

# Asset Allocation Versus Security Selection

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## Asset allocation versus security selection: the received doctrine

- The Received Doctrine is based on a 1986 paper by Brinson, Hood, and Beebower, “The Determinants of Portfolio Performance.”
- BHB examine 91 large corporate pension plans.
- 93.6% of return variation is explained by policy asset mix.

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## The problem with the received doctrine

- The Brinson, Hood, and Beebower study tests a joint hypothesis:
  - what opportunities were presented by the capital markets, *and*
  - what investment activities did investors choose to perform?
- The BHB study does not disentangle the opportunity set from investor behavior.
- Therefore, it says nothing about the relative importance of asset allocation and security selection.

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## Other studies

- Ibbotson and Kaplan (2000) published an article that distinguished cross sectional return variation from intertemporal return variation.
- They confirmed the Brinson et al result that asset mix policy accounts for more than 90% of return variation through time.
- But they demonstrated that only 40% of return differences across funds is attributable to asset mix policy.

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## Other studies (continued)

- Hensel, Ezra, and Ilkiw (1991) acknowledged the importance of investor behavior, but they did not control for this effect.
- They showed that asset allocation could appear more or less important depending on the reference point around which it varies.
- Ankrim and Hensel (2000) objected to the Brinson et al methodology because it attributes the returns from 0% up to the policy portfolio return to asset allocation. This attribution assumes implicitly that the default exposure is 100% cash.

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## Other studies (continued)

- Jahnke (2000) argued that it is difficult to measure the importance of asset allocation because the answer depends on many factors such as the extent to which investors engage in active asset allocation and security selection, investment expenses, and skill.
- Statman (2000) endorsed the notion that asset mix policy is critical, because he argues investors are not skillful at market timing or security selection.

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## How do we define importance?

- We define importance as the extent to which an investment activity causes dispersion in wealth.
- Dispersion is important to skillful investors as well as unlucky investors.

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## Reasonable prior expectations

- Why might security selection be more important?
  - There are more individual securities than asset classes.
  - Individual securities are more volatile than asset classes.
- Why might asset allocation be more important?
  - Individual securities are more highly correlated than asset classes; therefore, their higher correlations offset their higher volatilities.
- Which is the dominant effect: the higher volatility of securities or the higher correlation among securities?

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## Resolution by bootstrapping

The security selection bootstrap proceeds as follows for each country.

1. We randomly select a stock from the MSCI sample and calculate its total return
2. We replace the randomly selected stock into the original sample.
3. Again, we randomly select a stock from the MSCI sample, calculate its total return, and replace it.
4. We continue to select stocks randomly with replacement until 100 stocks are chosen in order to obtain a diversified stock portfolio.
5. We calculate the average total return of the 100 selected stocks.
6. We compute a portfolio return comprising a 60% allocation to the randomly selected stocks, a 30% allocation to the bond index, and a 10% allocation to the cash index.
7. Each year we repeat steps one through six 1,000 times.
8. We calculate the annualized cumulative returns of the 1,000 portfolios and then rank them.

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## Resolution by bootstrapping

The asset allocation bootstrap proceeds as follows for each country.

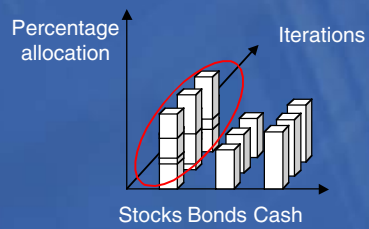
1. We randomly select the equally weighted MSCI stock index, the J. P. Morgan government bond index, or the J. P. Morgan cash index from a sample that is weighted 60% toward the stock index, 30% toward the bond index, and 10% toward the cash index. Then we calculate its total return.
2. We replace the randomly selected asset into the original sample.
3. Again, we randomly select the MSCI stock index, the J. P. Morgan government bond index, or the J. P. Morgan cash index from the weighted sample, calculate its total return, and replace it.
4. We continue to select assets randomly with replacement until 100 assets are chosen.
5. We calculate the average total return of the 100 selected asset portfolios.
6. Each year we repeat steps one through five 1,000 times.
7. We calculate the annualized cumulative returns of the 1,000 portfolios and then rank them.

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## Resolution by bootstrapping

What could be simpler?

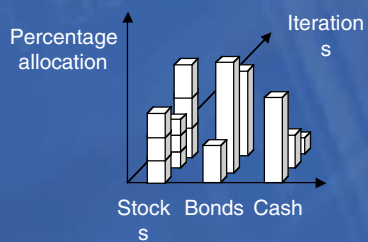
The importance of security selection is measured by holding constant asset mix and calculating variation in wealth due to random security selection.



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## Resolution by bootstrapping

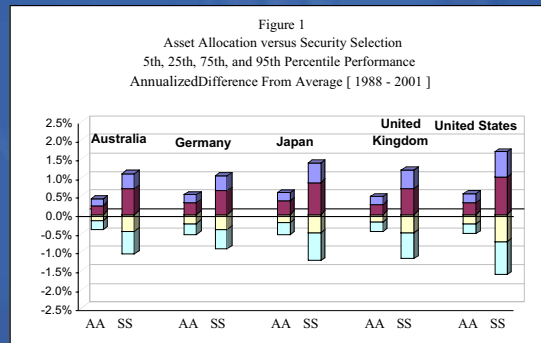
Then the importance of asset allocation is measured by holding constant security weights and calculating variation in wealth due to random asset allocation.



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## Resolution by bootstrapping

And the answer is...?



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## Resolution by bootstrapping: risk adjusted

$$U = \ln(1+\mu) - (1/2 \sigma^2)/[(1+\mu)^2]$$

where,

U = utility

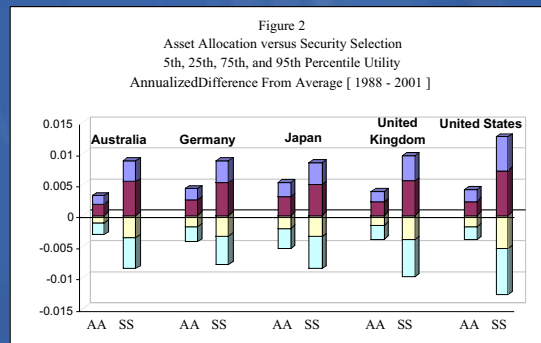
ln = natural logarithm

$\mu$  = annualized return

$\sigma$  = annualized standard deviation

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## Resolution by bootstrapping: risk adjusted



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## The dispositive answer: How the market prices skill

$$EO = N(d_1) - N(d_2)$$

where,

EO = value of exchange option

$V_P$  = starting value of chosen percentile portfolio

$V_M$  = starting value of median portfolio

$N(\cdot)$  = cumulative normal probability

$$d_1 = (\ln(V_P/V_M) + \frac{1}{2}\sigma^2 t) / (\sigma\sqrt{t})$$

$\ln$  = natural logarithm

$\sigma$  = relative volatility between  $V_P$  and  $V_M$

$t$  = time remaining to expiration as a fraction of a year

$$d_2 = d_1 - \sigma\sqrt{t}$$

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## The dispositive answer

The value of an option to exchange median performance for good performance and poor performance for median performance

Asset Allocation					
	Australia	Germany	Japan	UK	US
Top Quartile	0.79%	0.78%	0.76%	0.61%	0.63%
Bottom Quartile	0.43%	0.64%	0.45%	0.50%	0.81%

Security Selection					
	Australia	Germany	Japan	UK	US
Top Quartile	1.91%	0.93%	1.53%	2.33%	2.70%
Bottom Quartile	1.14%	1.35%	1.66%	1.63%	2.01%

Relative Value					
	Australia	Germany	Japan	UK	US
Top Quartile	2.42	1.19	2.01	3.82	4.29
Bottom Quartile	2.65	2.11	3.69	3.26	2.48

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## The equity risk premium discussion

- The opportunity set offered by capital markets is greater for security selection than for asset allocation.
- Investors overestimate the importance of the equity risk premium debate.

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## How you might object

- We only allow security selection within the stock component.

*True, but greater dispersion to vary security exposure within the bond and cash components would only amplify the dominant influence of security selection.*

- We limit the stock universes to the MSCI indexes, and early years attrition reduces these universes even further.

*True, but a larger universe would diminish the opportunity to affect wealth by asset allocation, because the volatility of asset classes declines as more securities are added.*

- Because we only include stocks that have survived from 1988 to 2001 our stock sample is biased.

*Our stock may or may not be biased. Moreover, to the extent the performance of the deleted stocks has been greater or worse than the surviving stocks, our simulation understates the potential impact of security selection on wealth.*

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## How you might object

- Our choice of equally weighted indexes biases the results against asset allocation.

*Capitalization weighted indexes are less volatile than equally weighted indexes. It is therefore probably true that capitalization weighting would reduce the relative volatility among asset classes, but it would also reduce the relative volatility among portfolios that differ by security composition. It is not clear which effect would dominate, but it is unlikely that the net effect would change the results significantly.*

- Our simulated stock portfolios represent unduly risky portfolios that few investors would be willing to own.

*False. The randomly selected security portfolios are well diversified. For example, the average tracking error of the top and bottom quartile portfolios that vary by security weights relative to the median portfolios equals 4.31%. It ranges from a low of 2.32% in Germany to a high of 6.78% in the U.S. Moreover, the same pattern prevails when we measure the dispersion of utility, which incorporates risk. If the portfolios that vary by security exposure were so risky, we would expect to find a compression in the distribution of utility, we do not.*

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## How you might object

- The portfolios that vary by security composition contrast the best stocks against the worst stocks and therefore represent unrealistic extremes.

*False. We do not first rank the securities from best to worst and then identify the top and bottom portfolios. We contrast the top percentiles with the bottom percentiles based on random selection. Hence these portfolios reflect the dispersion in performance that would occur naturally if investors did not consciously restrict tracking error.*

- There may be greater opportunity to add value through asset allocation than through security selection.

*This may be true, which means it is more important to avoid security selection than it is to avoid asset allocation.*

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## Conclusion

The only thing wrong with security selection is that it's never been tried; or

for those who have tried, it's been fatal.

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