is the creation of management structures that emphasize responsibility and accountability, where employees are measured against sufficiently rigorous benchmarks, and there are consequences for failing to meet those benchmarks. Some organizations have countered bureaucracy by creating
independent management organizations. Canada Pension Plan is managed by an independent crown corporation that can set its own salaries and hire whomever it likes. It is designed to be as far removed as possible from meddling politicians.\footnote{Norway’s SWF is managed by a separate division of its central bank, a structure that allows it to operate somewhat independently of the rest of the institution.}

Intergenerational Equity

National pension plans and defined benefit plans ensure retirement security by having different generations pay and receive different benefits. Social security pensions paid to one generation must be financed by generations following them, and private defined pension plans must be paid by a paternalistic company making contributions over time.

In a sustainable pension plan, the sum of all generational accounts must be zero: a benefit enjoyed by one generation must be paid for by another generation. Blake (2006) reports that there is large inequality across generations in the Social Security system. The generation born in the 1920s and 1930s is “the most favored generation in history according to the generational accounts” and the least favored generation is the cohort of the youngest workers today.

Some form of intergenerational inequality is actually optimal. Intergenerational risk sharing allows Social Security to absorb a shock that can be catastrophic for one generation—like those who were in the peak earnings years when the Great Depression struck—and diversifies it across a series of generations.\footnote{In defined benefit plans, employers help smooth risk across cohorts of workers. The amount of inequality in many pension systems today is very large and disadvantages younger workers; the old have stolen from the young.} In defined benefit plans, employers help smooth risk across cohorts of workers. The amount of inequality in many pension systems today is very large and disadvantages younger workers; the old have stolen from the young.

The decline in the dependency (or support) ratio, which is the ratio of current workers to retirees, makes this problem worse. As people live longer, more retirees are being supported by fewer workers. The dependency ratio shrank from 5.3 in 1970 to 4.6 in 2010 and is projected to hit 2.6 in 2050.\footnote{The large retiree population in General Motors contributed to its bankruptcy: before bankruptcy it was supporting 2.5 retirees for every active worker; and retirees accounted for 70% of its health costs.} The large retiree population in General Motors contributed to its bankruptcy: before bankruptcy it was supporting 2.5 retirees for every active worker; and retirees accounted for 70% of its health costs.
Norway, like many developed countries, has an aging population and needs to save to meet increasing retiree costs. Between 2010 and 2060, the number of people aged sixty-seven and above is expected to double, increasing government expenditures by 12% of GDP. Perhaps Norway is right in putting the words “pension” in the name of its SWF, the “Norwegian Pension Fund—Global,” because it stresses the current generation’s responsibility to save for the future.

4. Foundations and Endowments
Like the SWFs of Timor-Leste and Norway, foundations and endowments generally set (flexible) spending rules based on some proportion of AUM. Private foundations are required to pay out at least 5% of AUM every year, a figure established by the Tax Reform Act of 1969. Although the law frames this as a minimum, in practice many foundations simply pay out 5% regardless of other considerations.

University endowments are not subject to the 5% minimum, but endowments spend at about that rate anyway and only slowly vary through time. Why should Congress mandate a minimum payout for foundations but not endowments? The only plausible justification that I find in the literature is that private foundations are less accountable than public charities, which include universities. Private foundations are often set up by a single donor, family, or corporation. Once the principal donor has died, foundations are accountable to few stakeholders, and this lack of oversight often leads to their doing little “charitable” work. Even when the donor is alive, some private foundations are set up to control wealth, exempt from tax, even while the wealth is being (gradually) disbursed. The reports of Rep. Wright Patman, a Texas Democrat in the early 1960s, detailed some of these abuses and influenced legislation passed in 1969. These governance problems are less of a concern at colleges and universities, which must answer to students, faculty, staff, alumni, and donors, and also must comply with a host of federal guidelines associated with receiving federal money.

4.1. Restricted versus Unrestricted Funds
Unlike SWF and pension funds, the world of endowments and foundations prominently features restricted funds. Harvard has the largest university endowment, at $30.7 billion as of June 30, 2012. But only 17% is unrestricted. The remainder has temporary restrictions (64%), or is permanently restricted
(19%). If these restrictions are not adhered to, donors may sue for return of their money—as the Robertson family did in accusing Princeton of mismanaging their gift.

Originally intended to educate students at Princeton’s Woodrow Wilson School for careers in government, the Robertson family, heirs to a fortune from the A&P supermarket chain, donated $35 million in 1961. But the family was dismayed to learn, years later, that the funds were being used to teach students going into all sorts of careers except government (“advanced study, the teaching profession, college administration, private business, journalism, law, medicine, and music”). Thanks to Princeton’s talented investment managers, the money grew to roughly $900 million. Princeton settled in December 2008, right before trial, and the terms required Princeton to pay all of the Robertson Foundation’s substantial legal fees ($40 million), and give the Robertson family $50 million to launch a new foundation to carry out the original intent of the gift.57

Most endowment money is restricted. Table 1.4 breaks down the $408 billion in university and college wealth reported to the National Association of College and University Business Officers (NACUBO) and Commonfund in 2011. Of the total endowment, only $15.4 billion (4%) is unrestricted. True endowment, (p.26) which consists of unrestricted and restricted endowment, represents 46% of total endowment. Term endowment, which is about the same size as unrestricted endowment, represents nonperpetual funds. Quasi-endowment constitutes 23% of total endowment and does not come from gifts, but from other sources of university income like operating surpluses. Quasi-endowment is unrestricted, but it cannot be spent until a board reclassifies it as true endowment.
### Table 1.4

Components of Total Endowment in 2011 (Billions) NACUBO

<table>
<thead>
<tr>
<th></th>
<th>Billions</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>True Endowment</td>
<td>188.11</td>
<td>46</td>
</tr>
<tr>
<td>Donor-restricted</td>
<td>172.67</td>
<td>42</td>
</tr>
<tr>
<td>Unrestricted</td>
<td>15.44</td>
<td>4</td>
</tr>
<tr>
<td>Term Endowment</td>
<td>16.88</td>
<td>4</td>
</tr>
<tr>
<td>Quasi-Endowment</td>
<td>92.44</td>
<td>23</td>
</tr>
<tr>
<td>Funds Held in Trust by Others</td>
<td>16.46</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>94.24</td>
<td>23</td>
</tr>
<tr>
<td>Total Endowment</td>
<td>408.13</td>
<td>100</td>
</tr>
</tbody>
</table>
The most interesting part of total endowment is the “other” category. This is a large category representing $94.2 billion, or almost one quarter, of total endowment wealth. It includes artwork, farmland, patents, trademarks, and royalties. The last three result from commercial application of research projects and are now large sources of revenue for universities. The “Axel patents,” for example, generated close to $800 million in revenue for my home institution, Columbia University, and the inventors. The Axel patents, now expired, showed how foreign DNA could be inserted into a cell to produce certain proteins. They are named after Richard Axel, a professor of neuroscience who won the Nobel Prize in Physiology or Medicine in 2004 for work (quite unrelated to the Axel patents) on how the brain interprets smell.

4.2. Universities Are Investing Pioneers
The leading university endowments have long been investing pioneers. During the 1920s and 1930s, despite the Great Depression, universities shifted toward equities. We remember John Maynard Keynes as one of the greatest economists of the twentieth century, but lesser known is that he was also an endowment manager. Keynes managed the endowment of King’s College, Cambridge, and was one of the pioneers of the trend to move into equities. These greater equity allocations proved hugely beneficial in the long run, but at the time many questioned the sanity of endowment managers. It turned out that the Great Depression was the perfect time to buy equities, as prices were low and expected returns were high—but buying when everyone was selling took guts.

During the 1980s the leading universities—Harvard, Princeton, and Yale (HPY)—started to shift into alternative assets, especially more illiquid asset classes. Yale, led by David Swensen, moved first: by reducing its public equity allocation from 60% in 1980 to 20% by the mid-1990s. Its allocation to private equity, meanwhile, shot up from below 5% to above 20%. Swensen’s (2009) thesis, called the endowment model, was that long-lived investors had an edge in illiquid asset investing if they could ferret out talented managers who had skill. Princeton followed close behind, and then Harvard joined the party.
In the 1990s, Yale again led the way by investing in hedge funds. Yale held no hedge funds in 1990, and by the end of the decade held over 20% of its portfolio in these *marketable alternatives*. Princeton followed suit, moving into hedge funds in 1995. Harvard again was the last of the three to move, doing so in 1998.

Panel A of Figure 1.5 graphs the allocation to alternative assets by endowments according to NACUBO from 2002 to 2012. Like lemmings, most endowments have enthusiastically followed HPY in allocating to private equity, hedge funds, and other alternative assets. In 2012, over half of all U.S. endowment assets were invested in alternative asset classes.

Most of these endowments, however, did not generate the superior returns enjoyed by HPY. Panel B of Figure 1.5 shows endowment returns computed by NACUBO. The large allocations to alternatives did not save endowments during the 2008 and 2009 financial crisis, when returns were -3.0% and -18.7%, respectively. Returns in 2012 were a dismal 0.3%. The illiquidity of the endowment model portfolios also proved to be a big problem when many universities, like Harvard, desperately needed cash during this time.\(^6^2\) Endowments would have been better off just holding the standard mix of 60% equities and 40% bonds. Since 2001, endowment returns averaged 4.6% compared to 5.4% in the 60/40 portfolio (consisting of the S&P 500 and U.S.
Treasuries). The volatility of the 60/40 portfolio was also lower, at 10.2%, compared to the endowment return volatility of 11.3%.

4.3. Keeping Up with the Jones

William Goetzmann (my sometime co-author) and Sharon Oster, professors at Yale School of Management, argue that the rush to alternatives triggered by HPY resulted from “a form of arm’s race in which universities focus on ensuring adequate resources for tomorrow’s battlefield.”

Universities compete vigorously. Of course, they try to outdo each other in sports. But they also try to outdo each other in the classroom and laboratory. They bid for the same students and try to hire the same professors. Goetzmann and Oster argue that as HPY moved to alternatives, competitive pressures forced other universities to follow suit. Endowment managers are also benchmarked against each other. This herding causes them to mimic each other. This keeping up with the Joneses (see chapter 2) leads endowments to hold the same sort of portfolios. Not surprisingly, most of them have followed the Yale Pied Piper in loading up on illiquid alternatives.

5. Individuals and Families
The rich really are different.

Cornelius Vanderbilt (1794–1877), known as the “Commodore,” was born rich, created even more wealth, and amassed a fortune of more than $100 billion in today’s dollars, enough to make him the richest person in the world by a comfortable margin. Even today “Vanderbilt” has the connotation of rolling-in-dough, filthy rich. His heirs lived the high life, squandering their inherited wealth on yachts, enormous estates, grand parties, and whatever took their fancy. In two generations, they had burned through all of it. According to a scion of the Vanderbilt family, several descendants died penniless, and “when 120 of the Commodore’s descendants gathered at Vanderbilt University in 1973 for their first family reunion, there was not a millionaire among them.”

Generally speaking, the rich are divided into those with ultra-high net worth, which means $10 million to $30 million, and those of merely high net worth, who range from around $1 million to $10 million. (To put this into perspective, the median annual income and net worth of U.S. households are $46,000 and $77,000, respectively, according to the 2010 Survey of Consumer Finances.) The absolutely filthy rich sometimes form family offices, which manage family assets much like endowments. Some family offices serve multiple families and even manage non-family money. In fact, the richest family offices manage much more than the top endowments, and they provide boutique concierge services to family members (like helping to get Junior admitted to a fancy private school and organizing a last-minute jaunt to the Caribbean).

Capgemini and RBC Wealth Management estimate that high-net worth individuals controlled $42 trillion in assets in 2012. For comparison, the total market capitalization of stocks listed on the NYSE was around $14 trillion. The ultra-high net worth and high net worth markets are also growing fast. Approximately half of the wealth resides in the United States and Europe, but Asia is furiously churning out millionaires at the fastest rate. Banks and other intermediaries are eyeing these enormous sums through their private wealth management divisions, but they face competition from stand-alone asset management firms. At Columbia Business School, I have taught several students who later started or
joined new low-cost firms that help individuals invest on their own.

5.1. Family Dynamics

The biggest risk for family or individual wealth is what happened to the Vanderbilts: your descendants waste it. Wealthy families and SWFs are actually alike in many ways: the principal aim is to avoid spending all of the money now and instead make it last through future generations. To accomplish this, both need to create robust governance structures to ensure that they can spend slowly. In general, families are terrible at preserving wealth: 70% of family money dissipates in two generations, much like what happened to the Vanderbilts.67

(p.30) Several issues in wealthy families cause their riches to disappear:

1. Families fight
   Tolstoy is spot on when he says that “all happy families are alike; each unhappy family is unhappy in its own way.” Bickering family members can’t decide on how a family firm will manage the business or on the appropriate investment style for the family office. In the worst case, millions are spent on deadweight legal fees as the parties wrangle in court. The wealthy need to pay attention to succession planning, and grooming their children in handling wealth, shepherding it, and managing it. Investing the nest eggs of high net worth individuals is as much about psychology as finance.68

2. Nepotism
   Just because the family is wealthy doesn’t mean that a family member should manage its assets. Families are better off using professional management—in their firms, their foundations, and in managing their fortunes. A family member could be, but probably is not, the best person for the job. Pérez-González (2006) and Bennedsen et al. (2007) show convincingly that favoring family members hurts the performance of family firms; outside CEOs generally perform much better than next-generation family CEOs inheriting the mantle. Yet families are reluctant to hire outsiders. Even the founding CEOs tend to hang on too long as their skills atrophy or become irrelevant to a changing
firm. Not surprisingly, stock prices tend to jump when a corporate founder dies.  

3. Lack of diversification  
It can be counterintuitive for rich individuals to realize that preserving wealth involves holding well-diversified portfolios that have exposure to different factor risk premiums. They created their wealth by doing just the opposite: holding highly concentrated positions in a single business. Athletes, models, and to a lesser extent actors, dancers, and musicians are similar to SWFs in that they generate their wealth relatively suddenly and then have to plan carefully so that the money will last. Timor-Leste’s Petroleum Fund diversifies away from oil and gas wealth to other assets. Diversification reduces risk and improves returns, as shown in chapter 3.  

(p.31) 4. Slouching  
The wealthy also suffer from the Dutch disease. Inheriting wealth that you didn’t earn by your own hands makes you lazy. Why bother creating new sources of income? Timor-Leste and Norway created SWFs so that their economies nurture other income streams; wealthy families need to create structures to ensure their children do as well.  

5. Spending too much  
Of course, if you spend more than you bring in, your assets decline. Payout rules based on the size of the assets, like those used by Timor-Leste and endowments, mitigate this by automatically reducing payouts when investment performance is bad. This hurts when people get used to a certain level of spending (economists capture this effect with habit utility). Chapter 5 discusses how to set payout rules when you want consumption not to fall.  

5.2. The Rest of Us  
The net worth of the household sector in the United States was $66.1 trillion at December 2012. This wealth is highly skewed: the richest 1% own 35%, the richest 5% own 62%, and the richest 10% own 75%. The richest 1% includes the ultra-rich whom we discussed before, but also include many who would call themselves (upper) middle class. This skewness has become more pronounced over time; the poor are getting (relatively) poorer and the rich are getting...
The top 1% took home 9% of total income in 1976, and 20% in 2011. We are back to the same levels of inequality the United States experienced during and before the 1930s.

The middle class has the same main concern as the other asset owners discussed up to now: to save more today so that tomorrow we can eat (retirement) or that our children can eat (bequests), even though we also need to worry about eating today. We must be especially mindful of the fees paid to intermediaries because the fees represent foregone consumption: since we are not rolling in dough, consumption matters more for us than the rich. (Technically, since we are poorer we have higher *marginal utilities* of consumption, see chapter 2.)

There are several additional considerations the rich don’t have to worry about (or that the rich worry about less):

1. Labor income
   - The biggest asset is not financial; it is human capital.
   - We should invest according to our total wealth, which is the sum of financial and human capital wealth. Timor-Leste recognizes this as it explicitly counts its oil wealth still in the Timor Sea in its EIS. As we age, our balance sheets resemble those of resource-rich countries with SWFs: over time, wealth is transferred from human capital to financial wealth, just as Timor-Leste transfers wealth from under the sea to its Petroleum Fund. When human capital is exhausted (the oil is gone), we consume from retirement savings (or the SWF). This *life-cycle* profile affects how we need to save; the composition of our financial portfolios changes as we age (see chapter 5). The fact that we can lose our labor income over our working years, hopefully just temporarily, leads us to hold portfolios that cushion the fall when we lose our jobs.

2. Leverage
   - Borrowing enables us to smooth consumption, but leverage leads to increased risk. Housing, the largest asset position for individuals, is typically highly levered and also highly illiquid. Leverage is a short position in bonds, and so the middle class is highly exposed to
interest rate risk (or duration risk). Illiquidity risk also carries its own consideration (see chapter 13).

3. Health care
A bad health shock can be disastrous. The government, through Medicare and Medicaid, provides some support for health care, but it is highly incomplete. We can buy health and disability insurance to hedge some of this risk, but we cannot completely remove the effects of these idiosyncratic shocks. The presence of such background risk leads us to be effectively more risk averse than would be the case if we were guaranteed perfect health at all times.

And what about the poor? Studies show that financial education actually makes little difference for the poor: what’s the point of good financial knowledge if you don’t have any money to invest in the first place? Addressing the (in)adequacy of savings for our poor and even middle class involve national-level savings systems to deal with bad bouts of unemployment, health-care shocks, and for retirement. There have been many proposals to reform our national pension system and many involve an increased role for government. This takes us back where we started—to the management of SWFs.

6. Timor-Leste Redux
According to the IMF, Timor-Leste is “the most oil-dependent economy in the world.” The government obtains 95% of its revenue from oil and gas, and the undeveloped state of the rest of its economy means that currently Timor-Leste has little else.

The Petroleum Fund is a tool to enable the use of Timor-Leste’s oil and gas wealth for the benefit of both current and future generations and prevents the Timorese from spending everything today. The petroleum wealth is many times the current size of the country’s economy. Timor-Leste’s SWF shields the economy from the fluctuations of oil and gas prices, so that the greatest resource of any country—human capital—ultimately develops.

Like flies attracted to rotting flesh, large amounts of money elicit the worst tendencies of politicians and intermediaries. The Petroleum Fund has $12 billion now—and there will be even more to come with reserves still to be tapped in the
Timor Sea. Timor-Leste needs to do more than just monitor its delegated managers; it needs to develop deep external partnerships so that it can ultimately transfer knowledge of asset management back to the Timorese.

Timor-Leste does not want to imitate Libya, which lost $4 billion from 2009 to 2013, $1 billion of it on derivatives. Troublingly, the fund’s manager, Societe Generale, could not even explain how the money was lost. This is on top of an episode in 2008 when Libya entrusted $1.3 billion to Goldman Sachs, which lost 98% of it in nine equity trades and one currency trade. Nauru is another sad story. The small island nation established trusts in the 1960s to accumulate wealth from phosphate mining. Gross mismanagement and overspending shrank the fund from a peak of $1 billion in 1991 to less than a tenth that size a decade later. Nauru now barely functions as a nation; the country is insolvent and three-quarters of its GDP is from external financial aid.

Preserving legitimacy of the SWF involves maintaining professionalism in its management. As Alfredo Pires, the Timor-Leste Secretary of State for Natural Resources, says, “It comes back to people and the leadership.” Perhaps Angola, which started its SWF in 2012 with $5 billion, should heed the empirical evidence on sub-par performance resulting from favoritism in families. Angola’s SWF is run by José Filomeno de Sousa dos Santos, the thirty-five-year old son of the president who has ruled Angola since 1979. The sole fund manager is a Swiss asset manager, Quantum Global, with fewer than a dozen clients. Quantum Global’s founder is a partner with dos Santos in an Angolan bank.

(p.34) In the worst case, large sums in SWFs are an invitation to graft. Their management can be nepotistic and incompetent. In the best case, proper management of SWFs can protect a country from the distortion and corruption that accompanies natural resource windfalls and play an important role in the economic development of a country. With any luck, that is how things will work out in Timor-Leste.

Notes:

(1) Figures in this section come from the Economist, IMF, World Bank, and United Nations.
(2) Australia—where I grew up—was the only Western country to officially (and shamefully) recognize Indonesian rule. In 1999, the United Nations sent peacekeeping forces to Timor-Leste to stabilize the country after the Indonesians left. These forces were spearheaded by Australia, and the last Australian Defense Force personnel left in 2013. Australia remains the largest provider of foreign aid to Timor-Leste. Australians commonly refer to Timor-Leste as East Timor.

(3) Some of this section is taken from Ang (2012a).

(4) The term “sovereign wealth fund” was coined by Rozanov (2005). A legal framework is provided by Gelpern (2011).

(5) States are sovereigns too, see chapter 12.

(6) China is one of the few countries not to disclose the portfolio composition of its foreign currency reserves. Experts estimate, though, that it is the largest holder of U.S. Treasuries. The breakdown of reserves within SAFE, which is responsible for investing most of China’s foreign exchange reserves, is convoluted. See Hu (2010).

(7) In Jeanne and Rancière’s (2006) language, the SWF can sustain demand in times of “sudden stops.” Heller (1966) is the first to develop the precautionary savings story for sovereign reserves. The Greenspan–Guidotti rule, which is named after a former chairman of the Federal Reserve Board and a former deputy minister of finance of Argentina, recommends a country hold reserves equal to its short-term external debt. An alternative, new mercantilist explanation for the rise of sovereign wealth is Dooley, Folkerts-Landau, and Garber (2005). They argue that the increased sovereign wealth arises as a product of some countries wanting to fix exchange rates. Related work on international savings (or equivalent dis-savings by some countries) is by Gourinchas and Rey (2007).


(9) As recounted here by Sala-i-Martin and Subramanian (2003).
(10) For more details, see “The Norwegian Government Pension Fund: The Divestiture of Wal-Mart Stores Inc.,” Columbia CaseWorks, ID#080301.

(11) The IMF has recommended resource-rich countries put windfalls into SWFs since 2000. See Davis et al. (2001).


(13) Norway has a second, much smaller SWF, The Government Pension Fund–Norway (also called Folketrygdfondet), which invests primarily in Norway and in other Nordic countries. There is no payout from the fund, or planned new injections of capital, so Folketrygdfondet is essentially a closed-end fund (see chapter 16).


(19) This terminology comes from the influential World Bank 1994 report, Averting the Old Age Crisis.

(20) This limited universe is often not in the best interest of the employee, see chapter 3.


(22) Defined benefit plans technically include cash balance plans, which are plans where the employers prefund contributions. From the point of view of the employee, cash balance plans look like defined contribution plans—they receive statements with their own balances, which they can withdraw when they leave the firm or retire—even though these balances are notional; the funds are pooled and
managed centrally. Munnell and Soto (2007) and Rauh, Stefanescu, and Zeldes (2012) study defined benefit pension freezes and conversions to defined contribution plans.


(24) See Munnell, A. H., and P. Perun, An Update on Private Pensions, Initiative on Financial Security, the Aspen Institute, Issue Brief October 2007. Munnell and Perun also report the fraction of workers covered by pension plans, both defined benefit and defined contribution, in the private sector has been trending downward over time from 51% in 1979 to 46% in 2004.

(25) A scathing, but thoughtful, review of the personal finance industry is Olen (2012).

(26) ERISA is one of the most complex sets of legislation affecting business. Title I protects rights of beneficiaries. Title II concerns taxation issues. Title III mandates the role of actuaries in certifying pension liabilities and asset values. Title IV creates the Pension Benefit Guaranty Corporation.

(27) In addition, FAS 158, implemented in 2006, requires plan sponsors to “flow through” pension fund deficits into their financial statements. In 2008 and 2010, Congress passed “funding relief” laws to temporarily relax some of the tighter funding requirements imposed by the PPA. Prior to the PPA, sponsors were required to generally fund only 90%, and sometimes only 80%, of pension liabilities and to make up smaller fractions of shortfalls over much longer periods.


(30) For further history, see Schieber (2012).

(31) See the 2008 report, PBGC’s Guarantee Limits—An Update, published by the PBGC.

This is first noted by Sharpe (1976) and Treynor (1977). Sharpe and Treynor play large roles in developing the CAPM, the first model of factor risk (see chapter 6). Pennacchi and Lewis (1994) compute explicit values for the PBGC put option guaranty.

Section 4980 of the Internal Revenue Code makes it extremely costly for a company to simply close an overfunded pension plan and collect the value of the pension fund in excess of its liabilities (or surplus) by imposing an excise tax of 50%.

Data from the Milliman 2012 Pension Funding Study.

See Novy-Marx (2009, 2011a, 2011b). In certain circumstances, Bohn (2011) shows that underfunding a public pension plan can be optimal—but he assumes that there will always be municipal revenue available (at some time in the future) to meet the pension obligations.

Numbers from the 2012 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds. My colleague Stephen Zeldes at Columbia Business School argues that the shortfall is less if market values of Social Security liabilities would be used (see Geanakoplos and Zeldes (2011)), but there is still a shortfall. The calculation depends crucially on the correlation of labor income with equity returns, a topic that we cover in chapter 5. Note also that Social Security liabilities do not have the “full faith and credit” backing of the U.S. government and are officially not a U.S. government liability.

As reported in “Falling Short,” *Economist*, April 9, 2011.

Technically, the economics literature has not settled on an appropriate preference specification (see chapter 2) of the pension fund. Love, Smith, and Wilcox (2011) deal with workers, the firm, and the PBGC. But they do not pit retired workers against current employees. Firms have great power, but not complete control, over defined pension plans. Both corporations and beneficiaries share, in different circumstances, the surplus (or deficit) of the pension plan. See Bulow and Scholes (1983), Bodie (1990a), Gold (2005), and Scherer (2005).

(41) Technically this is mean-variance utility (see chapter 4) over surplus. I extend this framework in Ang, Chen, and Sundaresan (2013) to incorporate downside risk.

(42) ERISA Section 404(a)(1) specifies that investment fiduciaries must perform their duties solely in the interest of participants and for the exclusive purpose of providing participants with retirement benefits. This is part of the prudent man investment standards set by ERISA. Thus, under ERISA, the surplus utility function cannot represent the utility function of the fund manager.

(43) In many states, pension liabilities are guaranteed under state constitutions. New York State, for example, gives state pension liabilities the same seniority as general obligation debt. (See “Who Watches the Watchman? New York State Common Retirement Fund,” Columbia CaseWorks ID #110307.) Thus, pension liabilities are close to risk free and should be discounted using discount rates resembling risk-free (Treasury or municipal) bond yields. Under accounting standards (GASB 25) and actuarial standards (ASOP 27), the discount rate is much higher, and is the expected long-term return on assets. This effectively considers public pension liabilities to be extremely risky. It also violates a fundamental principle in economics that the value of any stream of payments should be independent of the way that it is financed, which is the Miller and Modigliani (1958) principle. (Merton Miller and Franco Modigliani were awarded Nobel Prizes in 1990 and 1985, respectively.) See also Novy-Marx and Rauh (2009, 2011).

(44) This argument is in Ang and Green (2011).

(45) See Black (1989) for more details on these arguments.

(46) General Motors is a case study in de-risking. See “GM Asset Management and Martingale’s Low Volatility Strategy,” Columbia CaseWorks ID #110315.

(47) See chapters 14 and 15.

(49) Intergenerational accounting was introduced by Auerbach, Gokhale, and Kotlikoff (1991) and uses the concept of successive overlapping generations, with each generation following a life-cycle model (see chapter 5). Paul Samuelson (1958) and Peter Diamond (1965) developed overlapping generations models, which can be used to measure generational inequity.

(50) As reported in “Falling Short,” Economist, April 9, 2011.


(53) See Deep and Frumkin (2006). Strictly speaking, foundations are free to spend below 5%, but then the foundation’s assets are subject to an excise tax of 30%.

(54) The average spending rate for endowments was 4.2% in 2012 according to NACUBO. The Uniform Prudent Management of Institutional Funds Act (UPMIFA) has been adopted in forty-seven states and requires that the spending take into consideration “the duration and preservation of the endowment fund” and “general economic conditions.” UPMIFA specifies that a spending rate of more than 7% is a “rebuttable presumption of imprudence.” See comments by Conti-Brown (2010) on why this does not constitute a fixed payout ceiling.


(58) See Goetzmann, Griswold, and Tseng (2010).

(59) As described by Chambers and Dimson (2012).
(60) Numbers from Goetzmann and Oster (2012, Figures 2 and 3). See also Lerner, Schoar, and Wong (2008).

(61) Chapter 13 shows that the superior returns generated by these endowments were not due to the illiquid assets being illiquid, but to the skillfulness of the endowment managers in picking the right managers.


(63) A major paper documenting this is by Epple, Romano, and Sieg (2006).

(64) From Vanderbilt (1989).


(68) See “Stay the Course? Portfolio Advice in the Face of Large Losses,” Columbia CaseWorks, ID #110309. Economics has a literature on the governance of family firms. See the summary written by my colleague Daniel Wolfenzon at Columbia Business School, Bennedsen, Pérez-González, and Wolfenzon (2010).

(69) This is shown in a famous paper by Johnson et al. (1985).

(70) It is a myth that most lottery winners blow through all their winnings. While this certainly happens to some of them, most winners do not engage in lavish spending sprees, as Kaplan (1987) and Larsson (2011) report. Kaplan also finds “winners were well-adjusted, secure and generally happy from the experience.” (Surprise, surprise.)

(71) Numbers from Wolff (2010).

(72) See Cagetti and De Nardi (2008) and Kopczuk, Saez, and Song (2010).
(73) Numbers from Alvaredo et al. (2013).

(74) This is the notion of Kimball (1990), where any unexpected, uninsurable risk raises the demand for safe assets.

(75) Lusardi, Michaud, and Mitchell (2013) show that if you are poor enough, it is optimal to remain financially illiterate over your whole life.

(76) One that is surprisingly contentious is by Teresa Ghilarducci (2008), who recommends introducing compulsory savings levies managed by Social Security.

(77) IMF Executive Board Concludes 2010 Article IV Consultation with the Democratic Republic of Timor-Leste, IMF Public Information Notice No. 11/31, March 8, 2011.


(80) Recounted by Cox (2009).
