Discussion of Heaton and Lucas (2009)
“Capital Structure, Hurdle Rates and Portfolio Choice – Interaction in an Entrepreneurial Firm”

Paul Willen
Federal Reserve Bank of Boston

Bank of Spain Conference, October 15, 2009
Memory Lane

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- Steve Davis and I were working on a paper called, “Occupation-Level Income Shocks and Asset Returns: Covariance Structure and Portfolio Choice Implications”.

Image: A child sitting in a stroller.
Since then, my son has learned to:
Since then, my son has learned to:

- Talk
Since then, my son has learned to:

- Talk
- Walk
Since then, my son has learned to:

- Talk
- Walk
- Read
Since then, my son has learned to:

- Talk
- Walk
- Read
- Write
Since then, my son has learned to:

- Talk
- Walk
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- and play baseball
John and Debbie are still working on a paper called, “Capital Structure, Hurdle Rates and Portfolio Choice – Interaction in an Entrepreneurial Firm”.
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Disclaimer
I am speaking today as a researcher and as a concerned citizen.
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- The Boston Fed
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When I say “we”, I don’t mean Ben and me.
Everything I’m about to say could be wrong:
Everything I’m about to say could be wrong:

No one who cannot rejoice in the discovery of his own mistakes deserves to be called a scholar.

–Donald Foster
Motivation: Heaton and Lucas (2000) showed that entrepreneurs hold a disproportionate amount of stock and play a disproportionate role in asset pricing.
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- Findings:
  - Investors will use “risky debt” to finance entrepreneurial projects to the fullest extent, conditional on investing in such a project.
  - But the “hurdle” rate to get them to do the project may be quite high and is well above their apparent cost of funds.
A framework
Choose a candidate portfolio choice vector.
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- Let $Q$ be a probability measure constructed using household marginal utility.
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risk adjusted return

Shadow riskless rate
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$$E_Q[\tilde{R}_i] \quad \Leftrightarrow \quad 1 + r = \frac{u'(c_t)}{E(u'(c_{t+1}))}$$

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- risk adjusted return
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Simple Rule:
- If $<$, sell $i$
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- If $=$, do nothing.
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$$
\begin{align*}
\mathbb{E}_Q[\tilde{R}_i] & \quad \quad = \quad 1 + r \\
\text{risk adjusted return} & \quad \quad \text{Shadow riskless rate} \\
\end{align*}
$$

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- It's easy to understand classical portfolio choice.
- Borrowing constraints, short sale, etc. wreak havoc.
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- Mix of debt and equity.
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- Because investor can buy and sell unlimited amounts of the riskless shadow riskless rate = \( r_b \)
- So investor wants to short as much as possible of risky debt
High Hurdle Rates

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If one could invest $\varepsilon$ in entrepreneurial project, it would be sufficient for the fully-leveraged return on the project to exceed the riskless rate.
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- If one could invest $\varepsilon$ in entrepreneurial project, it would be sufficient for the fully-leveraged return on the project to exceed the riskless rate.
  - If no investment, then correlation of consumption with $r_i$ is zero
  - Risk adjusted return = expected return.

$$E(r_i) > r_b \Rightarrow E_Q(r_i) > r_b$$
With indivisible project, consumption is correlated with investment outcome

$$E_Q(r_i) < E(r_i)$$
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Thus:

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Thus:

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Sufficient condition

\[ E(r_i) > r_b + [E(r_i) - E_Q(r_i)] \]

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Hurdle rate depends on

- Ability to get leverage – Affects \( r_i \)
- Wealth – lower wealth means that consumption more highly correlated with investment outcome for given size of investment – risk-adjusted return lower.
The slide you’ve all been waiting for...
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The end.