Investment Tests

# 1970 – 1975 initial: $500,000 in the S&P 500 withdrawing $30,000/yr:

Start of 1970: $500,000

During 1970:

Starting Balance: $500,000

Inflation: %5.57

Market Change: %4.01

Interest Adjusted Withdrawal: $30,000 \* (100 + 5.57) / 100 = $31,671.00

Balance after withdrawal: $500,000 – $31,671.00= $468,329.00

Balance after market change: $468,329 \* (100 + 4.01) / 100 = $487,109

Actual Balance: $487,109

Inflation Adjusted Balance: $487,978 / (100 + 5.57) \* 100 = $**461,409**

During 1971:

Starting Balance: $487,109

Inflation: %3.27

Market Change: %14.31

Interest Adjusted Withdrawal: $31,671.00 \* (100 + 3.27) / 100 = $32,706.64

Balance after withdrawal: $487,109– $32,706.64 = $454,402.36

Balance after market change: $454,402.36 \* (100 + 14.31) / 100 = $519,427.34

Actual Balance: $519,427

Inflation Adjusted Balance: $519,427.34 / (100 + 3.27) \* 100 = $**502,980**

During 1972:

Starting Balance: $519,427

Inflation: %3.41

Market Change: %18.98

Interest Adjusted Withdrawal: $32,706.64 \* (100 + 3.41) / 100 = $33,821.94

Balance after withdrawal: $519,427 – $33,821.94 = $485,605.06

Balance after market change: $485,605.06 \* (100 + 18.98) / 100 = $577,772.90

Actual Balance: $577,773

Inflation Adjusted Balance: $577,772.90 / (100 + 3.41) \* 100 = $**558,721**

During 1973:

Starting Balance: $577,773

Inflation: %8.71

Market Change: %-14.66

Interest Adjusted Withdrawal: $33,821.94 \* (100 + 8.71) / 100 = $36,767.83

Balance after withdrawal: $577,773 - $36,767.83 = $541,005.17

Balance after market change: $541,005.17 \* (100 + -14.66) / 100 = $461,693.81

Actual Balance: $461,694

Inflation Adjusted Balance: $461,693.81 / (100 + 8.71) \* 100 = $**424,702**

During 1974:

Starting Balance: $461,694

Inflation: %12.34

Market Change: %-26.47

Interest Adjusted Withdrawal: $36,767.83 \* (100 + 12.34) / 100 = $41,304.98

Balance after withdrawal: $461,694 - $41,304.98 = $420,389.02

Balance after market change: $420,389.02 \* (100 + -26.47) / 100 = $309,112.05

Actual Balance: $309,112

Inflation Adjusted Balance: $309,112.05 / (100 + 12.34) \* 100 = $**275,158**

During 1975:

Starting Balance: $309,112

Inflation: %6.94

Market Change: %37.20

Interest Adjusted Withdrawal: $41,304.98 \* (100 + 6.94) / 100 = $44,171.55

Balance after withdrawal: $309,112 - $44,171.55 = $264,940.45

Balance after market change: $264,940.45\* (100 + 37.20) / 100 = $363,498.30

Actual Balance: $363,498.30

Inflation Adjusted Balance: $363,498.30 / (100 + 6.94) \* 100 = $**339,909**

# 2015 – 1955 (resetting) initial: $1000 in the S&P 500 withdrawing $100/yr:

Start of 2015: $1000

During 2015:

Starting Balance: $1000

Inflation: %0.72

Net Inflation: %0.72

Market Change: %1.38

Interest Adjusted Withdrawal: $100 \* (100 + 0.72) / 100 = $100.72

Balance after withdrawal: $1,000 – $100.72 = $899.28

Balance after market change: $899.28 \* (100 + 1.38) / 100 = $911.69

Actual Balance: $911.69

Inflation Adjusted Balance: $911.69 / (100 + 0.72) \* 100 = $**905**

During 2016:

Starting Balance: $911.69

Inflation: %2.07

Net Inflation: %2.80

Market Change: %11.96

Interest Adjusted Withdrawal: $100.72 \* (100 + 2.07) / 100 = $102.80

Balance after withdrawal: $911.69 – $102.80 = $808.89

Balance after market change: $808.89 \* (100 + 11.96) / 100 = $905.63

Actual Balance: $905.63

Inflation Adjusted Balance: $905.63 / (100 + 2.80) \* 100 = $**881**

During 2017:

Starting Balance: $905.63

Inflation: %2.11

Net Inflation: %4.97

Market Change: %21.83

Interest Adjusted Withdrawal: $102.80 \* (100 + 2.11) / 100 = $104.97

Balance after withdrawal: $905.63 – $104.97 = $800.66

Balance after market change: $800.66 \* (100 + 21.83) / 100 = $975.44

Actual Balance: $975.44

Inflation Adjusted Balance: $975.44 / (100 + 4.97) \* 100 = $**929**

RESETS BACK TO START OF DATA (1950)

During 1950:

Starting Balance: $975.44

Inflation: %5.93

Net Inflation: %11.19

Market Change: %31.71

Interest Adjusted Withdrawal: $104.97 \* (100 + 5.93) / 100 = $111.19

Balance after withdrawal: $975.44 – $111.19 = $864.25

Balance after market change: $864.25 \* (100 + 31.71) / 100 = $1,138.30

Actual Balance: $1,138.30

Inflation Adjusted Balance: $1,138.30 / (100 + 11.19) \* 100 = $**1024**

During 1951:

Starting Balance: $1138.30

Inflation: %6

Net Inflation: %17.86

Market Change: %24.02

Interest Adjusted Withdrawal: $111.19 \* (100 + 6) / 100 = $117.86

Balance after withdrawal: $1138.30 – $117.86 = $1020.44

Balance after market change: $1020.44 \* (100 + 24.02) / 100 = $1265.55

Actual Balance: $1265.55

Inflation Adjusted Balance: $1265.55 / (100 + 17.86) \* 100 = $**1074**

During 1952:

Starting Balance: $1265.55

Inflation: %0.75

Net Inflation: %18.74

Market Change: %18.37

Interest Adjusted Withdrawal: $117.86 \* (100 + 0.75) / 100 = $118.74

Balance after withdrawal: $1265.55 – $118.74 = $1146.81

Balance after market change: $1146.81 \* (100 + 18.37) / 100 = $1357.48

Actual Balance: $1357.48

Inflation Adjusted Balance: $1357.48 / (100 + 18.74) \* 100 = $**1143**

# Starting in 1983: debt = $18000 @ 4.2% | S&P = $14,500

# Start – Paid Off: pay off $5,000/yr in debts

# Start – (Start + 5 years): invest $25,000/yr in S&P

# (Start + 5 years) – (Start + 25 years): invest $10,000/yr in S&P

# (Start + 25 years) – (Start + 35 years): withdraw $20,000/yr

# (Start + 35 years) – (Death): withdraw $50,000/yr

During 1983:

Starting Net Worth: $14,500 – 18,000 = $-3,500

Starting Debts: $18,000

Debt after interest: $18,000 \* 1.042 = $18,756

Debt after repayment: $18,756 - $5,000 = $13,756

~~IADebt = $13,756 / 1.0379 = $13,253.69~~

Starting Investment: $14,500

Investment worth at EOY: $14,500 \* 1.2256 = $17,771.20

Investment after contribution: $17,771.20 + 25,000 = $42,771.20

~~IAInvestments: $42,771.20 / 1.0379 = $41,209.37~~

EoY Net Worth: $42,771.20 - $13,253.69 = $29,015.20

EoY IA Net Worth: $29,015.20 / 1.0379 = **$27,955.68**

During 1984:

Starting Net Worth: $29,015.20

Starting Debts: $13,756

Debt after interest: $13,756\* 1.042 = $14,333.75

Debt after repayment: $14,333.75 - $5,000 = $9,333.75

Starting Investment: $42,771.20

Investment worth at EOY: $42,771.20 \* 1.0627 = $45,452.95

Investment after contribution: $45,452.95 + 25,000 = $70,452.95

EoY Net Worth: $70,452.95 - $9,333.75 = $61,119.20

EoY IA Net Worth: $61,119.20 / 1.0395 = **$58,796.73**

During 1985:

Starting Net Worth: $61,119.20

Starting Debts: $9,333.75

Debt after interest: $9,333.75\* 1.042 = $9,725.77

Debt after repayment: $9725.77 - $5,000 = $4725.77

Starting Investment: $70,452.95

Investment worth at EOY: $70,452.95 \* 1.3173 = $92,807.67

Investment after contribution: $92,807.67 + 25,000 = $117,807.67

EoY Net Worth: $117,807.67 - $4725.77 = $113,081.90

EoY IA Net Worth: $ / 1.038 = **$**