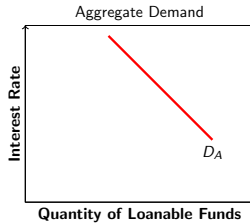
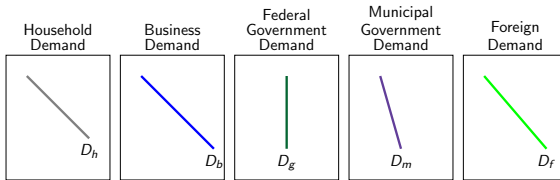


# Introduction to Packages *xcolor* and *tikz* How to make an impression with LaTeX?

Brian Pham

February 24, 2014



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|----------------------------------|---|
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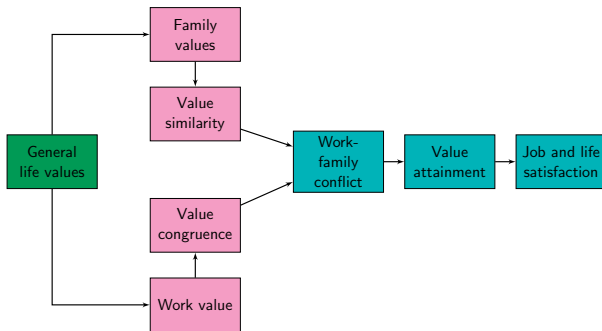


Figure: A Values Model of Work-Family Conflict

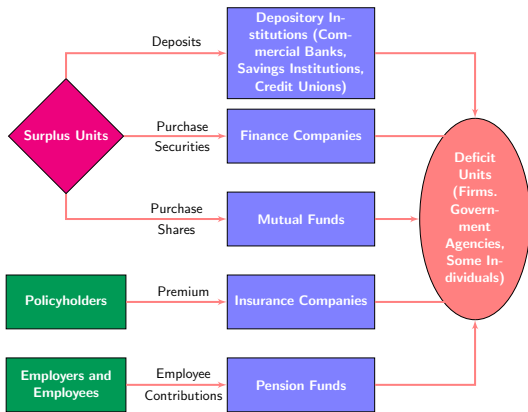
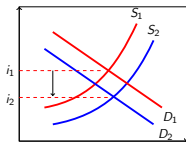


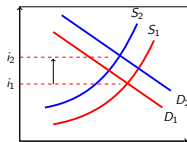
Figure: Comparison of Roles among Financial Institutions

Market for 3-Month (Short-Term) Risk-Free Debt



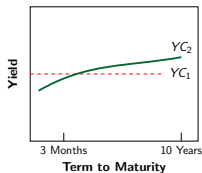
Quantity of Loanable Funds

Market for 3-Month (Short-Term) Risk-Free Debt

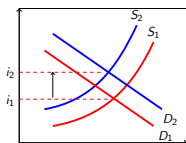


Quantity of Loanable Funds

Yield Curve

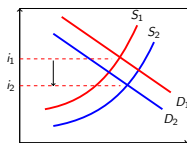


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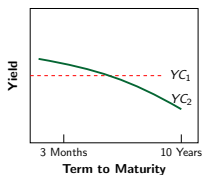


Figure: Impact of a Sudden Expectation of Changes Interest Rates

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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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

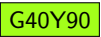
Some examples:



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- How does a mixture of 40% green and 100% yellow look like?  
(Answer:  +  = , `\color{green!40!yellow!90}`)

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







Some examples:

- How does a mixture of 40% green and 100% yellow look like?  
(Answer: 40% + 90% = G40Y90, `\color{green!40!yellow!90}`)
- And how does its complementary color look like?  
(Answer: notG40Y90, `\color{-green!40!yellow}`)

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(Answer:  +  = , `\color{green!40!yellow!90}`)
- And how does its complementary color look like?  
(Answer: , `\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:  $3 \times$   +  $2 \times$   +  $1 \times$   = ,  
`\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 we need to specify the *xcolor* options. For example, the command

`\usepackage[dvipsnames,table]{xcolor}` will enable the use of several premixed colors.

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- 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}
```

# Introduction to *tikz*

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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}
```



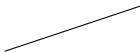
# Tikz – The Basics

```
\begin{tikzpicture}  
\draw (0,0) --(3,1);  
\end{tikzpicture}
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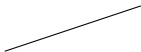


```
\draw (0,0) --(1,2) -- (2,3) -- (1,0);  
\draw[help lines] (0,0) grid (2,3);
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\end{tikzpicture}
```



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\draw (0,0) --(1,2) -- (2,3) -- (1,0);  
\draw[help lines] (0,0) grid (2,3);
```



```
\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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```
\begin{tikzpicture}  
\draw (0,0) --(3,1);  
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```



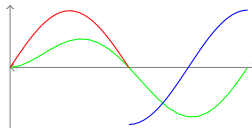
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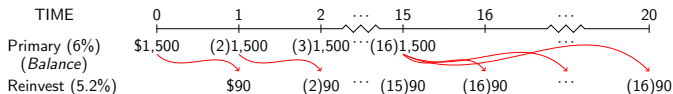


```
\draw [help lines, <->] (0,0) -- (6.5,0);  
\draw [help lines, ->] (0,-1.1) -- (0,1.1);  
\draw [green,domain=0:2*pi]  
  plot (\x, {(sin(\x r)* ln(\x+1))/2});  
\draw [red,domain=0:pi] plot (\x, {sin(\x r)});  
\draw [blue, domain=pi:2*pi]  
  plot (\x, {cos(\x r)*exp(\x/exp(2*pi))});
```



# More Involved Examples

## Financial Time Lines

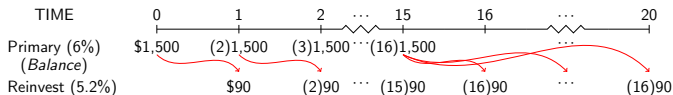


```
\begin{tikzpicture}[snake=zigzag, line before snake = 5mm, line after snake = 5mm,x=55]
```

```
\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};
```



```

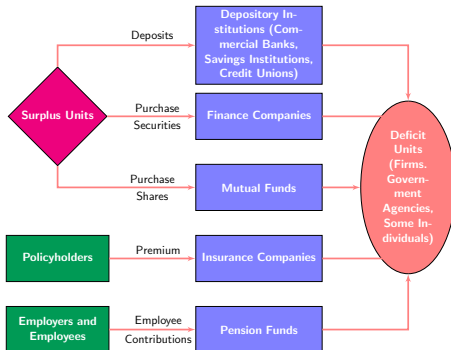
\draw (2, 0) node[below=3pt] {\$1,500};
\draw (3, 0) node[below=3pt] {(2)1,500};
\draw (4, 0) node[below=3pt] {(3)1,500};
\draw (4.5, 0) node[below=3pt] {\cdots};
\draw (5, 0) node[below=3pt] {(16)1,500};
\draw (7, 0) node[below=3pt] {\cdots};

\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

