



Debt Avalanche vs. Investing Arbitrage Decision Tree

Mathematical hurdle rate formula, tax-adjusted yields, and surplus cash allocation.

THE MATHEMATICAL ARBITRAGE HURDLE RATE FORMULA

After-Tax Cash Hurdle = Safe Cash APR * (1 - Marginal Tax Bracket)

Guaranteed, tax-free return from debt elimination vs. risk-adjusted equity expected return (7% to 8%).

* Tier 1: Toxic High-Interest Debt (APR > 7.0%)

Credit cards, personal loans, high-rate auto loans. Eliminate immediately with 100% of surplus cash. A guaranteed 7%+ tax-free return beats the historical risk-adjusted return of broad equities.

* Tier 2: The Ambiguous Arbitrage Zone (APR 4.5% to 7.0%)

Private student loans, moderate auto loans. Compare APR directly to your personal after-tax hurdle rate. Many investors split surplus 50/50 between debt principal and index funds for psychological balance.

* Tier 3: Low-Interest Legacy Debt (APR < 4.5%)

Subsidized student loans, fixed-rate mortgages (2.5% to 4.0%). Make minimum scheduled payments only. Surplus capital compounds far faster in broad market index ETFs (VOO/VTI) or Treasury bills.

PAYOFF METHODOLOGY COMPARISON & BEHAVIORAL DYNAMICS

* Debt Avalanche (Mathematically Optimal):

Orders liabilities by highest APR first. Minimizes total lifetime interest paid and accelerates debt-free date. Requires discipline to tackle large high-rate balances without immediate payoff milestones.

* Debt Snowball (Behavioral Momentum):

Orders liabilities by smallest balance first. Creates quick psychological wins but imposes a mathematical penalty by allowing toxic high-APR loans to compound interest against you longer.

* Tax-Adjusted Arbitrage (Wealth Maximizer):

Eliminates debt exceeding after-tax hurdle rate, then diverts surplus into compounding index funds. Produces the highest multi-decade net worth by capturing long-term equity growth early.

STEP-BY-STEP SURPLUS CASH EXECUTION PROTOCOL

☒ Step 1: Secure 1-Month Starter Buffer

Keep \$1,000 to 1 month of living expenses in cash before accelerating debt to avoid taking on new high-interest debt during minor emergencies.

☒ Step 2: Capture 100% Employer 401(k) Match

Never sacrifice employer match dollars for debt payoff. A 50% to 100% immediate match return beats any consumer loan interest rate.

☒ Step 3: Avalanche All Liabilities Above 7.0%

Direct every discretionary dollar to the highest-APR balance until all credit cards and high-rate personal loans reach \$0.

☒ Step 4: Shift Surplus to Compounding Index Funds

Once remaining debt APR falls below your hurdle rate, automate surplus into broad market ETFs (VOO/VTI) rather than prepaying low-rate debt.

☒ Step 5: Never Prepay Sub-4% Fixed Debt

Inflation erodes the real burden of low-rate fixed debt over time while productive index assets compound in nominal dollars.

