

**ECONOMICS 331**  
**Mathematical Economics**  
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## Homework Assignment #2

[1] In the interest of prudent diversification, an investor wishes to have his \$100 of wealth invested as \$50 in the Canadian economy, \$30 in the U.S. economy, and \$20 in the English economy. Although he can purchase the shares of firms that are *based* in Canada, the U.S. and England, it happens that each of these firms conducts some of its operations through foreign subsidiaries.

In particular, the Canadian based firm (C) has 75% of its operations in Canada but 25% in the U.S., the U.S. based firm (U) has 85% of its operations in the U.S. but 15% in England, and the England based firm (E) has 50% of its operations in England but 30% in Canada and 20% in the U.S.

- The problem for the investor is to determine the proper amounts to invest in each of these three firms to achieve his desired investment in the three economies. Write down a matrix equation that represents the problem he has to solve. Let the amounts invested in the three firms be represented by the column vector:

$$(C, U, E,)^T$$

- Use **matrix inversion** to solve for the amount that he should invest in each firm simultaneously.