We take the ordering (f,g,h) as convention.

Before interest:

In[190]:=
```
m = {{-.6, .4, .5}, {.1, -1.4, .05}, {.5, 1, -.55}};
```

In[191]:=
```
TraditionalForm[m]
```

Out[191]//TraditionalForm=

$$\begin{pmatrix} -0.6 & 0.4 & 0.5 \\ 0.1 & -1.4 & 0.05 \\ 0.5 & 1 & -0.55 \end{pmatrix}$$

After interest:

In[192]:=
```
a = m + .03 * IdentityMatrix[3];
```

In[193]:=
```
TraditionalForm[a]
```

Out[193]//TraditionalForm=

$$\begin{pmatrix} -0.57 & 0.4 & 0.5 \\ 0.1 & -1.37 & 0.05 \\ 0.5 & 1. & -0.52 \end{pmatrix}$$

Wealth leaving the system

In[194]:=
```
b = Transpose[{{-.6, -.4, 0}}];
```

In[195]:=
```
TraditionalForm[b]
```

Out[195]//TraditionalForm=

$$\begin{pmatrix} -0.6 \\ -0.4 \\ 0 \end{pmatrix}$$

Equilibrium solution:

In[202]:=
```
eq = Inverse[a].b
```

Out[202]=
```
{{-14.8832}, {-1.41608}, {-17.034}}
```

In[214]:=
```
TraditionalForm[eq]
```

Out[214]//TraditionalForm=

$$\begin{pmatrix} -14.8832 \\ -1.41608 \\ -17.034 \end{pmatrix}$$

Eigenstuff for a:

In[200]:=
```
system = Eigensystem[a]
```

Out[200]=
```
{{-1.40508, -1.08492, 0.03}, {{-0.179152, -0.6003, 0.779452},
   {-0.653306, -0.0974856, 0.750792}, {-0.667124, -0.0741249, -0.741249}}}
```

In[213]:=
```
TraditionalForm[system]
```

Out[213]//TraditionalForm=

$$\begin{pmatrix} -1.40508 & -1.08492 & 0.03 \\ \{-0.179152, -0.6003, 0.779452\} & \{-0.653306, -0.0974856, 0.750792\} & \{-0.667124, -0.0741249, -0.741249\} \end{pmatrix}$$

Initial conditions:

In[201]:=
```
init = Transpose[{{35, 8, 82}}];
```

In[215]:=
```
TraditionalForm[init]
```

Out[215]//TraditionalForm=

$$\begin{pmatrix} 35 \\ 8 \\ 82 \end{pmatrix}$$

(F) is gaining wealth while (G) and (H) are losing wealth:

In[217]:=
```
derivs = a.init + b
```

Out[217]=
```
{{23.65}, {-3.76}, {-17.14}}
```

In[218]:=
```
TraditionalForm[derivs]
```

Out[218]//TraditionalForm=

$$\begin{pmatrix} 23.65 \\ -3.76 \\ -17.14 \end{pmatrix}$$

Solving the initial value problem:

In[204]:=
```
coeffs = Inverse[system[[2]]].(init - eq);
```

In[216]:=
```
TraditionalForm[coeffs]
```

Out[216]//TraditionalForm=

$$\begin{pmatrix} -63.8376 \\ -144.199 \\ -61.7305 \end{pmatrix}$$

In[211]:=
```
solution = Sum[coeffs[[i, 1]] Exp[system[[1, i]] t] system[[2, i]], {i, 1, 3}] + eq;
```

In[220]:=
```
TraditionalForm[solution]
```

Out[220]//TraditionalForm=

$$\begin{pmatrix} -14.8832 + 11.4366\, e^{-1.40508\, t} + 94.206\, e^{-1.08492\, t} + 41.1819\, e^{0.03\, t} \\ -1.41608 + 38.3217\, e^{-1.40508\, t} + 14.0573\, e^{-1.08492\, t} + 4.57577\, e^{0.03\, t} \\ -17.034 - 49.7583\, e^{-1.40508\, t} - 108.263\, e^{-1.08492\, t} + 45.7577\, e^{0.03\, t} \end{pmatrix}$$

In the long term, the three-way ratio of (F), (G), and (H) will tend towards (41.2 : 4.6 : 45.8).