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Zero-coupon trees

Twenty-five or thirty dollars of banking assets for every dollar of banking equity hardly raised an eyebrow on the eve of the crisis of 2008. But while Wall Street has now disavowed extreme leverage, foresters practice it as a matter of course. Dig a hole, plant a seedling and wait 25 or 30 years. Minimum effort yields maximum results—leverage of a nonfinancial kind.

Now unfolding is a survey of the field of timber investment, especially investment in hardwoods and, specifically, investment in the noble black walnut. You plant—maximizing sunlight, your rows run north to south—you fertilize, spray, mow, prune and harvest. Or, your heirs and assigns harvest. The fast-growing, genetically modified black walnut seedling that cost you \$5 may finally command \$800 to \$1,000 of 2012 buying power—or some very different sum of money, nature being as fickle as the Fed. The journey from seedling to veneer log is the subject at hand.

Some would prefer that, if the subject must be trees, the focus should rather be on generic, easy-to-buy, plain-vanilla, institutionally acceptable timber REITs. Certainly, they are less bother. Trees stand up or get blown over; they contract or resist disease—there's no predicting which. Hardwoods demand a generation-length holding period and pay no dividend until the man with the chainsaw shows up. They are absolutely illiquid and may or may not be in popular demand or in short supply when the time comes to fell them. So you may be wondering: What is this particular asset doing in the pages of a family interest-rate journal?

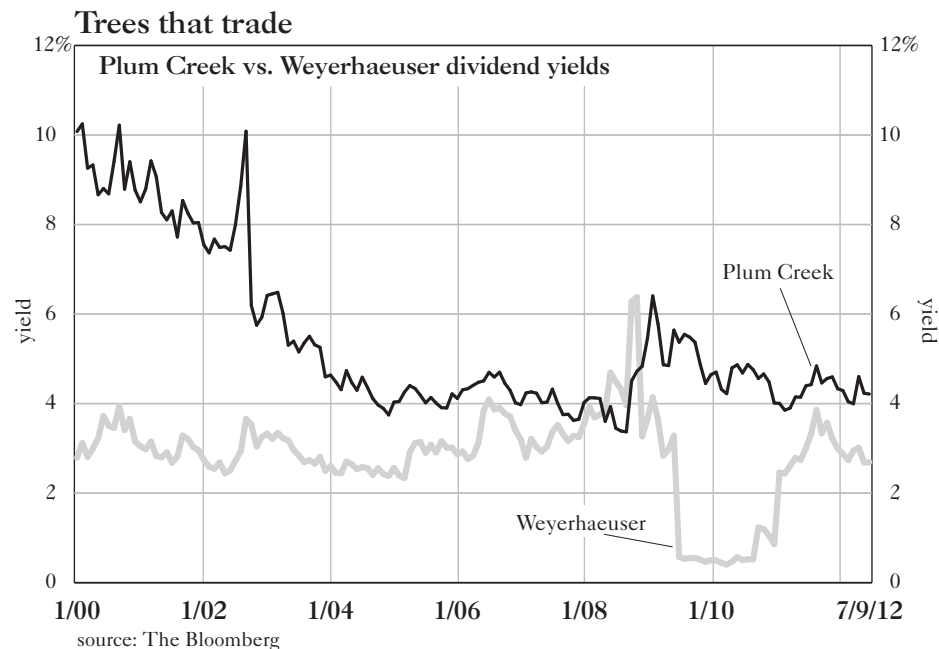
Reason No. 1 is that a tree is a store

of value, a tangible, or “real,” asset. A black walnut is as real as the next species of tree, but it may also remind you of a zero-coupon bond. As with a zero, you clip no coupons prior to maturity, therefore bear no reinvestment risk. The essential value is the principal value, not counting the land underneath the tree trunks. In the early 1980s, long-dated, zero-coupon Treasuries were offered at pennies on the dollar. Like hybridized black walnuts, they had a 30-year life. At a purchase price of \$20 per \$1,000 of face value, they delivered a compound rate of return of almost 14%. There's no telling if a stand of hardwood will deliver anything like that return. But it's a cinch today that the bond won't.

Barring fire and flood and a visitation

of thousand cankers disease, your phototrophic asset will grow up and out, finally attaining a height of, say, 65 to 90 feet and a trunk diameter of 16 inches. The finest specimens produce veneer, which, in strips as fine as one-one hundredth of an inch, is used in furniture making. You will also find black walnut in railroad ties, palettes, flooring, pulpwood chips and gun stocks.

The second reason we take up the cause of the *Juglans nigra* is that the idea is so winningly contrary. It's the kind of idea that not one professional investor in 500 will be able to implement. The value proposition takes this form: Lock up your capital—the cost of land as well as that of seedlings, taxes, labor, etc.—to reap an uncertain reward in the year



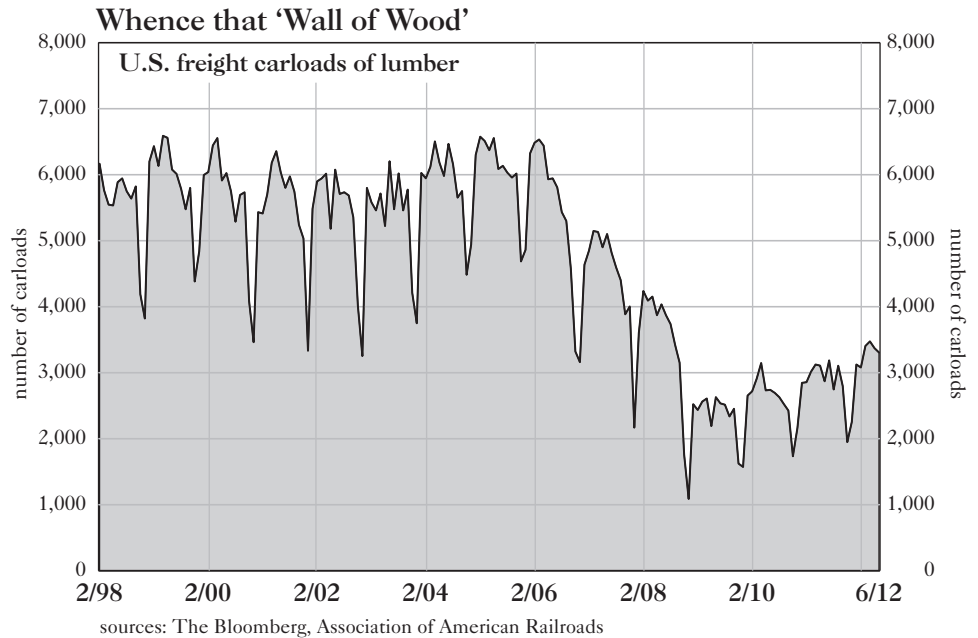
2040. Even if an investment consultant allowed the idea to come before an investment committee, and even if by some miracle the proposition did get waved through, the valuation department of that hypothetical open-minded endowment (or trust fund or pension fund) would soon be at wits' end trying to quantify the change in the net present value of a stand of timber on account of an average quarter-inch of growth in trunk diameter. Truly, black-walnut farming ticks not one institutional box.

The third reason for this unconventional topic requires a confession. Your editor and his wife own a farm in Upstate New York. Formerly young, we have had to begin thinking about futurity: How to pass along a certain number of dollars to one's descendants not named Uncle Sam? It used to be said that throwing a fastball past Ted Williams was like sneaking a lamb chop by a wolf. Moving money past the wolves of the Federal Reserve and the Internal Revenue Service is no easier. So when a friend mentioned black walnut trees—just the thing, he said, for the taxable investor with a truly long-term horizon—he had a receptive audience.

Investors, like the rest of humanity, are prone to pick the path of least resistance. And the path of least resistance for the timber-minded investor is probably not a limited partnership interest in a hardwood plantation—still less a personal adventure in silviculture. Rather, he or she will likely just buy Potlatch, Plum Creek, Rayonier and/or Weyerhaeuser.

To give them their due, the timber REITs are liquid, but that, at least to us, is the beginning and end of their investment appeal. On average, they yield 3.3% and trade at a slight discount to estimated net asset value, though at a full 24.2 times trailing FAD, or funds available for distribution—i.e., free cash flow after capital spending, according to Stifel Nicolaus. Most of the REITs change hands at ratios of price to earnings and price to book reminiscent of tech stocks in 1999. By no valuation method are they cheap.

Valuation is one problem, the REITs' principal stock in trade another. What they mainly produce is softwood, a building material. And when houses go unbuilt, such trees as pine, cedar, fir and spruce go unharvested. "Wall of wood" is a phrase you may have heard. It connotes the looming, post-housing-bubble



oversupply of lumber. "Inflation hedge" is a phrase you have certainly heard. In the context of timber investing, it is meant to invoke the supposedly impregnable defenses against the Federal Reserve that a generic timber investment erects. But does it?

Let us say, Chip Dillon, analyst at Vertical Research Partners, proposes to colleague David Peligal, that the inflation-phobes have their day in the sun and the CPI jumps by 5% in 2013, compared to 2% in 2012. In such a setting, the price of oil might well appreciate—say, by 10%. Even wages might go up. But—and here's the rub—mortgage rates, too, would shoot higher, perhaps to 6½% or 7% from less than 4% today. In that case, the monthly payment on a new house would almost double, never mind the price of the house itself. Given even a modicum of price elasticity, the demand for new houses—ergo for new lumber—would buckle. Land prices, too, would tumble, the sale of timberland to real estate developers providing a meaningful source of return for the typical plantation owner. "Bottom line," contends Dillon, "in 2012-15, buying timberland in the U.S. will not prove an effective inflation hedge."

As Dillon also notes, however, there's more than one kind of timber. Wholly different than commodity softwoods are the relatively scarce hardwoods—oak, maple, black cherry, ash and black walnut, among them. "Even with the housing downturn and the weak dollar," says Bob Saul, director of domestic forestry

investments at GMO's Renewable Resources division, "you've seen export of these logs and this lumber remain relatively stable, and ... in our GMO portfolios, we've seen the prices of pine fall off more than 40%. We've seen prices for sugar maple, oak and black walnut—if you blend all of those together—actually appreciate over the same period, not by a whole lot but by a few percentage points. So it's a different type of wood than commodity softwoods."

Saul, a 1980 alumnus of Amherst College, not only oversees GMO's timber investments but also manages his own. He farms 68 acres in Amherst, Mass., 27 acres in neighboring Hadley and a 120-acre plantation in Westmoreland, N.H., about an hour-and-15-minute drive from Amherst. He planted the oldest of his trees in 1992, the newest in 2012. On his Hadley property, he's spaced the rows of black walnuts 13 feet apart and has planted a tree in those rows every six feet. The trees, though they grow as far north as southern Ontario, have slender, droopy leaves that lend them a tropical air. Looking out over the neatly regimented plantings, you have a feeling you have wandered onto the set of "Jurassic Park."

For this, the operational portion of his life in silviculture, Saul dresses in shorts, low-cut hiking shoes and a John Deere cap. He has a wiry build, a square jaw and work-worn hands. Two Thursdays ago, he chose to complete his farm ensemble with a blue tennis shirt emblazoned, "GMO Renewable Resources."

If he looks as if he's training for a marathon, he says he isn't because his knees wouldn't hear of it. By Saul's count, they have helped him plant 70,000 seedlings.

Saul's training in forestry has come on the job. In college, he studied English, and at Harvard's Kennedy School, he studied public policy. Master's degree in hand, he became a furniture retailer. Learning all he cared to about the profitless economics of owning and managing five stores, he got into property management. An underemployed father of two—he married a fellow Amherst student, Katie Fretwell, in 1982—he came to GMO with a proposition to farm hardwoods. “We don't like your business plan but we do like you,” is Saul's account of his entry into the world of high-powered Boston money management. This was when the tech-stock fever was raging, and GMO Renewable Resources was managing \$35 million. Today, it looks after \$4 billion.

“Forestry is not that hard,” says Saul in a mock stage whisper when asked about his lack of arboreal credentials. A Brooklyn-dwelling visitor to the Saul properties is tempted to correct his host, saying, “Forestry is not that hard *if* you know what you're doing.” Clearly, raising trees—the straight and healthy kind that command top veneer prices—is no job for the uninitiated. A good forester, like a good farmer, is part mechanic, part agronomist and part entrepreneur. He or she must also be, like a good investor, part fatalist. Mortals propose but the gods dispose.

The freak Halloween snowstorm that ravaged New England last year cut a swath through the Saul property. “In two hours,” says the proprietor, “I lost 10% of my net worth.” Hardest hit were the oaks and ash that had held onto their leaves. On them, the heavy, unseasonable snow piled up until—crack! Down came the branches. Entirely unscathed was Saul's principal asset, his black walnuts. Having cleverly shed their leaves, they gave the snow no purchase. At that, the October 2011 blow-down in Amherst seems mild compared to the October 2008 blow-down on Wall Street.

“I love trees,” says Saul, unsentimentally. “Trees are good nutrient foragers,” he says. And he adds that he admires them for their toughness. But he doesn't mind harvesting, and he doesn't mind culling them. He'll shave the weaklings but he'll also fell the giants, which take more than their fair share of

sunlight from their later-developing cohorts. Walking around his New Hampshire plantation, Saul talks about his trees as a beef farmer might about his steers. “This guy,” he says, pointing to a twig in the ground, “don't ask me why he failed, but he did.” And concerning another specimen—better than the runt but still of less than prime quality: “Best you can hope for, a No. 1 sawlog.” And of another: “This guy—we'll likely prune him and cut off his head.”

One of the things about the black walnut that Saul loves is how little human effort is required to produce a prime specimen. Figure, he says, three minutes to plant and 12 minutes—all in—for trimming, mowing and weeding. That's 15 minutes—20 minutes, tops—over the full 25- to 30-year life. It's one of the greatest feats of leverage a human being can perform, Saul marvels: One quarter-hour to create a living, lucrative, beautiful, long duration asset. He goes on in this vein for a while longer, remarking, for instance, on how a black walnut will fight for space, how it will prevail over weeds and rummage for food. Then he stops himself. “That's about as poetic as I'm going to get,” he says.

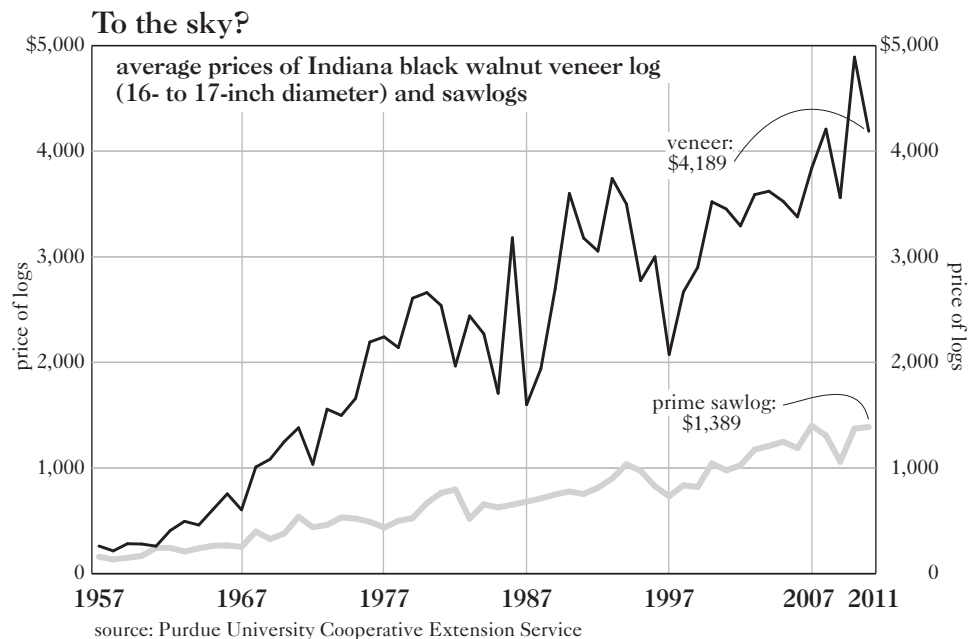
About the black walnut, it's easier to be poetic than prosaic. The truth is, there's no easy way to invest. Then, again, that is an essential part of the investment appeal. The barriers to entry are as high as the reluctance of nearly anyone to commit to a 30-year holding period. But say that you are that kind of long-range thinker. A “qualified” in-

vestor, you have identified a hardwood investment partnership in which to put money (on condition of a long lockup and no liquidity). Or you have decided to emulate Saul in your own backyard, farmette or farm. Whichever you choose, you'll have to know the basics.

To start with, not just any land will do. Well-drained land is the ticket, with a water table that rises no nearer to the surface than 16 inches even after a long, soaking rain. The cost of land is another constraint. Cheaper is better than dearer, as timberland-price appreciation may contribute 20% to one's total return. Tree growth is, naturally, the principal driver of value. And it would be nice if the walnut-tree bull market kept rolling (as the nearby graph points up, prices for sawlogs and veneer logs have made persistent, if sometimes volatile, upside progress since the second Eisenhower administration). Anyway, black walnuts need sun, as well as room to put down roots. “Soils with acid clayey subsoils should be avoided,” cautions the USDA, “as should soils with coarse sand or gravel layers or bedrock within 2.5 feet of the surface.”

But let's say that the land-price bubble has passed you by, the ground on which you or your general partner will plant has abundant sunlight and enough (but not too much) moisture. What then?

“Roughly speaking,” says Saul, “you are going to spend 50% of your money on land and 50% of your money on trees and maintaining those trees.... [B]lack walnuts are ideally suited for this kind of investment for two reasons: One, they're



very fast-growing; two, they're very valuable. There are two things that are not quite apparent to the layman. Black walnuts grow very well in crowded circumstances like plantations. Not all valuable hardwood species are that way. Black walnuts don't mind competing for water and nutrients and sun when they're crowded by other trees. They also have been hybridized. Purdue University has done a lot of work to take fast-growing trees and high-quality trees that grow high-quality wood, and trees that grow straight and kind of hybridize them into a single cloned genome, and you can get those trees from a couple of nurseries that specialize in them and have purchased those licenses from Purdue."

Not many species have been scientifically enhanced in this manner, Saul goes on. And not many species can thrive in plantations. "Those are two very important characteristics," he says. "For example, sugar maple, also a high-value species, you try to grow sugar maples on top of one another, forget it. They develop all kinds of disease. They start to wilt, they get very unhappy when they can't spread their branches out."

Saul says he likes the way black walnuts point toward the sun, searching for light, not just growing straight up in the air like some conifer on autopilot. Walnuts have heads on their shoulders. But, he cautions, those heads have to be cropped.

"The issue is," he says, "you've got to keep up with pruning, and pruning is an art, not a science. You face each tree like you face a painting. You have to take a different approach to each tree because even though they are clones, even though they come from the same genetic material, they manifest their genetics differently, almost tree by tree. So some trees you need to cut off their head to allow them to coppice, which is where you end up with a bud that takes the lead on the tree and starts to go straight. Some trees don't have good leadership, they don't have an apical bud that leads the charge and causes the tree to grow straight. Sometimes the tree will want to branch out and create an almost star shape at the top. If you come across a tree like that, you have to lop off the top so you get apical dominance coming

from a single bud, so you have a much straighter trunk. Other trees go into a V, and you have to cut out that V or else water gets into the V and you get rot in the V. So you really have to keep your tree growing straight. They want to grow straight because they're phototropic. They like to grow towards the sun, but they get off to a pretty rocky start."

The most intense pruning takes place in years three, four and five, Saul continues. In the first two years, most of the growth takes place underground, in the roots. "You don't see a lot of action up above," he continues, "but, boy, after two years if you try to take one of these babies out of the ground, it's just not going to happen. The roots have really developed, and once the roots start to develop, that's where most of the photosynthetic energy is going—then it starts to go up."

Time flies with trees as it does with children, and it's now year 10. "So you've been good about your pruning," Saul goes on, "you've got a stocking level. There are two schools of thought on this. One I call the precious tree approach, where you plant 160 trees per acre and that's it, and you take care of each one like it was your own child. You make sure it's propped up with a pole, you haven't planted too many trees so there's plenty of room, and the tree tends to grow up and out. So you have to be very attentive about pruning, and it's also prone to wind damage because it's out there on its own."

"Then there's my approach, which is to spend a lot more money up front—I also have to tell you, the aesthetics are much better and the aesthetics matter to me—and you plant 400 trees per acre. What that does is it gives you a stand to work with. Four hundred trees per acre, after five years you're probably left with only 300, 320 trees per acre, because some trees just suck. So you remove those trees—they're just getting in the way, they're never going to amount to anything, to use a phrase we all know. So you need a larger stand even though you're putting in more money upfront, so you end up with a lot of trees to choose from. Now, the benefit ... is that as these trees grow taller, and you can get, probably, of your 300 trees per acre at year 10,

you can get almost 275 of those to grow big enough so you can harvest them as saw logs or veneer logs. If you think about this acre with the 300 trees on it ... after 10, 12, 14 years, now it's going to start throwing off a deferred dividend, because you're going to be able to thin. This part is counterintuitive; if you write any of this part, you'll get letters to the editor saying: 'This is anti-silvicultural-best-management practices!' But what you'll end up doing is harvesting your biggest trees that are also getting in the way of the other trees, so you're essentially releasing those trees. Now, in a natural forest, you do it in reverse. You take out your low-grade trees and let your big honker trees grow to maturity and higher values."

Insofar as the price of black walnut rises faster than the rate of inflation, an investor has snatched his money past the quivering jaws of the Federal Reserve. And to the extent that the tax laws continue to favor timber investments, he or she stands a fighting chance with the IRS as well. "You deplete or you shelter your income by what you paid for the trees upfront," Saul explains. "You're running down that part of the asset, and so you're left with exposure only to the capital appreciation in the value of the trees and in the growth of the trees. In a hardwood plantation, because you're starting from scratch and all of those expenses—cost of trees, cost of labor, cost of equipment—all that stuff is capitalized. By the time you've made your first several harvests, all of that capitalization plus the depletion shelters, virtually all of those early harvest revenues—now that means your later harvest revenues will be fully exposed to long-term capital gains tax. But, still, it's long-term capital gains tax."

In the early 1980s, zero-coupon, long-dated Treasuries were priced to deliver an unconditional low-teens return. Today, zero-coupon, long-dated black-walnut trees are priced to deliver an indeterminate, highly conditional return. We may guess—fiddle with assumptions about interest rates and timber demand and supply and veneer-log prices—but we can't know. For us, we are prepared to guess that, in the absence of hard money, hardwoods will prove a rewarding investment.