Agent 0's reservation price for simple state claims (Sharpe p.40)

\[
\bar{r}_j^0 = \frac{\prod_j \cdot d_j^0 \cdot m^0(x_j^0)}{m^0(x_j^0)}
\]

For Eliza

\[
m(r) = x^{-2} \quad d_3 = 0.96
\]

And

\[
X_j = \begin{cases} 
50 & j = 2 \\
20 & j = 3 \\
40 & j = 4 \\
20 & j = 5 
\end{cases}
\]

\[
x_L = 47
\]

This means

\[
\begin{pmatrix}
0.1697 \\
1.3254 \\
0.0655 \\
1.5905
\end{pmatrix} \quad s = 2
\]

And thus Eliza's reservation prices per benefit is

\[(5, 5, 5, 8), \quad r_{Eliza} = 20.53\]

(Write that this is a freaking high price. Why?)
The two agents' reservation prices for the traded assets are equal:

\[ \text{Bond, Flower Corp, Bearse Inc} \]

No more trades will be made, and that's equilibrium.

Future states (4) may

There are more states (4) than

states (3), so the model

is incomplete.

It might still (with/ or the agents)

be sufficiently complete. But it is

not. We can see differences in reservation

prices across agents for the simple

state claims - e.g., the one that

pays in state "BADS" will more

would be a market for such a claim.
<table>
<thead>
<tr>
<th>Security</th>
<th>Exp Return</th>
<th>Exp ER</th>
<th>SD Return</th>
<th>SR</th>
</tr>
</thead>
<tbody>
<tr>
<td>MARKET</td>
<td>1.108</td>
<td>0.178</td>
<td>0.269</td>
<td>0.663</td>
</tr>
<tr>
<td>Bond</td>
<td>0.930</td>
<td>0.000</td>
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<tr>
<td>FlowerCorp</td>
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<td>0.448</td>
<td>0.925</td>
<td>0.485</td>
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<tr>
<td>BearsInc</td>
<td>0.968</td>
<td>0.038</td>
<td>0.226</td>
<td>0.169</td>
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</table>

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<td>0.269</td>
<td>0.663</td>
</tr>
<tr>
<td>Eliza</td>
<td>1.208</td>
<td>0.278</td>
<td>0.423</td>
<td>0.658</td>
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<tr>
<td>Elmo</td>
<td>1.034</td>
<td>0.105</td>
<td>0.156</td>
<td>0.671</td>
</tr>
</tbody>
</table>

\[
\text{Sharpe Ratio} = \frac{\text{Expected excess return}}{\text{std. dev. of return}}.
\]

**Q3**

- **Plot of CML on U-Matrix Plane.**

  Yes, we can plot above CML for the market portfolio does not mean-variance efficient.

  AND Moreover, the market is not (exactly) as agents have constant relative risk aversion, not quadratic utility (ie they don't mean/var optimize), in fact Elmo's PF is above CML (SR = 0.671 > Market SR = 0.663).

  But it's still very close.

**Q4**

- All securities an PF's lie on Power-SML because of the constant relative risk aversion, which makes pricing kernel log-linear. They don't lie on SML (because then market would be mean/var efficient). But close — do it yourself in APSIM.
a) \[ m \]

\[ \text{Consumption} \]

b) **Defined Benefit**: Pension due only on years worked, salary - not investment decisions.

**Defined Contribution**: Employer (and maybe employer) pay a part of salary and the employee chooses which investment vehicles to use (stocks, bonds, ...). DB: returns/decision due DOP-on investment decisions.

c) **Investing**: Form of based on past, portfolio

**Betting**: \[ \text{predictive sense.} \]

"be more predictive than the others"

To see if one is better or investing: check for macro consistency.