AGENDA

• When can I retire?
• What’s my “Number?”
• How can I tell if I’m “on track”?
• Does it matter how long I live?
• Does it matter
  o When I claim Social Security benefits?
  o If Social Security benefits are reduced?
Background and Introduction

- Rick Miller
  - Founder and CEO Sensible Financial (SF)
  - Ph D Economics University of Chicago
  - Taught at Johns Hopkins
  - Consulting and financial services

- Using Maxifi / ESPlanner since SF founding in 2002
  - Best planning software I could find, then and now
Executive Summary

• You have an implicit retirement plan

• You can retire once your assets will fund post-retirement spending

• Funding a year of retirement requires a calculable amount of assets (“Number”)

• Longer life spans require later retirement, lower spending, or both

• Claiming Social Security benefits at 70 ➔ earliest feasible retirement
When Can I Retire?

Superficially, a very easy question

• You can retire anytime if you don’t care about living standard

• Most people mean:
  - When I have enough income and assets
  - To live the way
    o I want to live; or
  o I have become accustomed to living
Many implicit questions and worries

- Modern retirement lasts many years
- The future is risky and unpredictable:
  - Investments
  - Health
  - Family issues
Thirty years (from 65-95 or 70-100) is a long time

- In 1990, who predicted?
  - 9/11
  - Rise of the Internet: Amazon, Google, etc.
  - Great Financial Crisis
  - President Barack Obama, then Donald Trump

- Think of unexpected events in your own life
We’re going to answer the “easy” question today

• The easy question is hard enough
• Illuminates basic concepts and issues
• Introducing risks & uncertainties can cloud thinking
Everyone has an implicit retirement plan

• Let’s think about an impossibly simple world
  - No taxes
  - No Social Security
  - No stock market
  - Zero interest rates
When Can I Retire?

- Bob and Charlie, both 55
- Both earn $100,000 per year

### Status Snapshot

<table>
<thead>
<tr>
<th></th>
<th>Charlie</th>
<th>Bob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spending</td>
<td>$60,000</td>
<td>$46,667</td>
</tr>
<tr>
<td>Savings ($M)</td>
<td>$1.24</td>
<td>$1.65</td>
</tr>
</tbody>
</table>

*Who is the better saver, Charlie or Bob?*
Charlie and Bob are both right on plan.
• Meet Tina and Steve Yall:

<table>
<thead>
<tr>
<th></th>
<th>Tina</th>
<th>Steve</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>55</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Profession</td>
<td>Therapist</td>
<td>Personal Trainer</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td>82,620</td>
<td>41,310</td>
<td>123,930</td>
</tr>
<tr>
<td>401(k) Assets</td>
<td>151,000</td>
<td>75,500</td>
<td>226,500</td>
</tr>
<tr>
<td>Other Savings</td>
<td>150,000</td>
<td>75,000</td>
<td>225,000</td>
</tr>
<tr>
<td>Social Security</td>
<td>60%</td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>Earnings History (%</td>
<td>since 1987</td>
<td>since 1987</td>
<td></td>
</tr>
<tr>
<td>of Wage Base)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## When Can I Retire?

- **Selected model assumptions:**

<table>
<thead>
<tr>
<th>Item</th>
<th>Assumption</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Security</td>
<td></td>
<td>Fix allocates half of solvency restoration cost to each of benefits and taxes</td>
</tr>
<tr>
<td>Change Year</td>
<td>2035</td>
<td>Projected insolvency year</td>
</tr>
<tr>
<td>Benefit Reduction</td>
<td>11%</td>
<td></td>
</tr>
<tr>
<td>Tax Increase</td>
<td>12%</td>
<td>from 12.4% to 13.8%</td>
</tr>
<tr>
<td>Life Insurance</td>
<td>Ends at 70</td>
<td>Simplification</td>
</tr>
<tr>
<td>Nominal Rate of Return</td>
<td>2.78%</td>
<td></td>
</tr>
<tr>
<td>Inflation Rate</td>
<td>2.13%</td>
<td></td>
</tr>
<tr>
<td>Real Rate of Return</td>
<td>0.64%</td>
<td>Adjusted Annually in January</td>
</tr>
</tbody>
</table>
• When can the Yalls retire?

• Let's ask Maxifi!

<table>
<thead>
<tr>
<th>Scenario</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Retire now (55)</strong></td>
<td><strong>Retire soon (60)</strong></td>
<td><strong>Retire &quot;average&quot; (65)</strong></td>
<td><strong>Work 'til Social Security retirement benefits start (70)</strong></td>
</tr>
<tr>
<td>Retirement Age</td>
<td>55</td>
<td>60</td>
<td>65</td>
<td>70</td>
</tr>
</tbody>
</table>
When Can I Retire?

- They can retire at 65
- Each 5 more work years supports about $10k in discretionary spending

Sustainable Consumption ($000s)

- Retire now (55): $17
- Retire soon (60): $27
- Retire "average" (65): $38
- Work even longer: $49

Current consumption: $38

Work a bit more: $11
Work a good deal more: $10
Work 'til Social Security retirement benefits start: $49
What’s my “Number?”

• Lee Eisenberg made “The Number” famous in 2006
  - Net worth
  - Enough to retire on
  - In the style you desire
And, What’s My “Number?”

• There is no single “Number”

• Retiring earlier, you
  - Must cover more spending years
  - Need more assets for the same living standard; or
  - Live at a lower living standard with the same assets
And, What’s My “Number?”

- Adjusting assets helps the Yalls retire at any age
- Need more brokerage assets at 55 to retire before 65
- Can manage with fewer assets at 55 to retire at 70

<table>
<thead>
<tr>
<th>Retirement Age</th>
<th>401(k)</th>
<th>Brokerage</th>
<th>Total</th>
<th>Extra (vs Retire at 65)</th>
<th>Spend ($000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>227</td>
<td>1,150</td>
<td>1,377</td>
<td>925</td>
<td>38</td>
</tr>
<tr>
<td>60</td>
<td>227</td>
<td>675</td>
<td>902</td>
<td>450</td>
<td>38</td>
</tr>
<tr>
<td>65</td>
<td>227</td>
<td>225</td>
<td>452</td>
<td>-</td>
<td>38</td>
</tr>
<tr>
<td>70</td>
<td>227</td>
<td>(225)</td>
<td>2</td>
<td>(450)</td>
<td>38</td>
</tr>
</tbody>
</table>
A little intuition

- The Yalls need about $450,000 more assets \textbf{at 55} if they want to retire at 60 instead of at 65.

  - Retiring at 60 with no extra assets reduces annual spending about $11,000 for 45 years – 45 times $11,000 is $495,000.

  - Income on extra assets reduces amount needed.
The Yalls’ “Number” is larger for earlier retirement, and smaller for later retirement.
• The “Number” (retirement assets) must cover total spending

<table>
<thead>
<tr>
<th>Retirement Spending</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discretionary Spending</td>
<td>$38,000</td>
</tr>
<tr>
<td>Housing (Rent)</td>
<td>$30,000</td>
</tr>
<tr>
<td>Income Taxes (Average)</td>
<td>$1,800</td>
</tr>
<tr>
<td>Medicare Part B Premiums (Average)</td>
<td>$8,800</td>
</tr>
<tr>
<td><strong>Total Retirement Spending</strong></td>
<td><strong>$78,600</strong></td>
</tr>
</tbody>
</table>
And, What’s My “Number?”

More intuition

Spending & Income

$79k

$61k

Total Spending

Extra “Number” at 55

“Number” at 65

Social Security Income

55  60  65  70

100

Sensible Financial Planning
How can I tell if I’m “on track”?

• Run a Maxifi plan using
  - Your data – income, assets, Social Security history
  - Your plans for
    ○ Retirement
    ○ Housing, education and other fixed expenses
  - Reasonable assumptions for taxes, rates of return, inflation

• Or, review asset growth each year versus prior plan
How can I tell if I’m “on track?”

• With current plan:
  - Sustainable discretionary spending should match current discretionary spending, more or less
  - Surplus, or excess of sustainable over current discretionary spending provides cushion

• With prior plan:
  - Adjust assets for inflation to plan year
  - Asset growth then matches plan, more or less
How can I tell if I’m “on track”?

The Yalls are on track if they plan to retire at 65, but not if they want to retire now.

**Sustainable Consumption ($000s)**

- **Work a bit more**: $38
- **Work a good deal more**: $11
- **Work even longer**: $10
- **Retire now (55)**: $17
- **Retire soon (60)**: $27
- **Retire "average" (65)**: $38
- **Work 'til Social Security retirement benefits start (70)**: $49

Horizontal green line represents estimated current consumption.
How can I tell if I’m “on track?”

- Are your assets following the plan?
  - Adjust for inflation!
Does it matter how long I live?

What is the impact of a shorter life span?

<table>
<thead>
<tr>
<th>Scenario</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retirement Age</td>
<td>65</td>
<td>65</td>
<td>64</td>
<td>63</td>
</tr>
<tr>
<td>Life span</td>
<td>100</td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
</tbody>
</table>

Retire 65; Full life span
Retire 65; Life span 90
Retire 64; Life span 90
Retire 63; Life span 90
Does it matter how long I live?

• Retiring at same age with shorter life span spreads resources over fewer years, allowing higher spending

• Alternatively, could retire earlier with same spending

Sustainable Consumption ($000s)

- Retire 65; Full life span: $38
- Retire 65; Life span 90: $43
- Retire 64; Life span 90: $40
- Retire 63; Life span 90: $37
Does it matter how long I live?

- If Social Security is sole resource, longevity is irrelevant
- Larger assets [here, $1M more at 55] enhance the effect – Social Security is relatively less important

### Sustainable Consumption ($000s)

<table>
<thead>
<tr>
<th>Retirement Age</th>
<th>Life Span</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retire 65</td>
<td>Full</td>
<td>$61</td>
</tr>
<tr>
<td>Retire 65</td>
<td>90</td>
<td>$72</td>
</tr>
<tr>
<td>Retire 64</td>
<td>90</td>
<td>$69</td>
</tr>
<tr>
<td>Retire 61</td>
<td>90</td>
<td>$62</td>
</tr>
</tbody>
</table>

Current consumption: $10, $3, $8
Does it matter how long I live?

Last bit of intuition

Spending & Income

- Social Security
- Retirement Assets

Social Security Income

Available to Shorter Lifespan

Sensible Financial Planning
Does it matter how long I live?

Last bit of intuition (cont’d)

Spending & Income

Spend

Social Security

Retirement Assets

Available to Shorter Lifespan

Social Security Income
Does it matter how long I live?

• We discourage reducing life span to make your plan “work”

  - “Life expectancy” is the **mean** of the probability distribution, **not** the maximum

  - People tend to underestimate their longevity

  - Longevity has been increasing ➔ judgements based on family experience are risky

  - Ability to add resources post-retirement very limited
If I claim Social Security benefits later, can I retire earlier?

The Yalls can retire at 60 if they claim at 70, but not if they claim at 62.

- To allow the Yalls to retire at 60 (claiming at 70), we gave them $450k.

- If we have them claim at 62
  - They give up $380k present value of Social Security retirement benefits.
  - $450k extra isn’t close to enough to afford them $38k spending.
Quick reminder: Yalls need more assets to retire at 60
If I claim Social Security benefits later, can I retire earlier?

- The Lifetime Balance Sheet provides a clue
- Claiming at 70, Social Security represents nearly half of the Yall’s assets at 55!

### Lifetime Balance Sheet

<table>
<thead>
<tr>
<th>Lifetime Income</th>
<th>Lifetime Spending</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social Security Benefits</strong></td>
<td><strong>Discretionary Spending</strong></td>
</tr>
<tr>
<td>$1,536,618</td>
<td>$1,535,688</td>
</tr>
<tr>
<td>Labor Earnings $731,922</td>
<td>Housing Expenses $1,200,672</td>
</tr>
<tr>
<td>Pensions and Annuities $0</td>
<td>Other Expenses $22,549</td>
</tr>
<tr>
<td>Retirement Account Withdrawals $276,725</td>
<td>Federal and State Taxes $216,848</td>
</tr>
<tr>
<td>529 Account Withdrawals $0</td>
<td>Retirement Account Contributions $21,964</td>
</tr>
<tr>
<td>Reserve Fund Assets $0</td>
<td>529 Contributions and Expenses $0</td>
</tr>
<tr>
<td>Real Estate Income $0</td>
<td>Ending Reserve Fund $0</td>
</tr>
<tr>
<td>Special Receipts $0</td>
<td>Medicare Part B Premiums $241,307</td>
</tr>
<tr>
<td>Regular Assets $693,764</td>
<td>Life Insurance Premiums $0</td>
</tr>
<tr>
<td><strong>TOTAL</strong> $3,239,029</td>
<td><strong>TOTAL</strong> $3,239,028</td>
</tr>
</tbody>
</table>
If I claim Social Security benefits later, can I retire earlier?

- ...much less if they claim at 62
- Claiming early greatly reduces benefits

### Lifetime Balance Sheet

<table>
<thead>
<tr>
<th>Lifetime Income</th>
<th>Lifetime Spending</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Labor Earnings</strong></td>
<td><strong>Housing Expenses</strong></td>
</tr>
<tr>
<td>$731,922</td>
<td>$1,200,672</td>
</tr>
<tr>
<td><strong>Social Security Benefits</strong></td>
<td><strong>Other Expenses</strong></td>
</tr>
<tr>
<td>$1,157,712</td>
<td>$22,549</td>
</tr>
<tr>
<td>Pensions and Annuities</td>
<td><strong>Federal and State Taxes</strong></td>
</tr>
<tr>
<td>$0</td>
<td>$221,249</td>
</tr>
<tr>
<td>Retirement Account Withdrawals</td>
<td><strong>Retirement Account Contributions</strong></td>
</tr>
<tr>
<td>$276,725</td>
<td>$21,964</td>
</tr>
<tr>
<td>529 Account Withdrawals</td>
<td><strong>529 Contributions and Expenses</strong></td>
</tr>
<tr>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Reserve Fund Assets</td>
<td><strong>Ending Reserve Fund</strong></td>
</tr>
<tr>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Real Estate Income</td>
<td><strong>Medicare Part B Premiums</strong></td>
</tr>
<tr>
<td>$0</td>
<td>$240,842</td>
</tr>
<tr>
<td>Special Receipts</td>
<td><strong>Life Insurance Premiums</strong></td>
</tr>
<tr>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Regular Assets</td>
<td><strong>Discretionary Spending</strong></td>
</tr>
<tr>
<td>$693,764</td>
<td>$1,152,846</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>TOTAL</strong></td>
</tr>
<tr>
<td>$2,860,123</td>
<td>$2,860,122</td>
</tr>
</tbody>
</table>
If I claim Social Security benefits later, can I retire earlier?

- Yalls gain $380k in Social Security value and $9k per year discretionary spending by claiming at 70 vs 62

- Claiming Social Security early is **expensive**
• Under current law Social Security is projected to be $12.5 trillion short over the next 75 years

• “Fixing” Social Security requires increasing taxes, reducing benefits, or both

• We assume both starting in 2035:
  - Benefits decrease by 11.5%
  - Payroll taxes increase from 12.4% to 14.2%.
What about Social Security benefit reductions?

• “Promised” benefits allow the Yalls to retire at 63

• Impact on retirement age is larger the more important Social Security is to the full plan
• You have an implicit retirement plan.

• To retire, your assets must fund your post-retirement spending.

• Maxifi calculates funding assets required.
  - Each retirement year adds to your “Number.”
  - Retirement years before Social Security benefits are more expensive.
  - Positive rates of return reduce later year funding costs.
• Longer life spans imply later retirement, lower spending, or both.
  - Be cautious about planning for a short life span.

• You are “on track” if
  - Your sustainable living standard is at or below your current discretionary spending.
  - Your spending is at or below your earlier plan, and your assets are at or above it.
• Claiming Social Security benefits at 70 supports your earliest feasible retirement.

• If you know your Social Security benefits will not be reduced, you can retire a bit earlier.
• Email: rick.miller@sensiblefinancial.com

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Thank you for participating!