

Quantitative Macroeconomics - PS IV

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1 Value Function Iteration

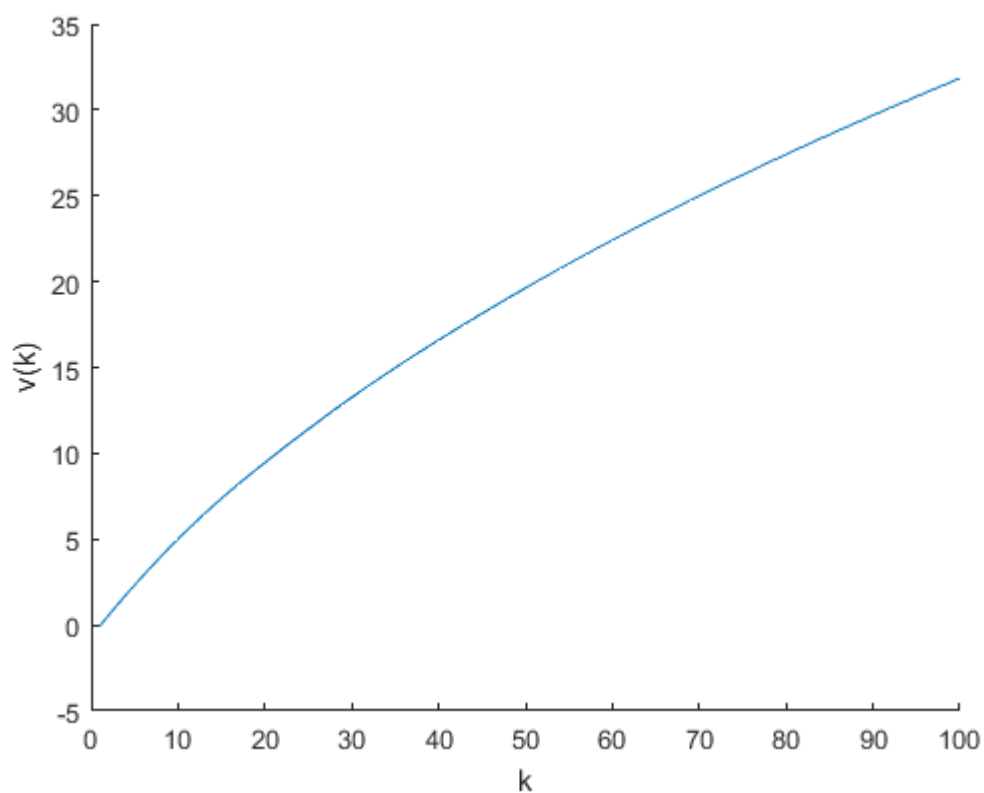


Figure 1: Value Function

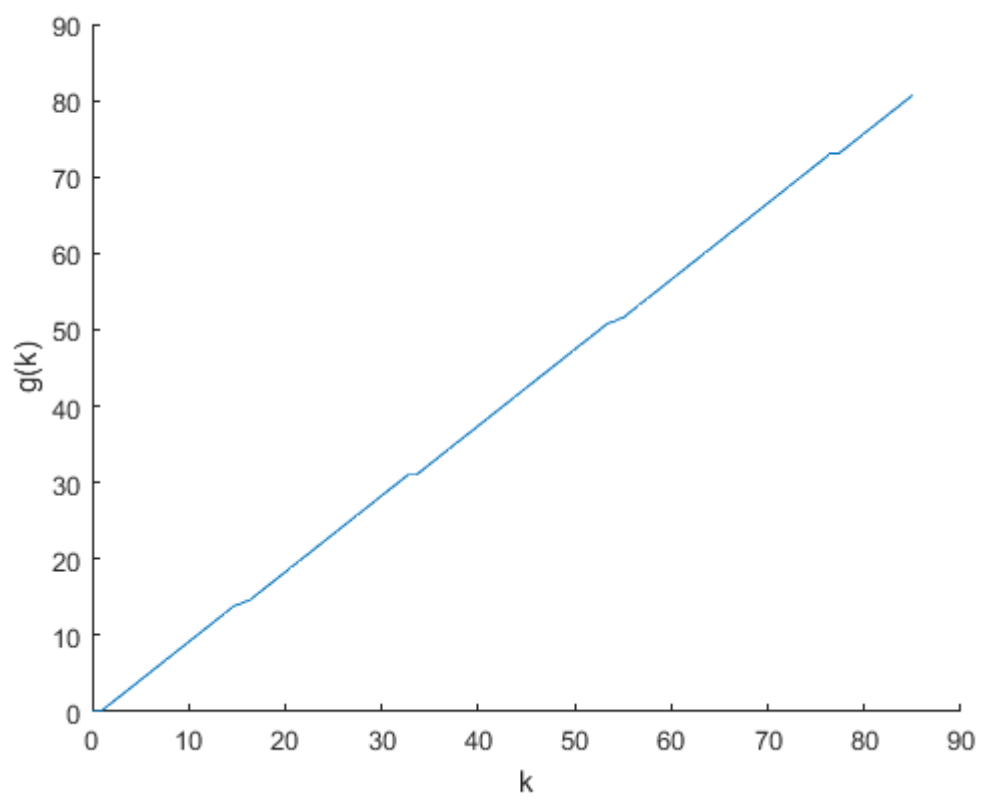


Figure 2: Policy Function

- Brute Force VFI: Convergence achieved in 32.28 seconds and 729 iterations;
- VFI - monotonicity of the optimal decision rule: Convergence achieved in 2.70 seconds and 45 iterations;
- VFI - concavity of the value function: Convergence achieved in 0.31 seconds and 1123 iterations;
- VFI - local search: Convergence achieved in 0.20 seconds and 1146 iterations;
- VFI - concavity and monotonicity: Convergence achieved in 0.31 seconds and 1118 iterations;
- Howard's Policy iteration: Convergence achieved in 0.23 seconds and 1192 iterations

1.1 Introducing continuous labor choice

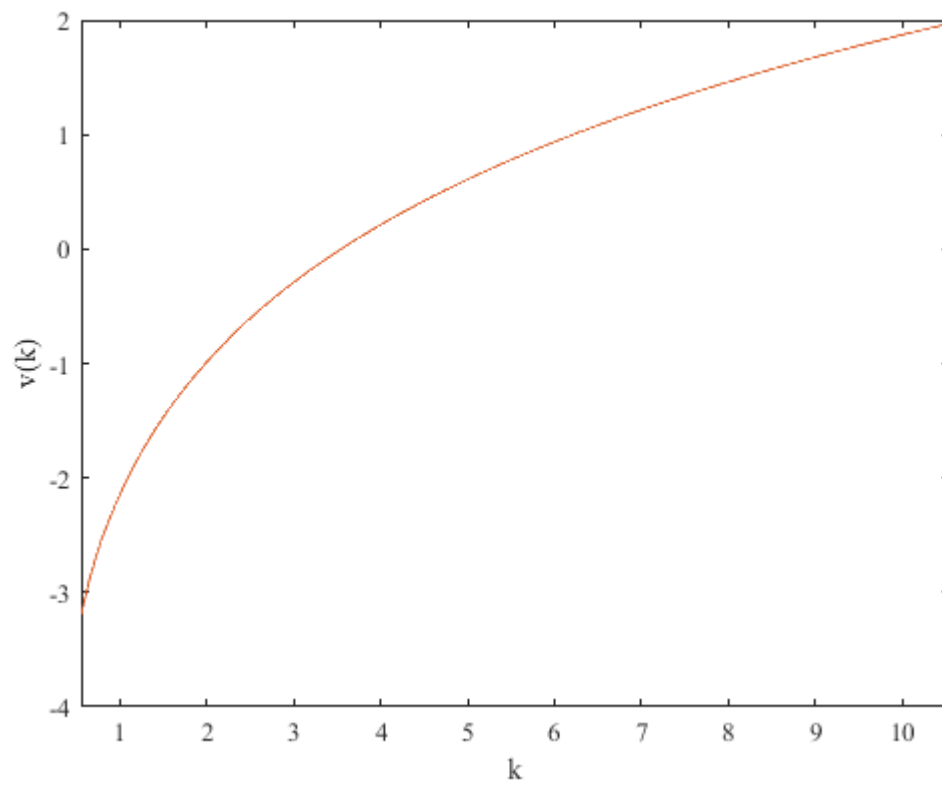


Figure 3: Value function with labor

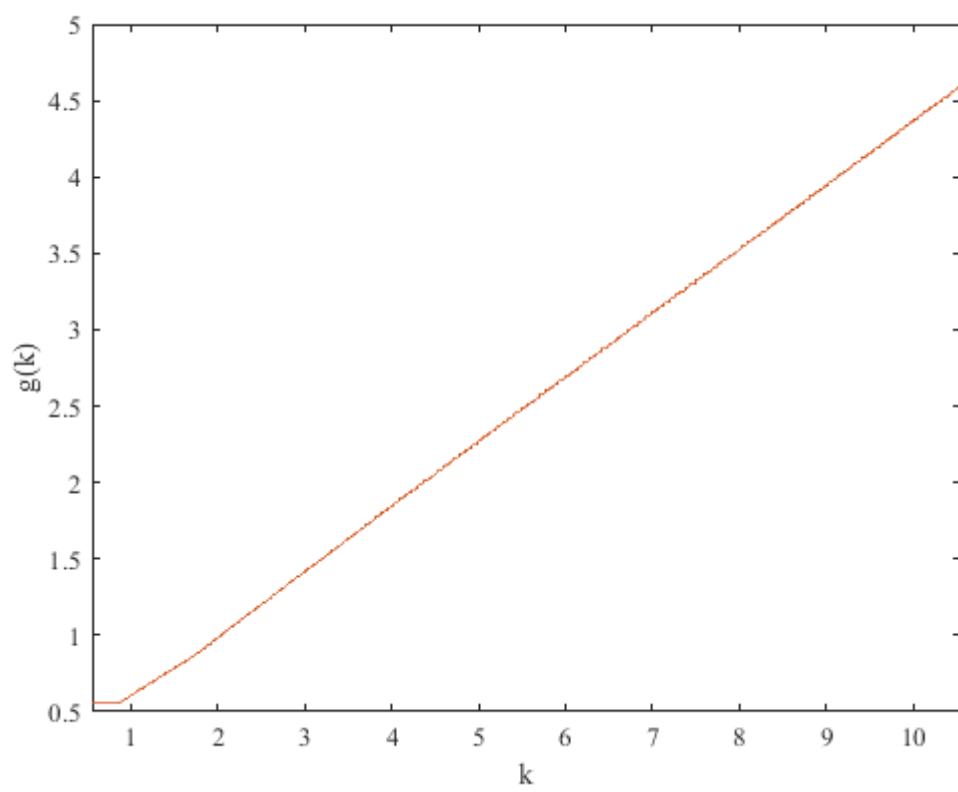


Figure 4: Policy function with labor

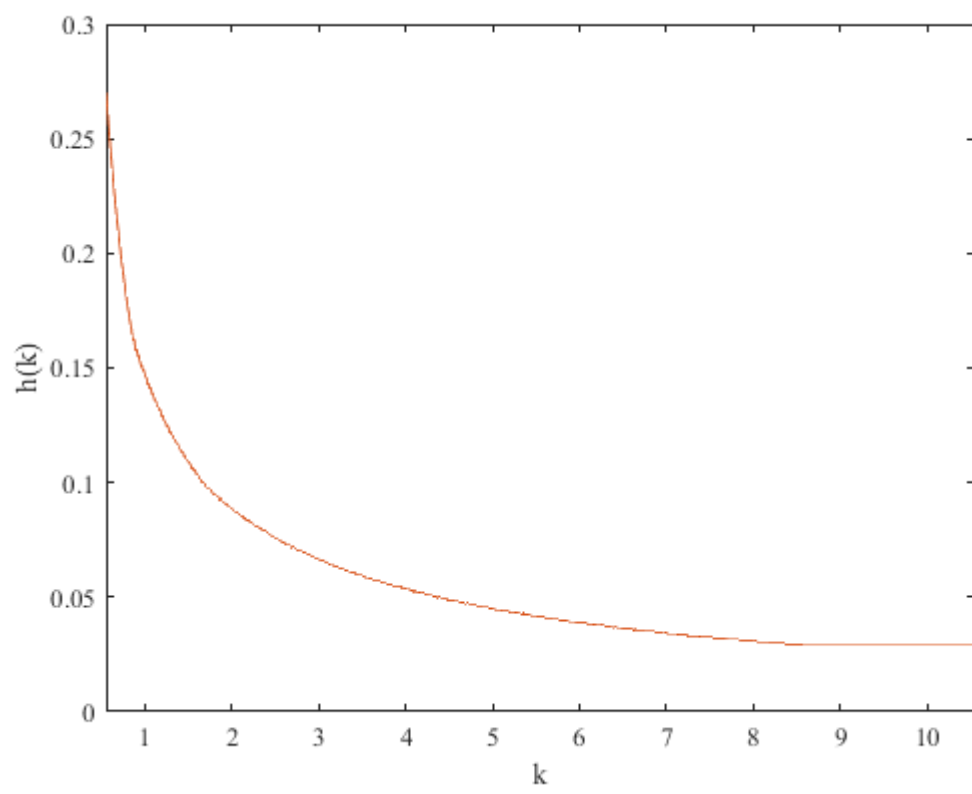


Figure 5: Labor supply function

2 Business Cycle Fluctuations

2.1 Stochastic VFI

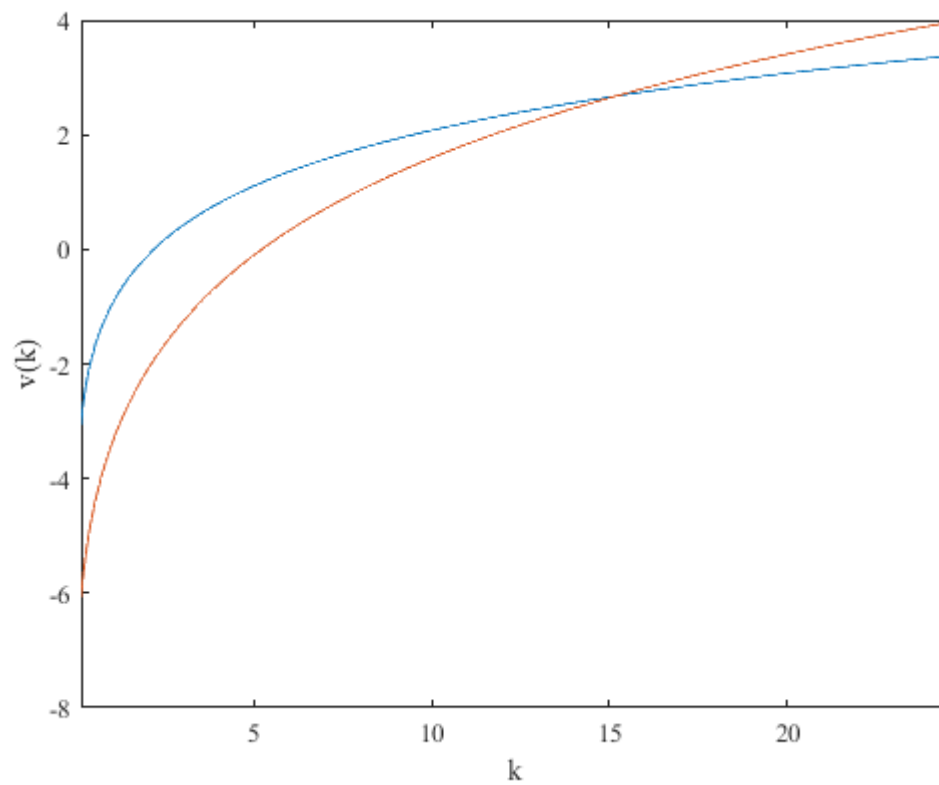


Figure 6: Stochastic Value function (blue line: "good productivity shock")

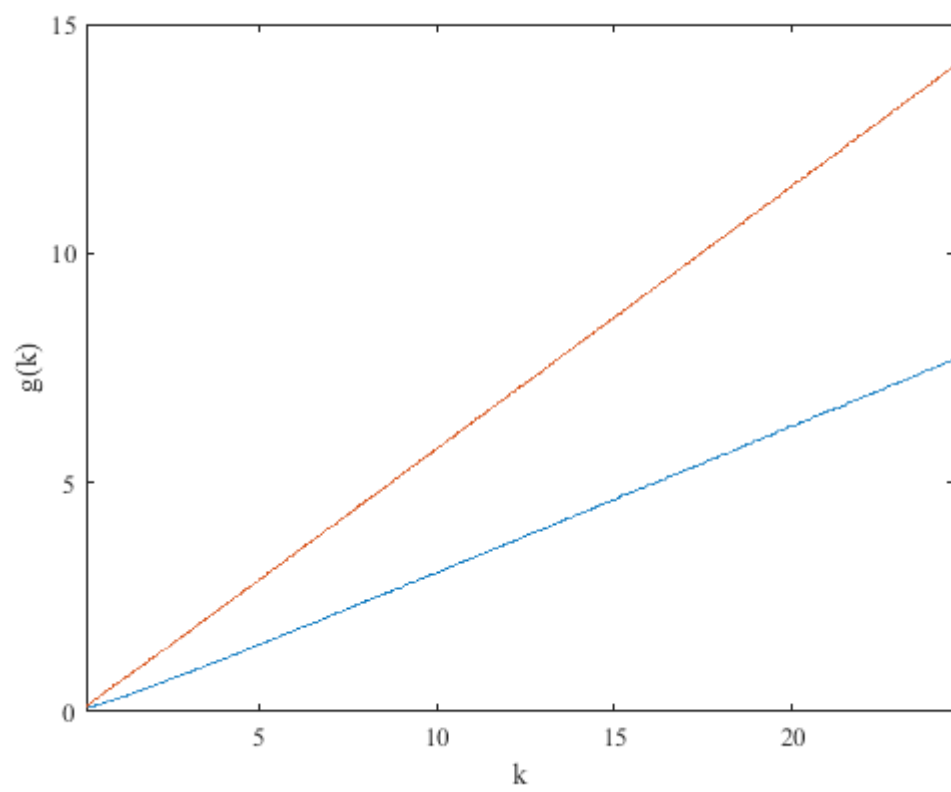


Figure 7: Stochastic Policy function (blue line: "good productivity shock")

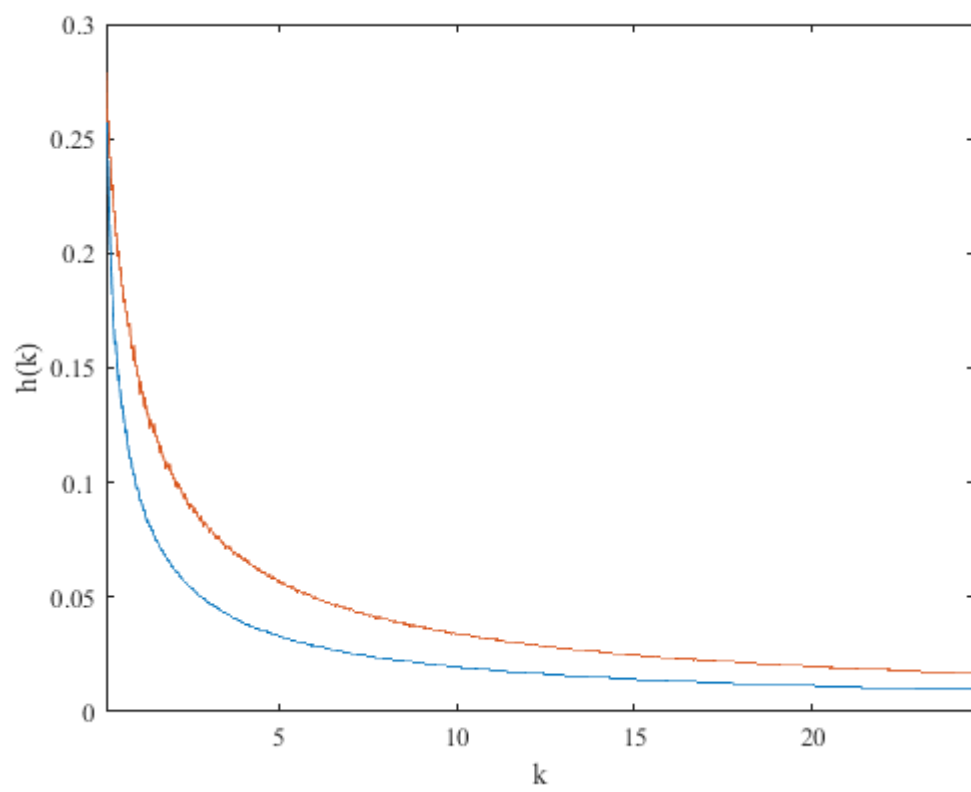


Figure 8: Stochastic Labor supply function (blue line: "good productivity shock")