

Ryan  
Conference

**Actuarial Equity Bias**  
(Speaker's Notes)

Jeremy Gold

April 8, 2002

## Slide 2

I usually start with M&M and transparency. To avoid a rehash of M&M and accounting issues, I will substitute the sole shareholder alternative.

Pretend:

You are the sole shareholder of a private company.

Company has \$1 million in its pension plan.

You also own several million \$ diversified portfolio of publicly traded assets.

For now, we will ignore taxes.

How should you invest the \$1 million pension plan?

I assure you that this situation can be generalized to large publicly traded corporations.

Further, substituting taxpayers for s/h's, it can be applied to pension plans sponsored by governments.

## Slide 3

In addition to your own large portfolio of diversified assets, you own the private company and thus own its assets and owe its debts.

Therefore you also own its pension assets and owe its pension liabilities.

You look at your investments as a total portfolio and choose your overall asset allocation to get the best expected returns that you can for an acceptable level of risk.

## Slide 4

From any starting place, if the pension plan adds or subtracts publicly traded assets, you can, in your diversified portfolio, subtract or add the very same publicly traded assets.

You can offset any pension plan trades so as to maintain your optimal total portfolio risk/return profile.

Thus you are indifferent to the allocation of pension plan assets.

## Slide 5

Now we define a starting place, a base case.

The pension plan has \$1 million in bonds.

The bond cash flows exactly match the liability cash flows of the plan.

## Slide 6

The plan sells its bonds and buys the S&P index.

Are you richer than before? While you might expect to be richer in the future, you find that your overall asset allocation is now too risky.

So, in your diversified portfolio, you sell \$1mm of the S&P index and buy the liability-matching bonds. Your aggregate portfolio is unchanged.

In fact, ignoring ERISA, you could do this exchange directly between the pension plan and your diversified portfolio. Just swap personal stocks for plan bonds.

SWAP is the right word. You have just entered into a swap with no present value: \$1mm bonds for \$1mm equity.

## Slide 7

Plan actuary calls to tell you that pension costs have declined by \$60,000 annually reflecting the addition of the 6% equity risk premium to the expected return on plan assets.

Are you richer? You know that cannot be.

The actuary can give you no economic or financial fact of life that makes you any better off than you were.

Is the company worth more?

## Slide 8

No, but he assures you that it will be in the long run.

When? He cannot say.

Can you recognize that expected future value now?

Yes, you can sell the company to those who buy reported earnings. Comparable companies have a 15:1 P/E. So moving \$1mm from bonds to stocks adds \$900,000 to company value.

Do you believe that?

## Slide 9

An ordinary company enters into a worthless swap and is suddenly more valuable due to actuarial and accounting methods and assumptions.

I call this the Fundamental Theorem of Actuarial Error.

It is pervasive. The magnitude of the distortion -  
- roughly equal to the notional value of the swap  
-- is typical

A number of financial analysts can see thru this.

## Slide 10

But analysts do not necessarily want the BEST answer. They want to know today what the consensus analyst will believe 30 days from now.

If an analyst does not believe that the consensus analyst will see thru the FTAE 30 days from now, then he does not choose to see thru it today.

Thus, FTAE => equity investments despite:

- 1) \$1mm stocks = value of \$1mm bonds
- 2) Increased expected stock value is exactly offset by the market price for the increased risk.

## Slide 11

So, a first order truism:

Ignoring taxes, we should be entirely indifferent to allocation of assets held by corporate pension plans.

But actuarial error favors equities.

I will return shortly to show the tax impact. It is large and it implies that virtually every plan should be invested entirely in taxable bonds.

## Notes First Half of Ryan – Actuarial Equity Bias

This will be a series of observations and propositions. I usually start with M\_M and transparency. To keep it simpler and to avoid rehash of M\_M and accounting issues, just pretend that you are the only shareholder of a private company. Suppose that the company has \$1mm in its pension plan and that you have several million in diversified publicly traded assets unrelated to this private company.

How should you invest the assets of the pension plan of the private company?

I assure you that this situation may be generalized to the pension plans of the largest publicly traded companies, GE, GM, IBM. Further, by substituting taxpayers for shareholders. The same propositions can be extended to pension plans sponsored by governments.

Observation I – you own the private company and thus you own its assets and owe its debts. You also own its pension assets and owe its pension liabilities. You also own diversified publicly traded assets.

Observation II – you look at your investments as a total portfolio and choose your overall asset allocation to get the best expected returns that you can for an acceptable level of risk.

Proposition I – ignoring taxes, as long as you can coordinate your unrelated portfolio and the pension portfolio, you are indifferent to the pension plan asset choices. If the plan sells \$1 in bonds and buys \$1 in equities, you will simply do the opposite in your diversified portfolio.

Example I – suppose that the pension plan has perfectly matched a bond portfolio to the benefits that the plan has promised. Let us call this the base case. Now the plan sells this \$1mm portfolio and buys the S&P Index. Are you richer than you were before? While you might expect to be richer in the future, you find that your overall asset allocation is now too risky. So you sell \$1mm of the S&P Index in your diversified portfolio and buy the bonds that perfectly match the liabilities. Are you poorer than you were before? Of course not.

In fact, you can do this exchange directly with the pension plan (ignoring ERISA). Just swap stocks for bonds with the plan.

In fact, SWAP is the right word. You and the pension plan have just entered into a swap. A swap with no present value, a swap of \$1 million of bonds for \$1 million of equity.

Observation III – The pension plan actuary calls you to tell you that the pension costs have just been reduced by \$60,000 annually (6% equity premium). Are you richer than you were before? You know that you cannot be. You ask him to explain what happened. He really cannot tell you any economic or financial fact of life that suggests that you are any better off. He tells you a lot about actuarial methods and assumptions and generally accepted accounting principles. He's got a lot of letters after his name. He must know something. Is your company worth more than it was before? No, but it will be in the future he assures you. When? He cannot say, but he knows it will be in the long run. Can you recognize that expected future value now? Yes, he says. How? Sell the company to someone who buys earnings. Companies like yours sell for 15 times earnings. So switching \$1 mm from bonds to stocks adds \$900,000 to the value of the company. Do you believe that?

Proposition II – an ordinary company that enters into a valueless swap is suddenly more valuable due to actuarial and accounting methods and assumptions. I call this phenomenon the Fundamental Theorem of Actuarial Error. It is pervasive and the magnitude of the distortion – roughly the same as the value of the pension assets – is typical. While a number of financial analysts are capable of seeing through this, most do not. Analysts do not necessarily want better answers than the consensus analyst has – they just want to know today what the consensus analyst will believe 30 days hence. So, if I (an analyst) do not believe that the consensus analyst will see through the FTAE 30 days from now, I do not choose to see through it today.

So the FTAE encourages equity investments by pension plans despite the fact that \$1 of bonds is worth exactly as much as \$1 of stocks and despite the fact that the difference in their future expected value is exactly the market price for the additional risk of equities. Therefore, as a first order truism, we should be entirely indifferent to the allocation of assets held in corporate pension plans. But I have ignored taxes. I will return in a few minutes and show that the tax effects can be every bit as important as the FTAE.