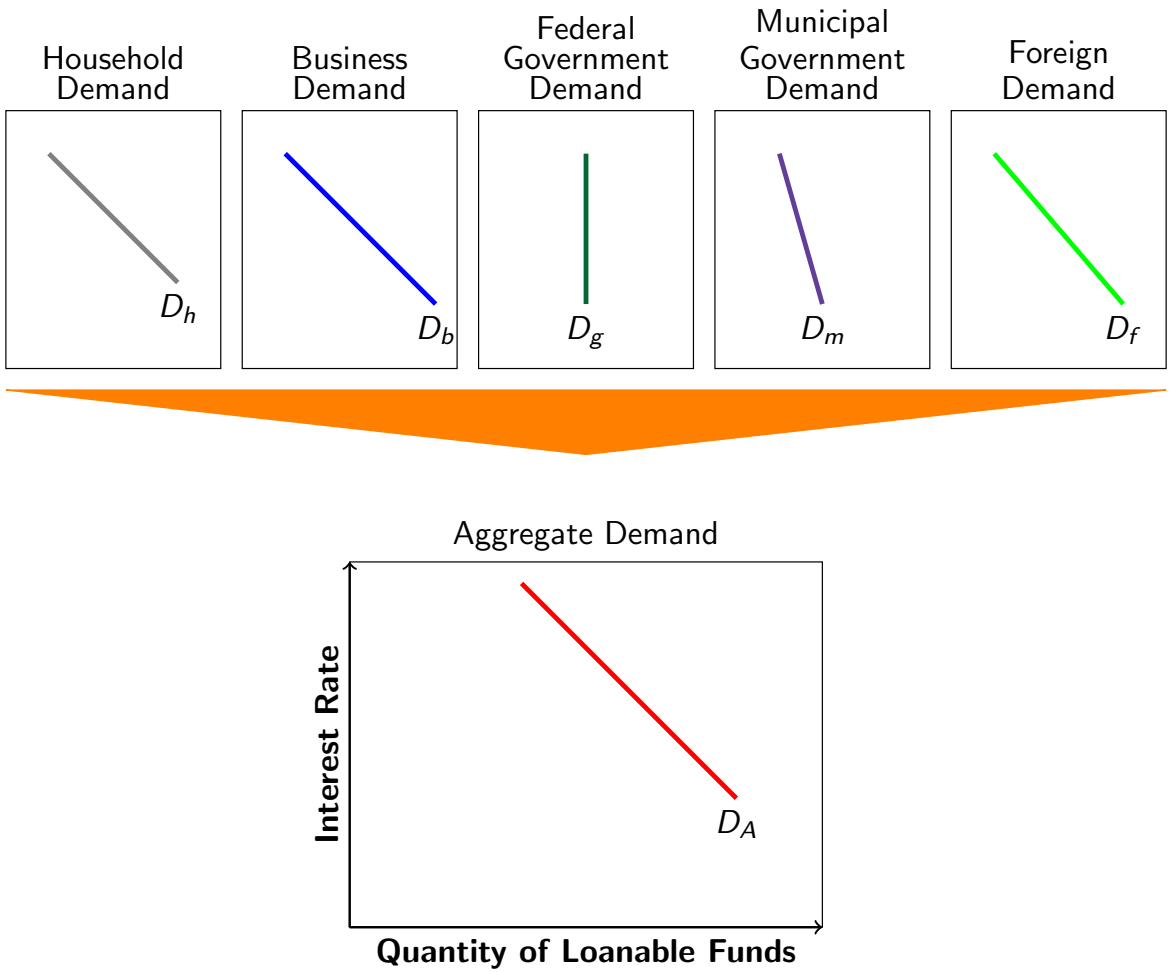
# Introduction to Packages *xcolor* and *tikz* How to make an impression with LaTeX?

Brian Pham

February 24, 2014


Household Demand
Business Demand
Federal Government Demand
Municipal Government Demand
Foreign Demand
$D_h$
$D_b$
$D_g$
$D_m$
$D_f$
Aggregate Demand
Interest Rate
$D_A$
Quantity of Loanable Funds

| PERSONALITY DIMENSION | CHARACTERISTICS OF A PERSON SCORING POSITIVELY ON THE DIMENSION |
|---|---|
| 1. **Extraversion** | Outgoing, talkative, sociable, assertive |
| 2. **Agreeableness** | Trusting, good-natured, cooperative, softhearted |
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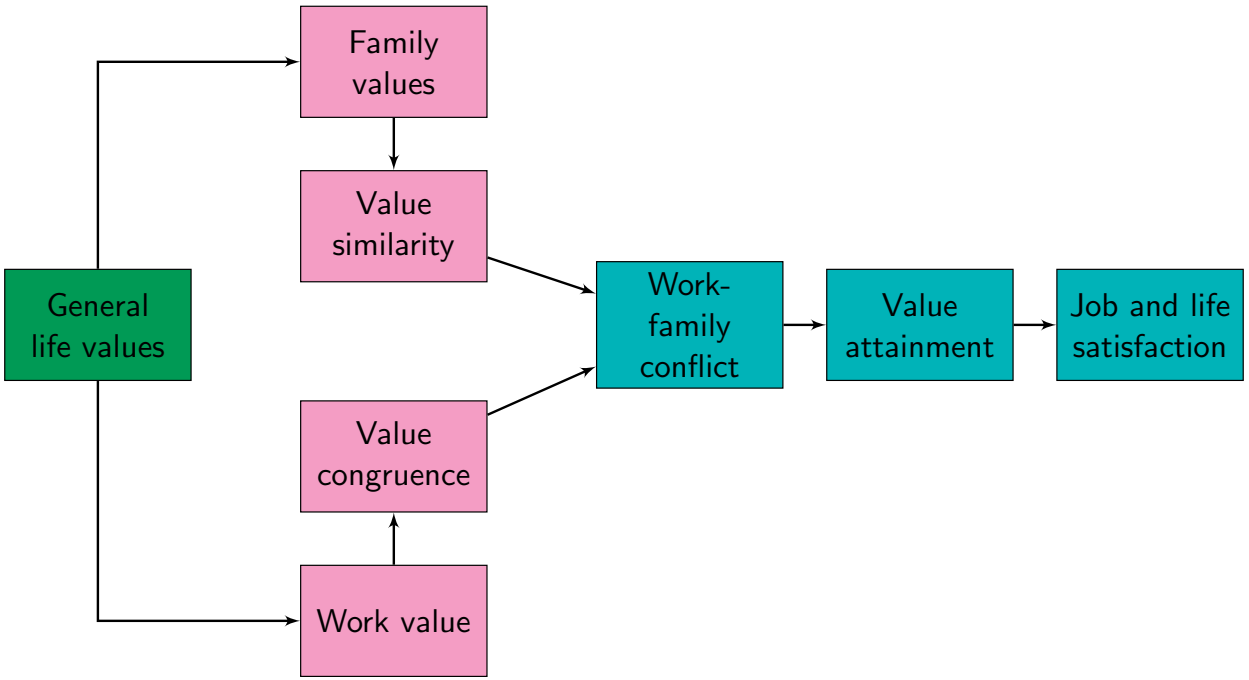


Figure: A Values Model of Work-Family Conflict

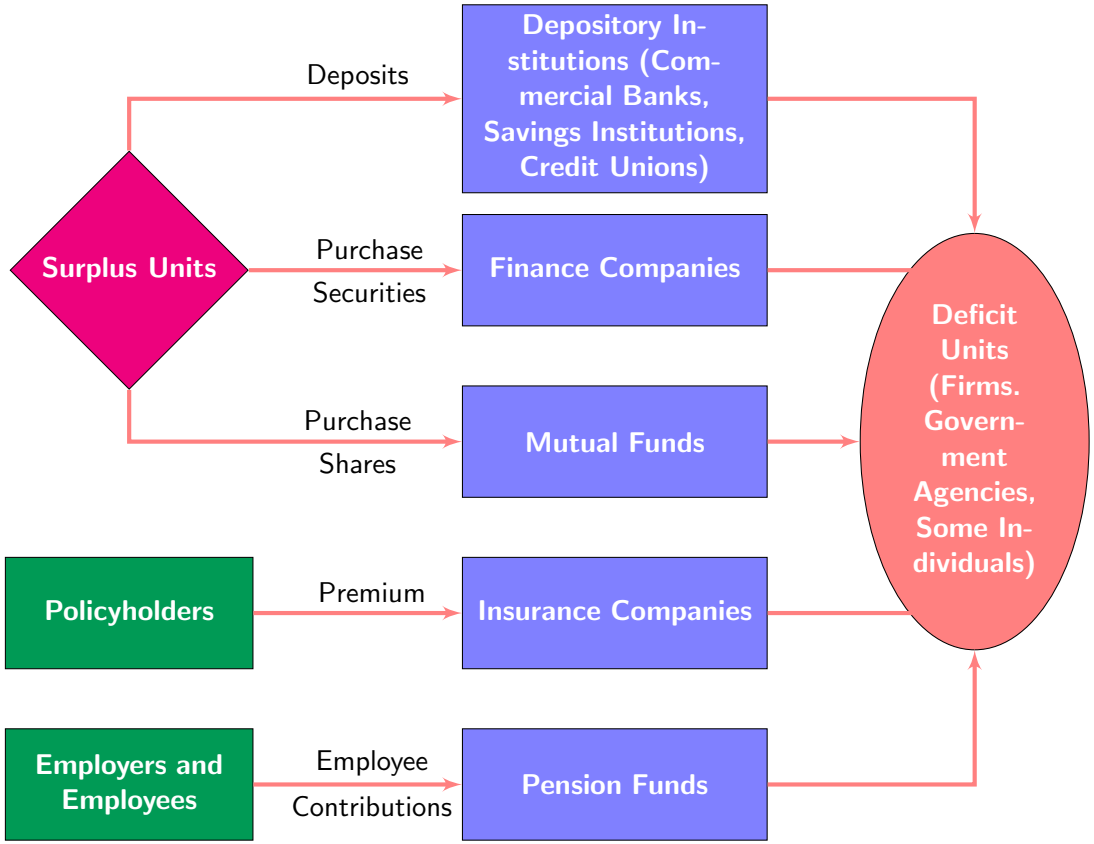


Figure: Comparison of Roles among Financial Institutions

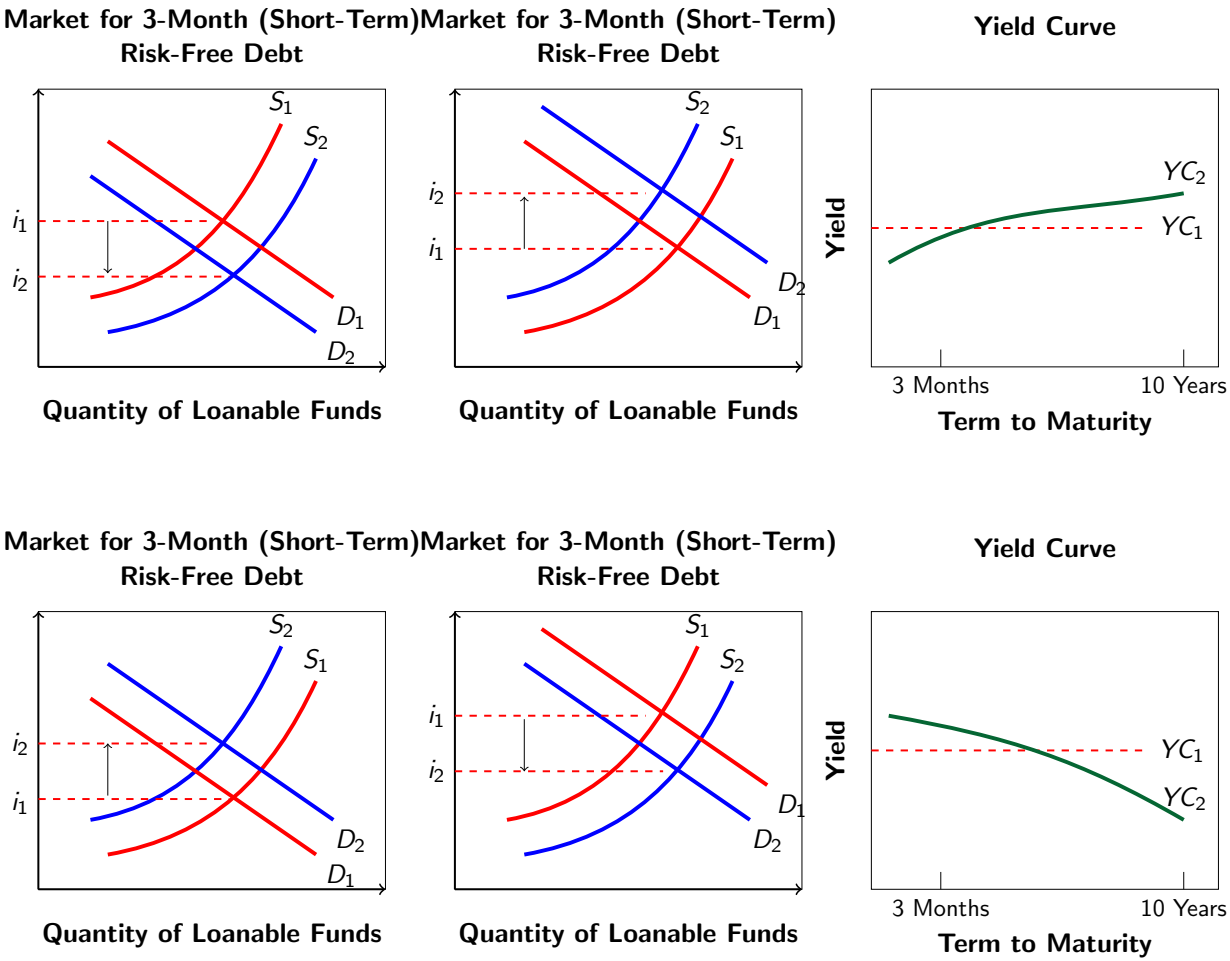


Figure: Impact of a Sudden Expectation of Changes Interest Rates

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The package *xcolor* provides users a variety of choices for colors. LaTeX comes preloaded with package *color*; however, this package does not give users the flexibility of mixing or defining new color patterns.
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  (Answer: 40% + 90% = G40Y90 ,`\color{green!40!yellow!90}`)

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  (Answer: notG40Y90, `\color{-green!40!yellow}`)

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- And how does its complementary color look like?
  (Answer: notG40Y90, `\color{-green!40!yellow}`)
- How about mixing 3 parts of the last color with 2 parts of its complement and 1 part of red?
  (Answer: 3× + 2× + 1× = ,
  `\color{rgb:-green!40!yellow,3;green!40!yellow,2;red,1}`)

For more information, go to http://ftp.math.purdue.edu/mirrors/ctan.org/macros/latex/contrib/xcolor/xcolor.pdf.

# Implementing *xcolor*

The package *xcolor* needs to be loaded in the preamble. If we want to use the premixed colors the we need to specify the emphxcolor options. For example, the command `\usepackage[dvipsnames,table]{xcolor}` will enable the use of several premixed colors.
Go to http://en.wikibooks.org/wiki/LaTeX/Colors to check out these colors and their names.

- To color text, use `\textcolor{defined-color}{text}` ; e.g., `\textcolor{BrickRed}{text}` gives text
  - Or `{\color{defined-color} text}`
- Other useful commands:`\colorbox`, `\fcolorbox`
- Create your own color, use `\definecolor{''name''}{''model''}{''color-spec''}`. For example, I created my own Dark Green color by `\definecolor{drkgreen}{RGB}{5,102,51}`.

# Colors in *tabular* environment

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```
\begin{table}\sffamily
\renewcommand{\arraystretch}{1.5}
\rowcolors{2}{Turquoise!25}{gray!10}
\resizebox{9cm}{!}{
\begin{tabular}{rlp{10cm}}
\multicolumn{2}{l}{\cellcolor{Turquoise!60}{\color{white}\textbf{PERSONALITY DIMENSION}}}
&\cellcolor{Turquoise!60}{\color{white}\textbf{CHARACTERISTICS OF
A PERSON SCORING POSITIVELY ON THE DIMENSION}}\\
...
...
\end{tabular}}
\end{table}
```

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*Tikz* is probably the most comprehensive drawing tool for LaTex documents.

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The *Tikz* package needs to be loaded in the preamble before we can use it. The usual *Tikz* environment looks like this

```
\begin{figure}
  \begin{tikzpicture}
     ...code...
  \end{tikzpicture}
\end{figure}
```

# *Tikz* – The Basics

```
\begin{tikzpicture}
\draw (0,0) --(3,1);
\end{tikzpicture}
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\draw (0,0) --(1,2) -- (2,3) -- (1,0);
\draw[help lines] (0,0) grid (2,3);
```

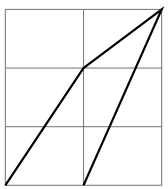

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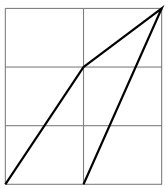
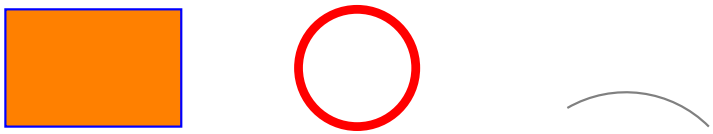


```
\draw [ultra thick, blue, fill=orange]
    (0,0) rectangle (1.5,1);
\draw [red, ultra thick] (3,0.5)
      circle [radius=0.5];;
\draw [gray] (6,0) arc [radius=1,
    start angle=45, end angle= 120];
```



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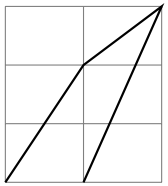

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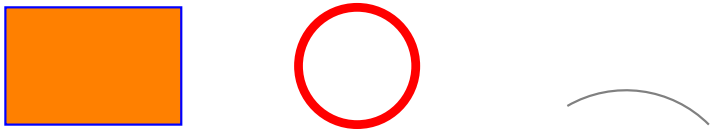
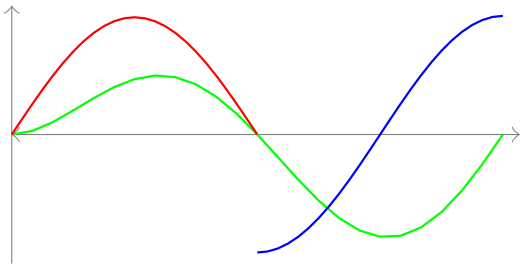
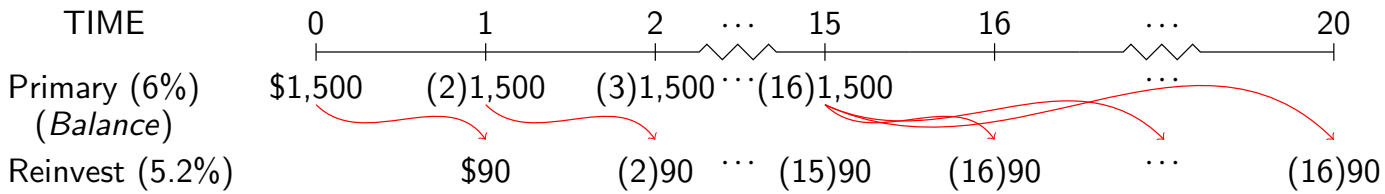


```
\draw [help lines, <->] (0,0) -- (6.5,0);
\draw [help lines, ->] (0,-1.1) -- (0,1.1);
\draw [green,domain=0:2*pi]
    plot (\x, {(sin(\x r)* ln(\x+1))/2});
\draw [red,domain=0:pi] plot (\x, {sin(\x r)});
\draw [blue, domain=pi:2*pi]
    plot (\x, {cos(\x r)*exp(\x/exp(2*pi))});
```



## Financial Time Lines

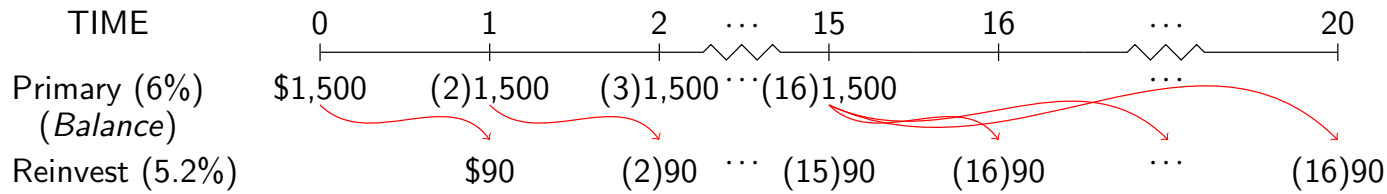



```
\begin{tikzpicture}[snake=zigzag, line before snake = 5mm, line after snake = 5mm,x=55]

  \draw (1,0) (2,0)-- (3,0)--(4,0)(5,0)--(5.5,0);
  \draw[red,->]  (2,-.6) to [out=-45,in=-235] (3,-1);
  \draw[red,->]  (3,-.6) to [out=-45,in=-235] (4,-1);
  \draw[red,->]  (5,-.6) to [out=-45,in=-235] (6,-1);
  \draw[red,->]  (5,-.6) to [out=-25,in=-225] (7,-1);
  \draw[red,->]  (5,-.6) to [out=-25,in=-225] (8,-1);

  \draw[snake] (4,0)--(5,0) (6.5,0)--(7.5,0);
  \draw (5.5,0)--(6.5,0)(7.5,0)--(8,0);
  \draw  (.75,0) node[left,above=2pt] {TIME};
  \draw  (0.75,0) node[left,below=3pt] {Primary (6\%)};
  \draw  (0.75,0) node[left,below=15pt] {(\textit{Balance})};
  \draw   (.85,0) node[left,below=30pt] {Reinvest (5.2\%)};

  \draw (2, 0) node[above=2pt] {0};
  \draw (3, 0) node[above=2pt] {1};
  \draw (4, 0) node[above=2pt] {2};
  \draw (4.5, 0) node[above=2pt] {$\cdots$};
  \draw (5, 0) node[above=2pt] {15};
  \draw (6, 0) node[above=2pt] {16};
  \draw (7, 0) node[above=2pt] {$\cdots$};
  \draw (8, 0) node[above=2pt] {20};
```

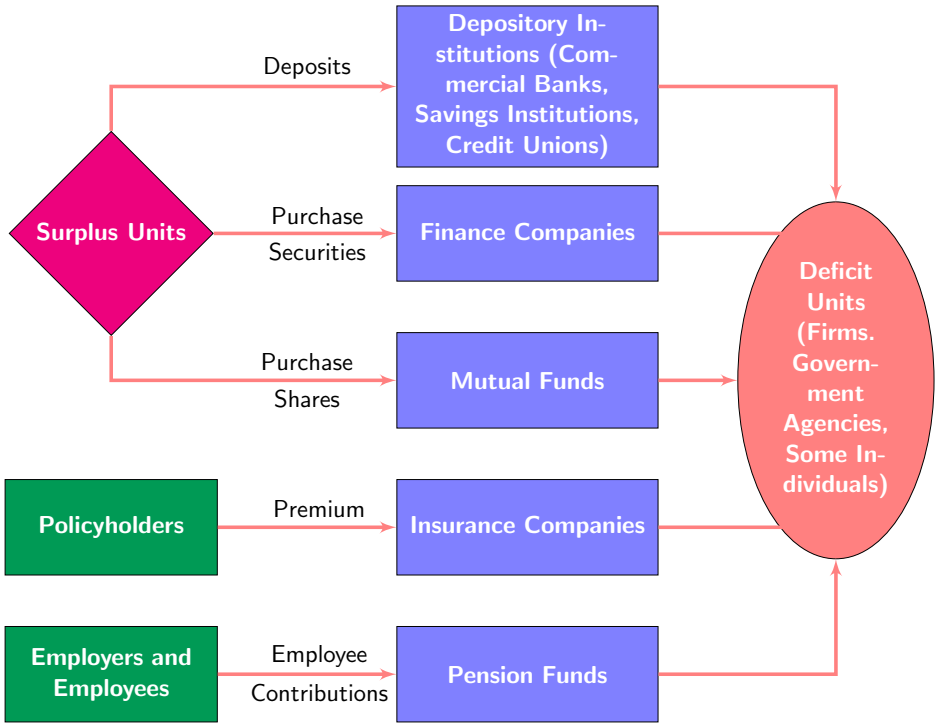



```
  \draw (2, 0) node[below=3pt] {\$1,500};
  \draw (3, 0) node[below=3pt] {(2)1,500};
  \draw (4, 0) node[below=3pt] {(3)1,500};
  \draw (4.5, 0) node[below=3pt] {$\cdots$};
  \draw (5, 0) node[below=3pt] {(16)1,500};
  \draw (7, 0) node[below=3pt] {$\cdots$};


  \draw (2, 0) node[below=30pt] {};
  \draw (3, 0) node[below=30pt] {$\$90$};
  \draw (4, 0) node[below=30pt] {$(2)90$};
  \draw (4.5, 0) node[below=30pt] {$\cdots$};
  \draw (5, 0) node[below=30pt] {$(15)90$};
  \draw (6, 0) node[below=30pt] {$(16)90$};
  \draw (7, 0) node[below=30pt] {$\cdots$};
  \draw (8, 0) node[below=30pt] {$(16)90$};

  \draw[] (2,-0.1) -- (2,0.1);
  \draw[] (3,-0.1) -- (3,0.1);
  \draw[] (4,-0.1) -- (4,0.1);
  \draw[] (5,-0.1)  --(5,0.1);
  \draw[] (6,-0.1) -- (6,0.1);
  \draw[] (7,-0.1)  (7,0.1);
  \draw[] (8,-0.1) -- (8,0.1);
\end{tikzpicture}
```

# Diagrams in *Tikz*




```
\begin{figure}[!h]
\centering
\tikzstyle{block} = [ draw, rectangle, fill=blue!50, text width=10em, text centered, minimum
                      height=15mm, node distance=5em]
\tikzstyle{block1} = [draw, rectangle, fill=ForestGreen, text width=8em, text centered,
                      minimum height=15mm, node distance=7em]
\tikzstyle{block2} = [draw, rectangle, fill=Fuchsia, text width=10em, text centered,minimum
                      height=25mm, node distance=5em]
\tikzstyle{decision} = [diamond, draw, node distance=12em, fill=RubineRed]
\tikzstyle{line} = [draw, -latex', ultra thick,color=red!50]
\tikzstyle{elli}=[draw, ellipse, fill=red!50,minimum height=8mm, text width=5em, text centered]
```

```
\resizebox{7cm}{!}{
\begin{tikzpicture}
\node [block] (MF) {\color{white}\textbf{Mutual Funds}};
\node [block, above of=MF, yshift=1em] (FC) {\color{white}\textbf{Finance Companies}};
\node [decision, left of=FC, xshift=-5em] (SU) {\color{white}\textbf{Surplus Units}};
\node [block, above of=FC, yshift=1em] (DI) {\color{white}\textbf{Depository Institutions
    (Commercial Banks, Savings Institutions, Credit Unions)}};
\node [block, below of=MF, yshift=-1em](Ins){\color{white}\textbf{Insurance Companies}};
\node [block1, left of=Ins, xshift=-10em] (Holders) {\color{white}\textbf{Policyholders}};
\node [block, below of=Ins, yshift=-1em](PF){\color{white}\textbf{Pension Funds}};
\node [block1, left of=PF, xshift=-10em] (EE) {\color{white}\textbf{Employers and Employees}};
\node [elli, right of=MF, xshift=10em] (DU) {\color{white}\textbf{Deficit Units (Firms.
      Government Agencies, Some Individuals)}};

\path [line] (SU) |-node[yshift=0.755em, xshift=8em] {\color{black}Deposits}(DI);
\path [line] (SU) -- node[yshift=0.75em, xshift=.5em] {\color{black}Purchase}
            node[yshift=-0.75em, xshift=.5em] {\color{black}Securities}(FC);
\path [line] (SU) |- node[yshift=0.75em, xshift=8em] {\color{black}Purchase}
            node[yshift=-0.75em, xshift=8em] {\color{black}Shares}(MF);
\path [line] (Holders) -- node[yshift=0.75em, xshift=.5em] {\color{black}Premium}(Ins);
\path [line] (EE) -- node[yshift=0.75em, xshift=.5em] {\color{black}Employee}
           node[yshift=-0.75em, xshift=.5em] {\color{black}Contributions}(PF);

\path [line] (DI) -|(DU);
\path [line] (FC) -|(DU);
\path [line] (MF) --(DU);
\path [line] (Ins) -|(DU);
\path [line] (PF) -|(DU);

\end{tikzpicture}}
\end{figure}
```

Check this out http://elishapeterson.wikidot.com/tikz:diagrams.

# Take-Home Challenge