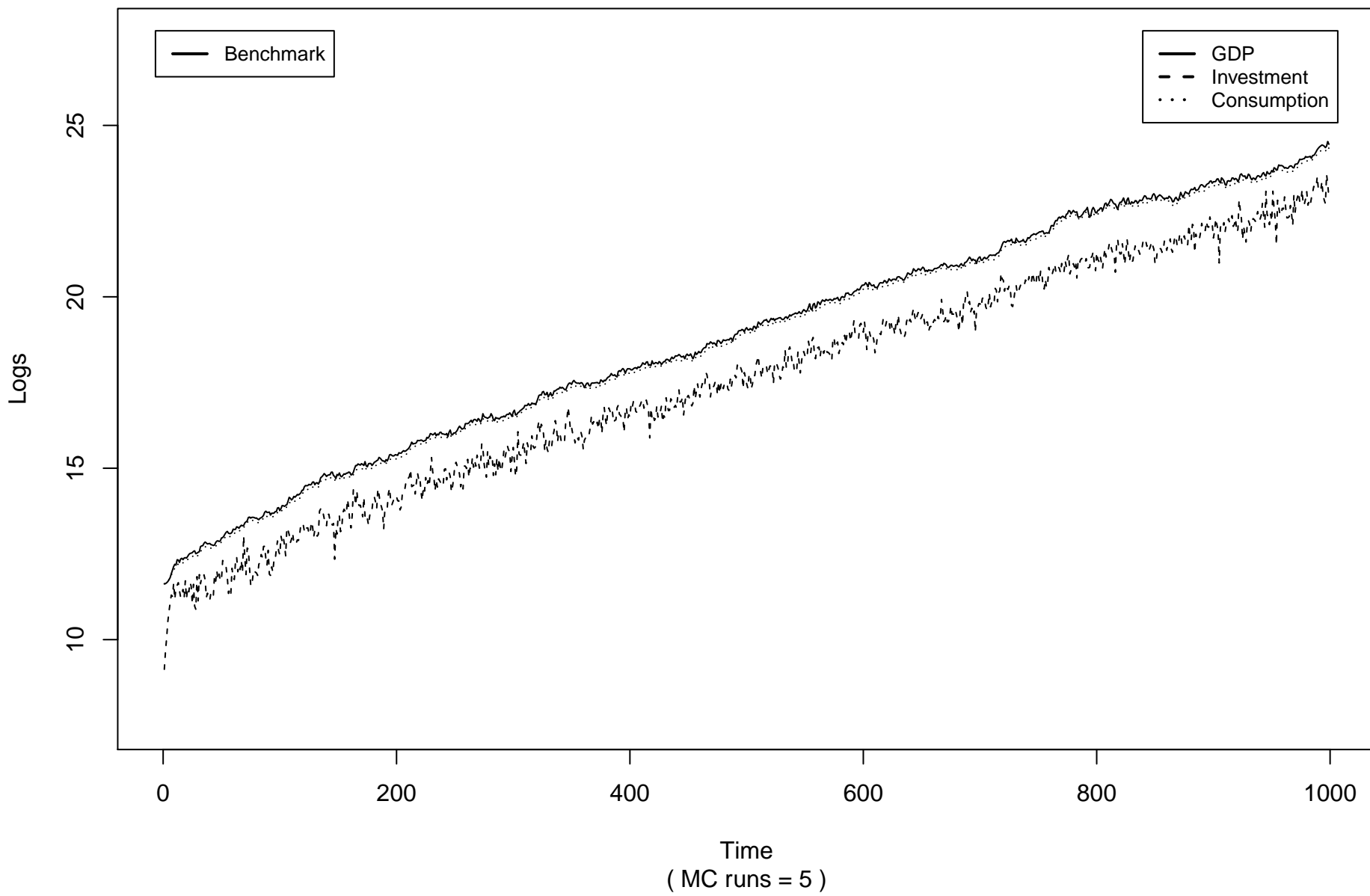
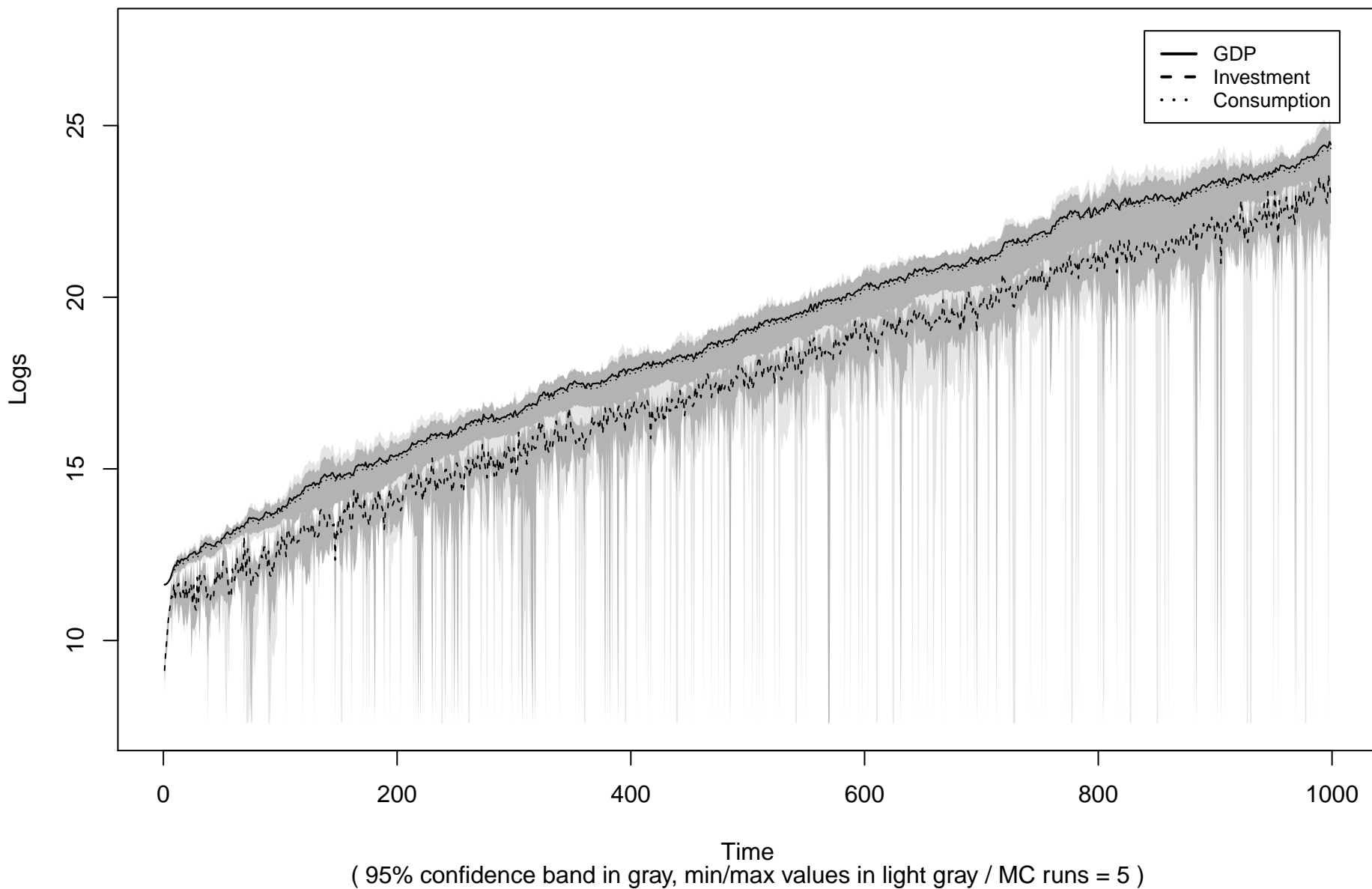


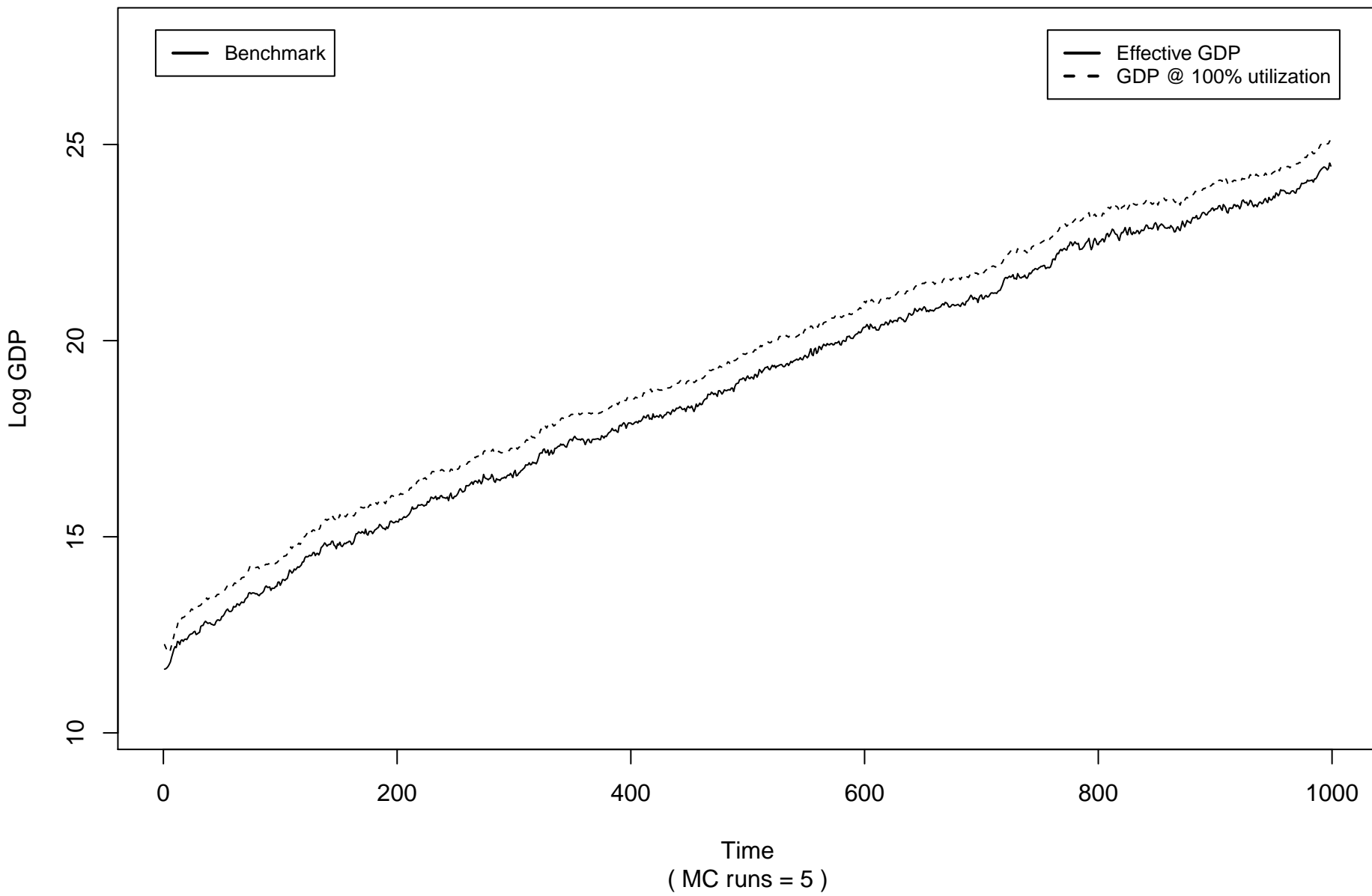
GDP, investment and consumption (all experiments)



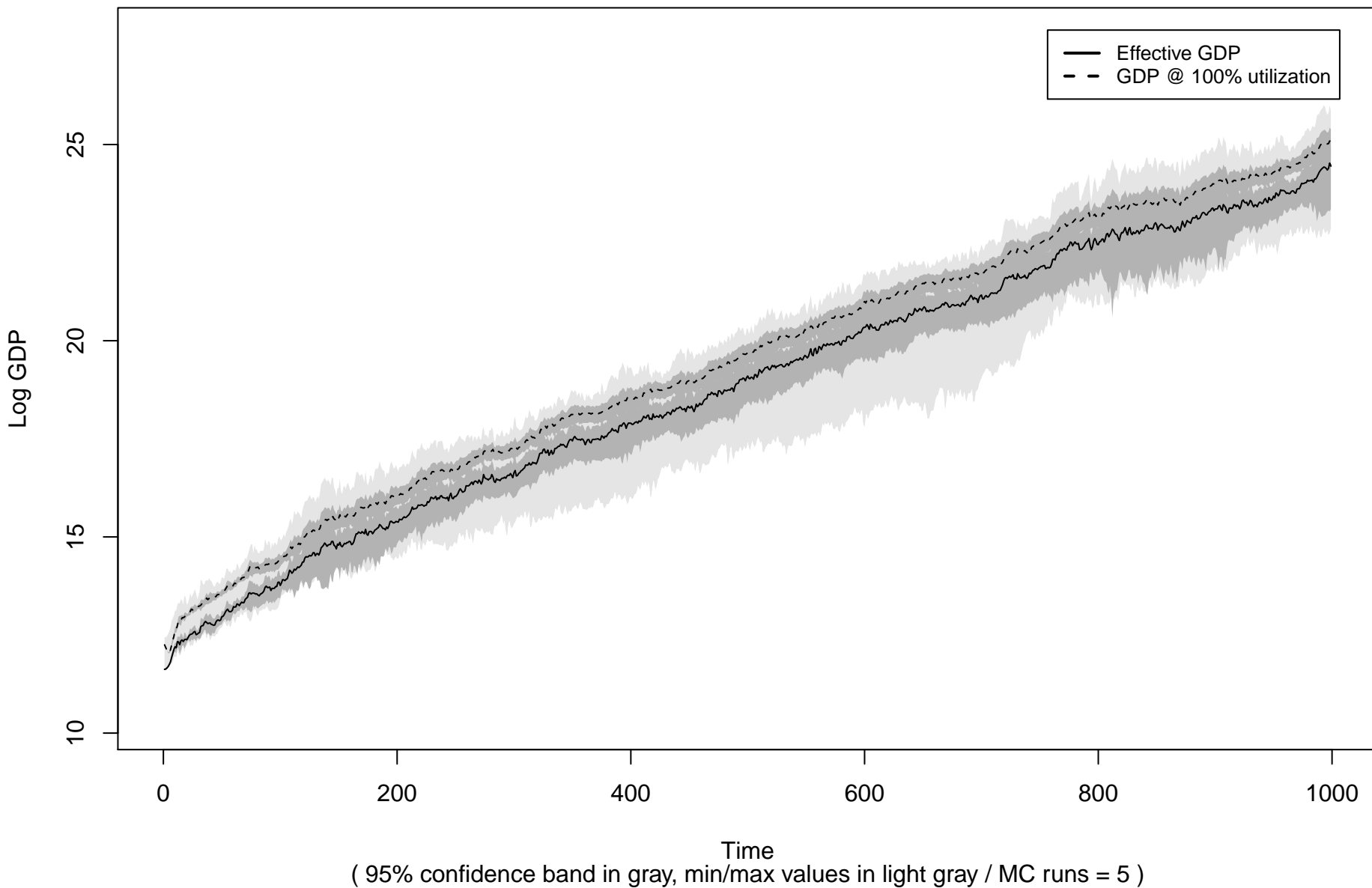
GDP, investment and consumption (Benchmark)



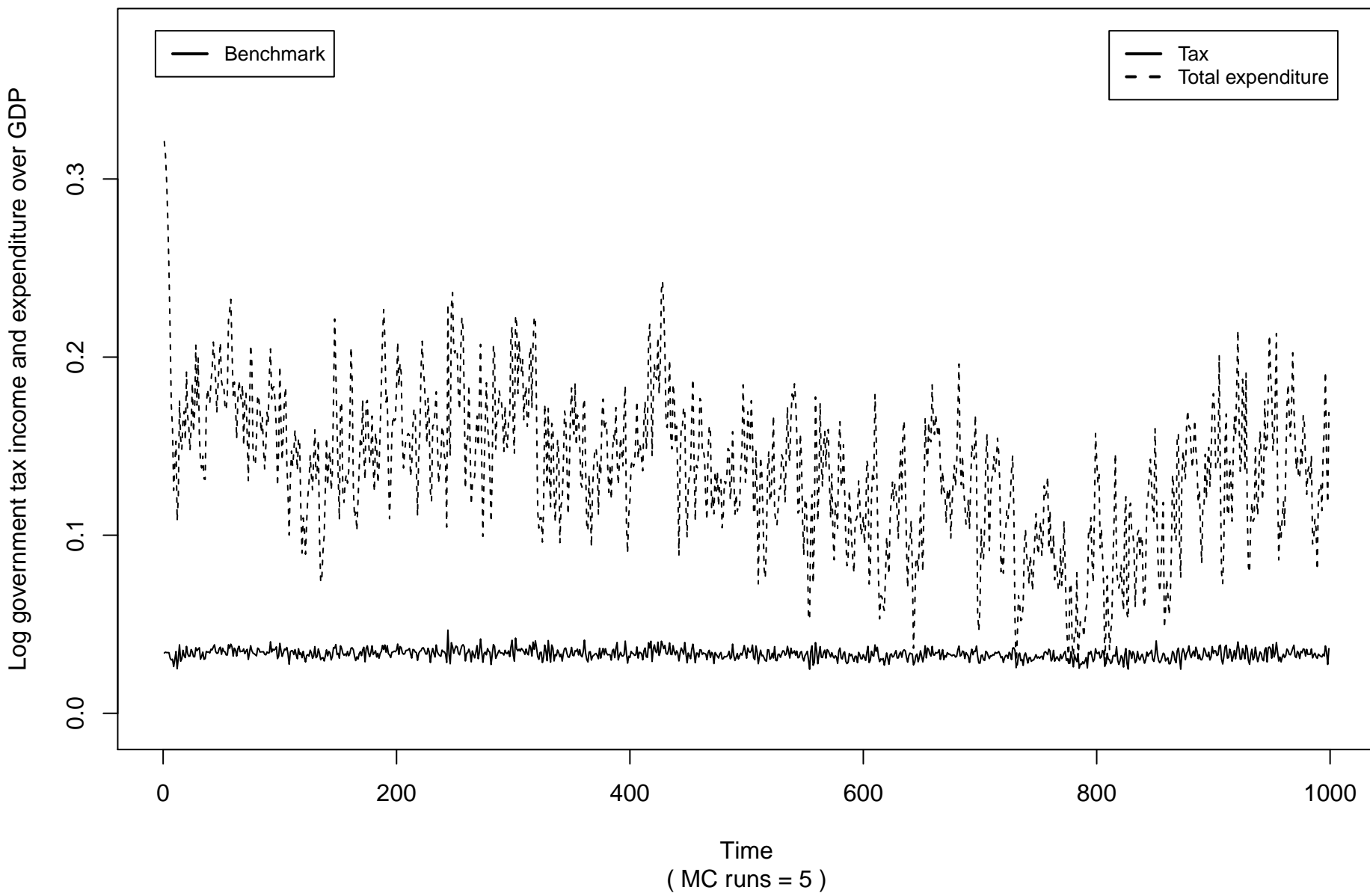
GDP (all experiments)



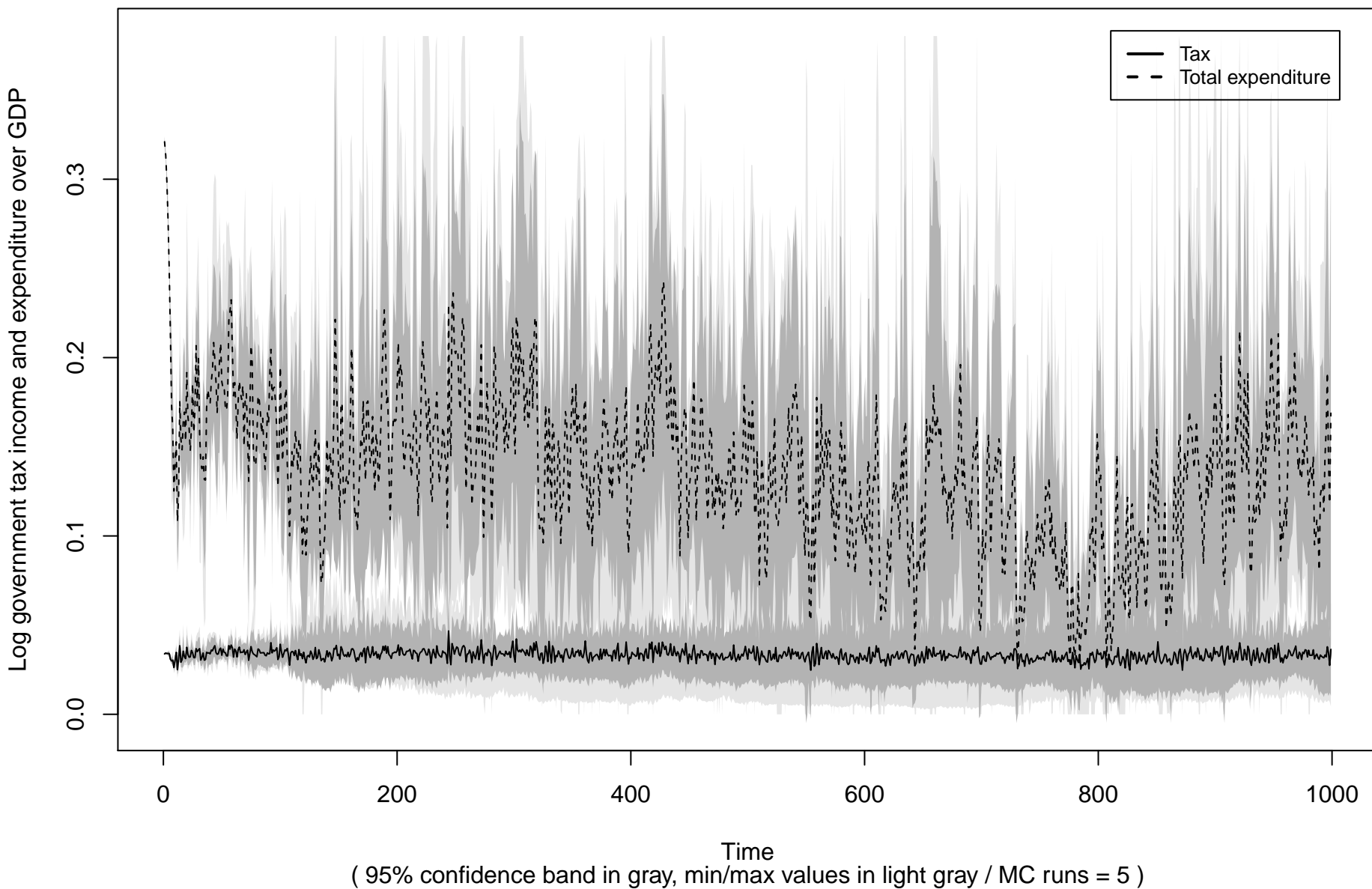
GDP (Benchmark)



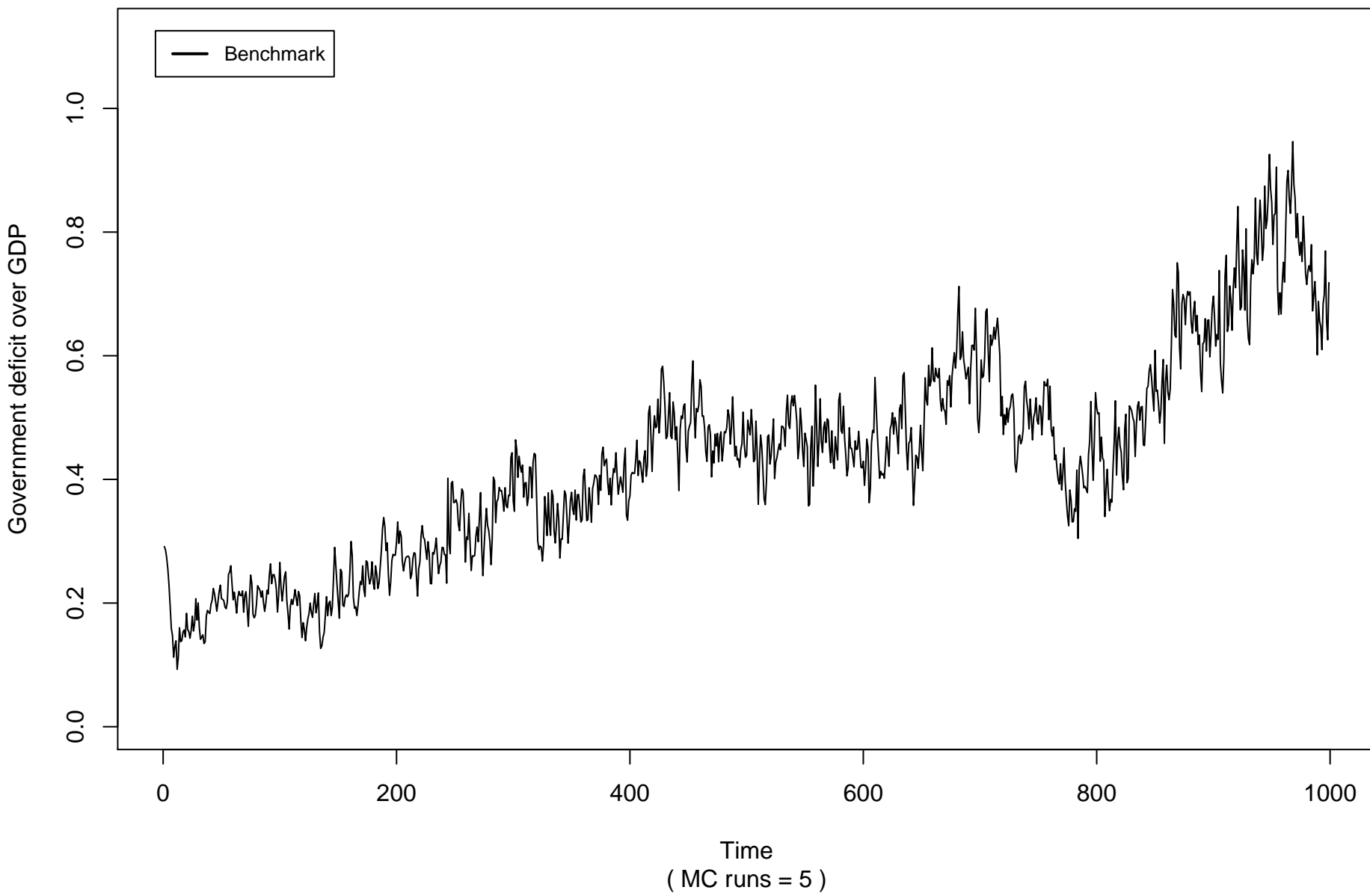
Government income and expenditure on GDP (all experiments)



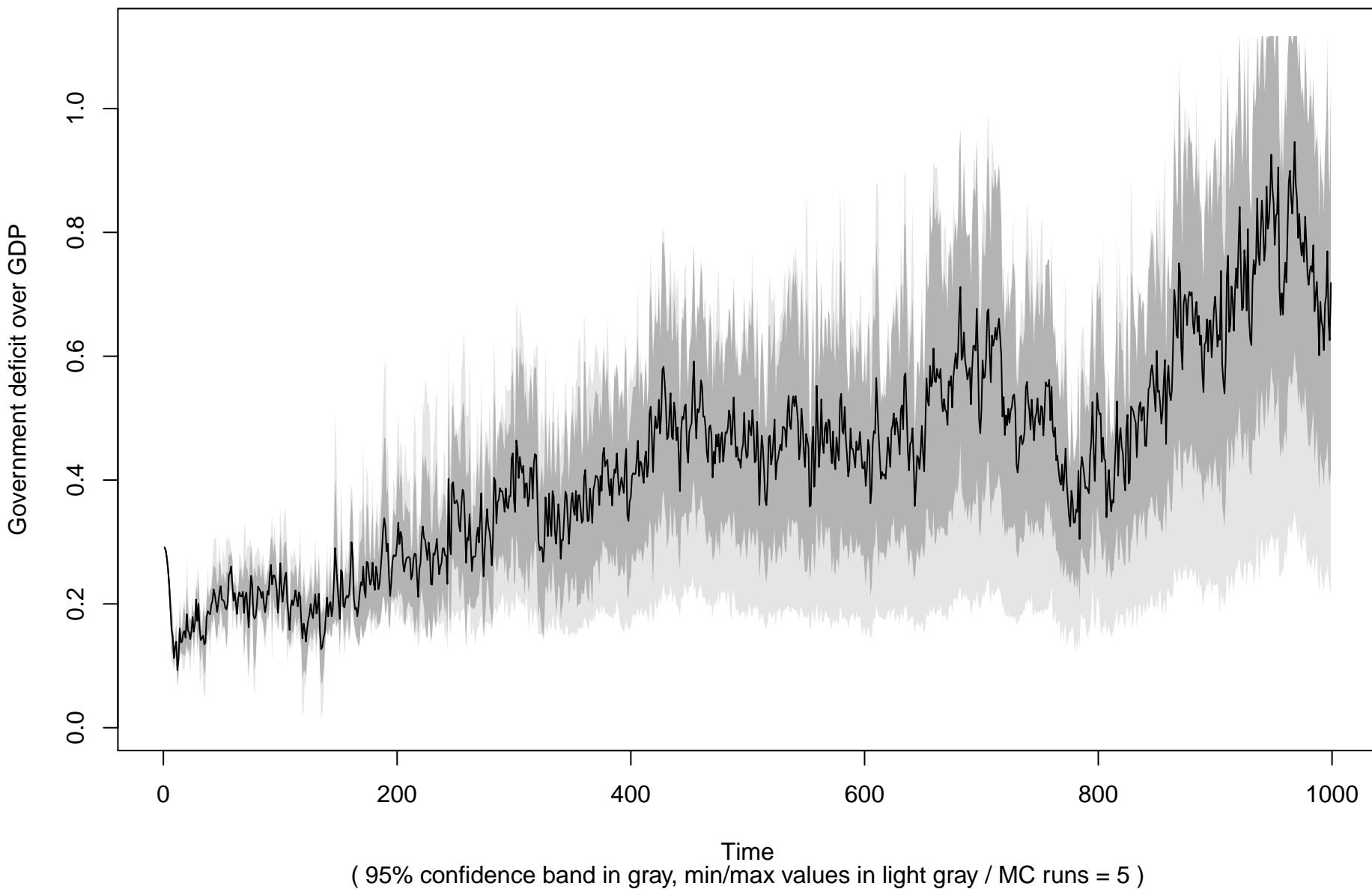
Government income and expenditure on GDP (Benchmark)



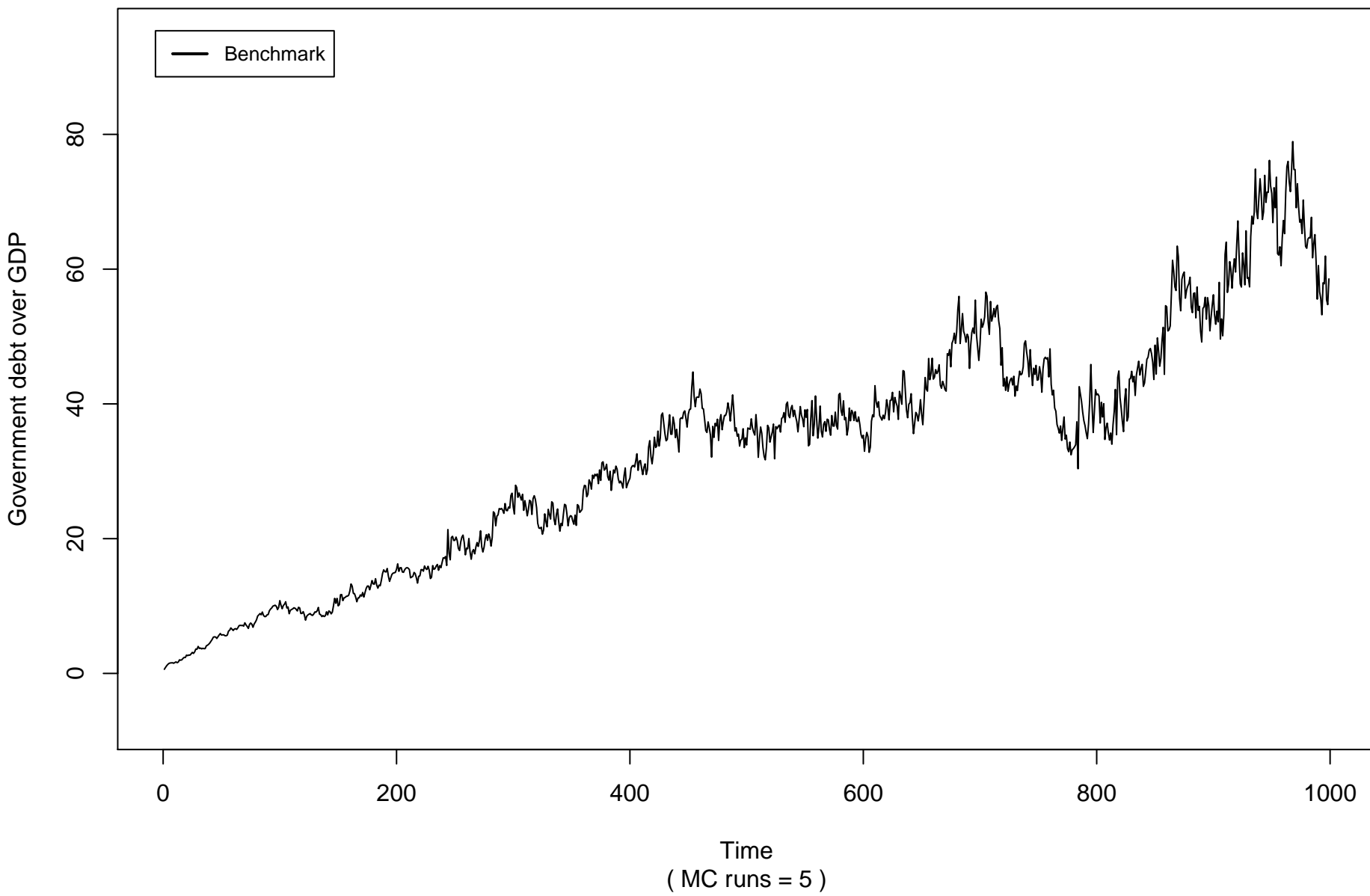
Government deficit on GDP (all experiments)



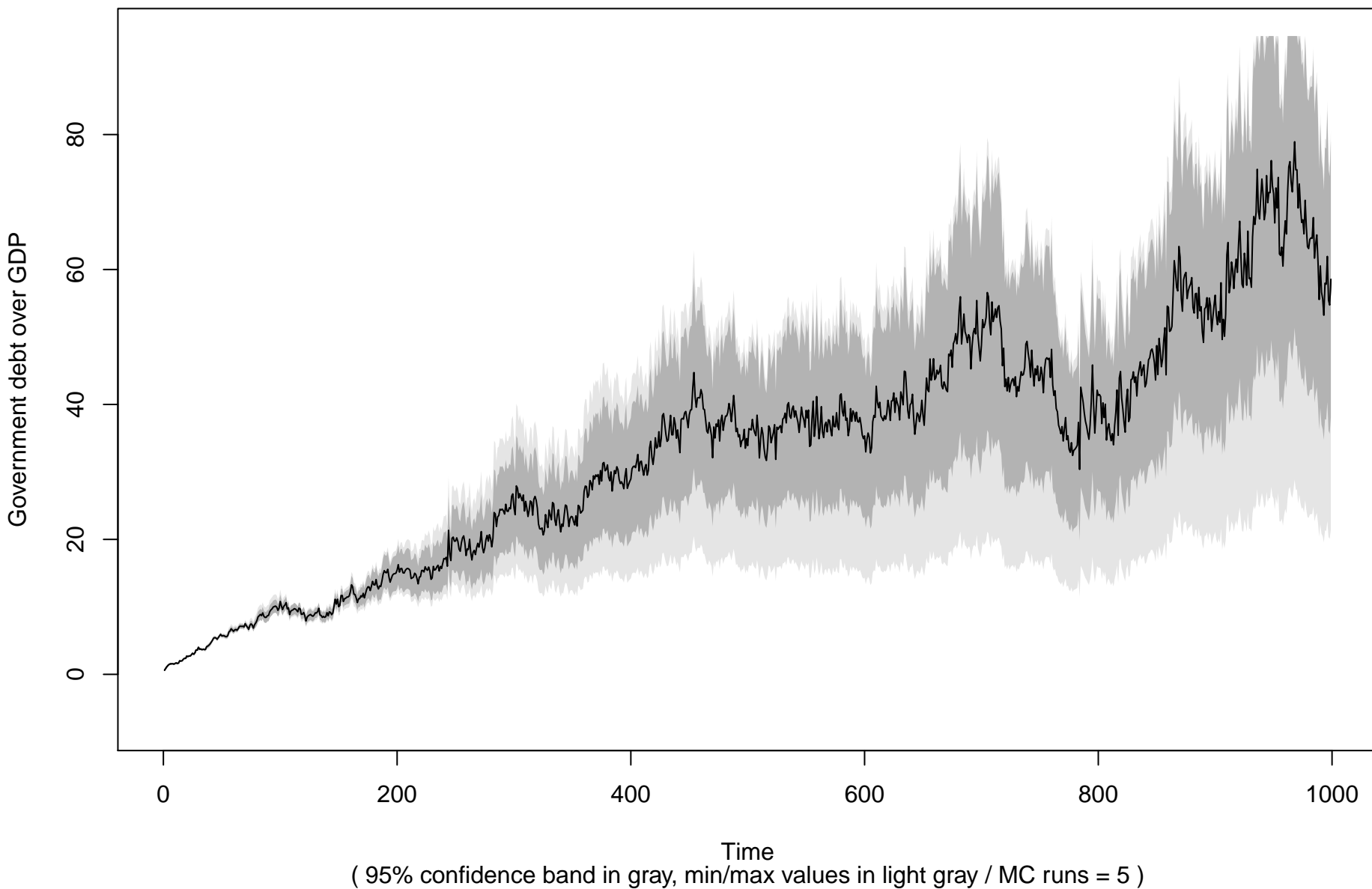
Government deficit on GDP (Benchmark)



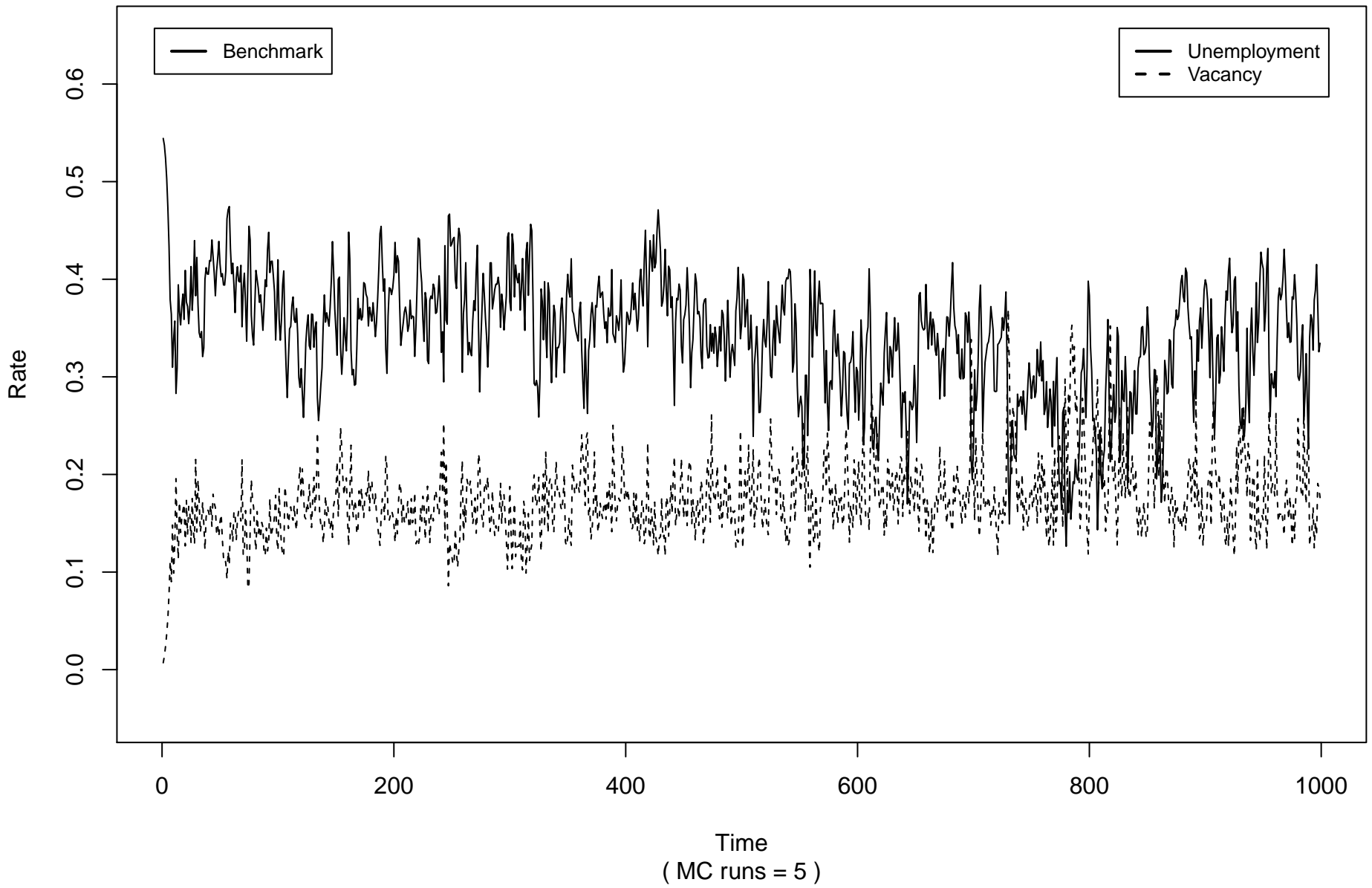
Government debt on GDP (all experiments)



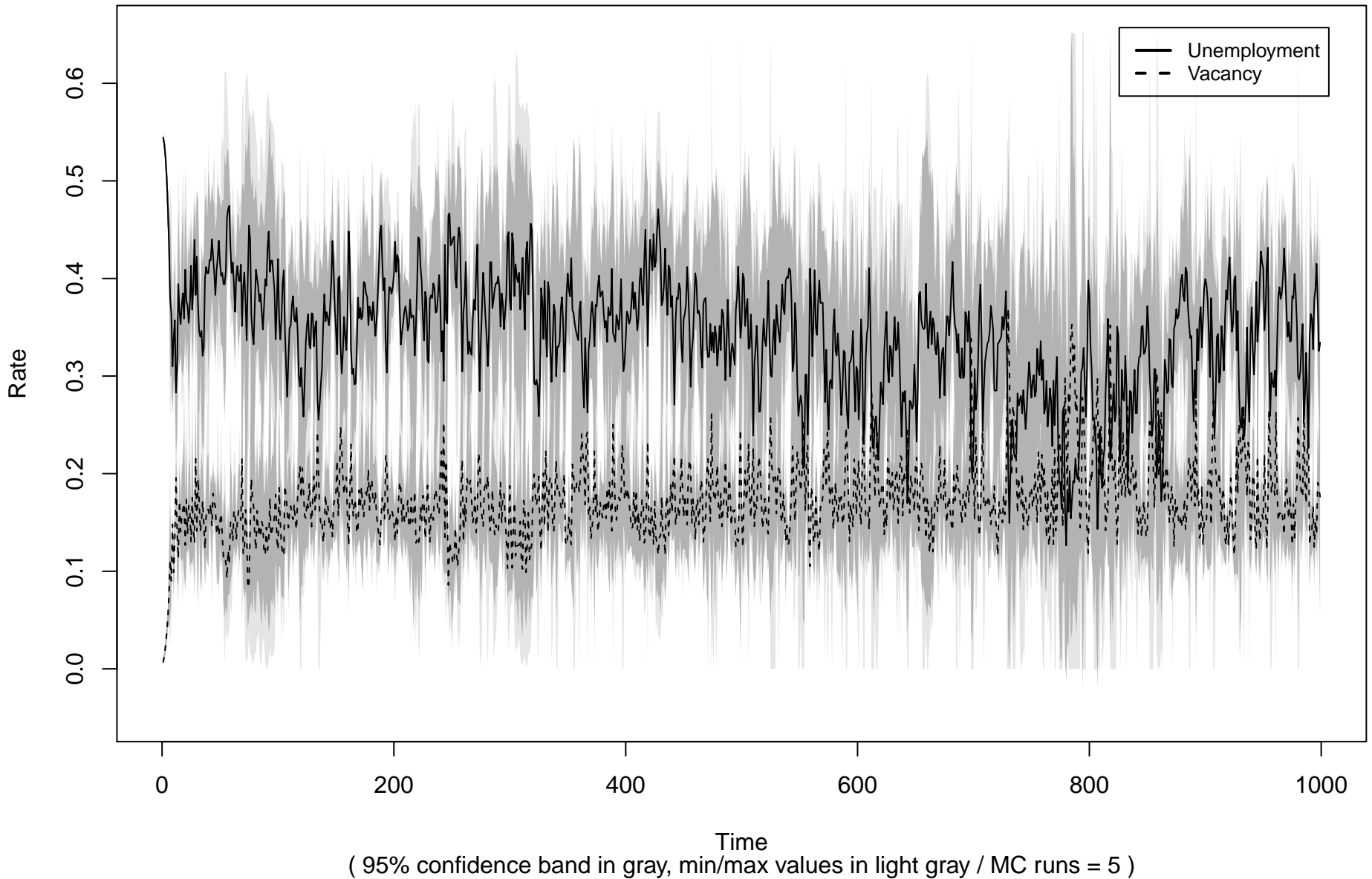
Government debt on GDP (Benchmark)



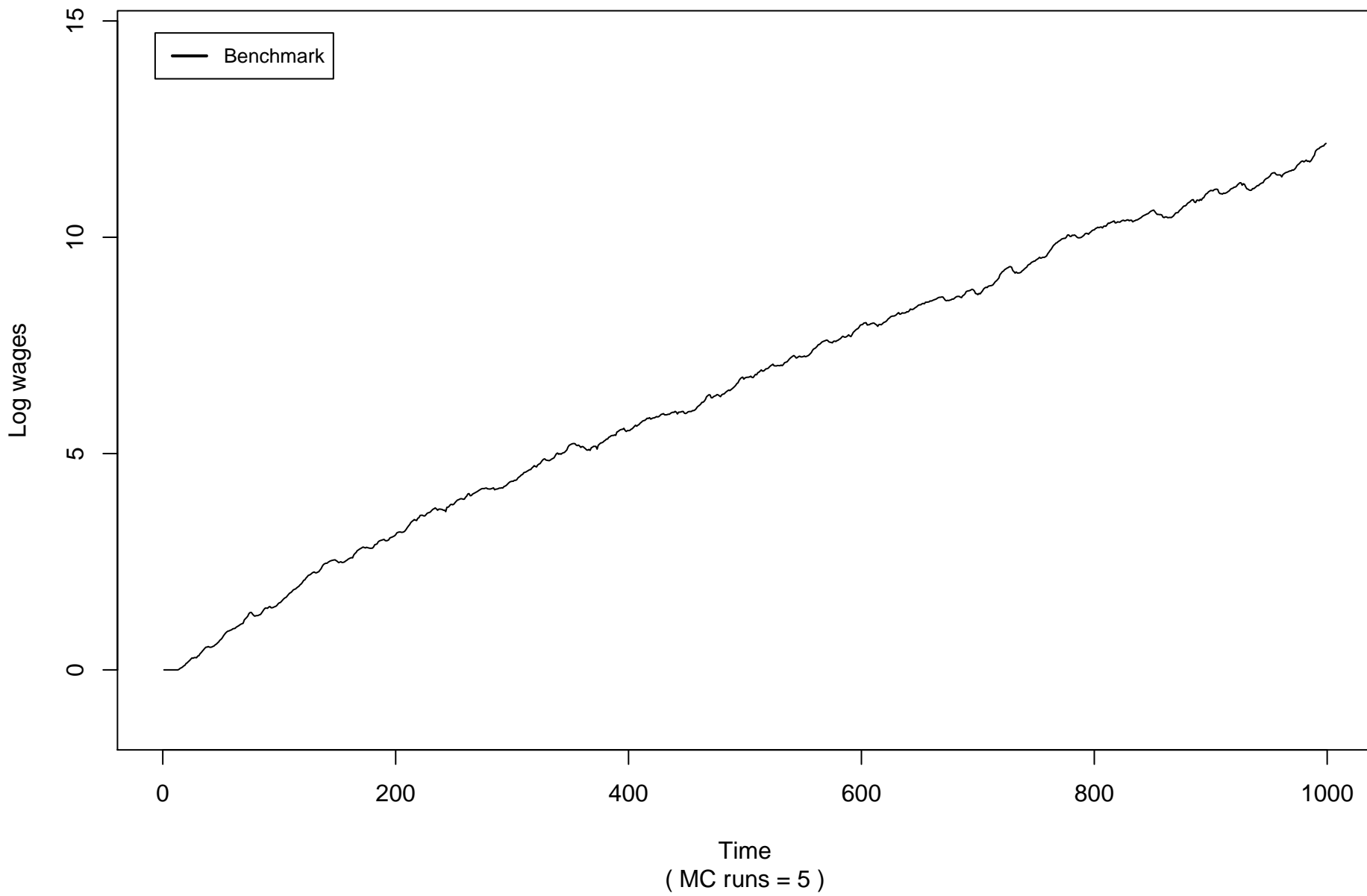
Unemployment and vacancy rates (all experiments)



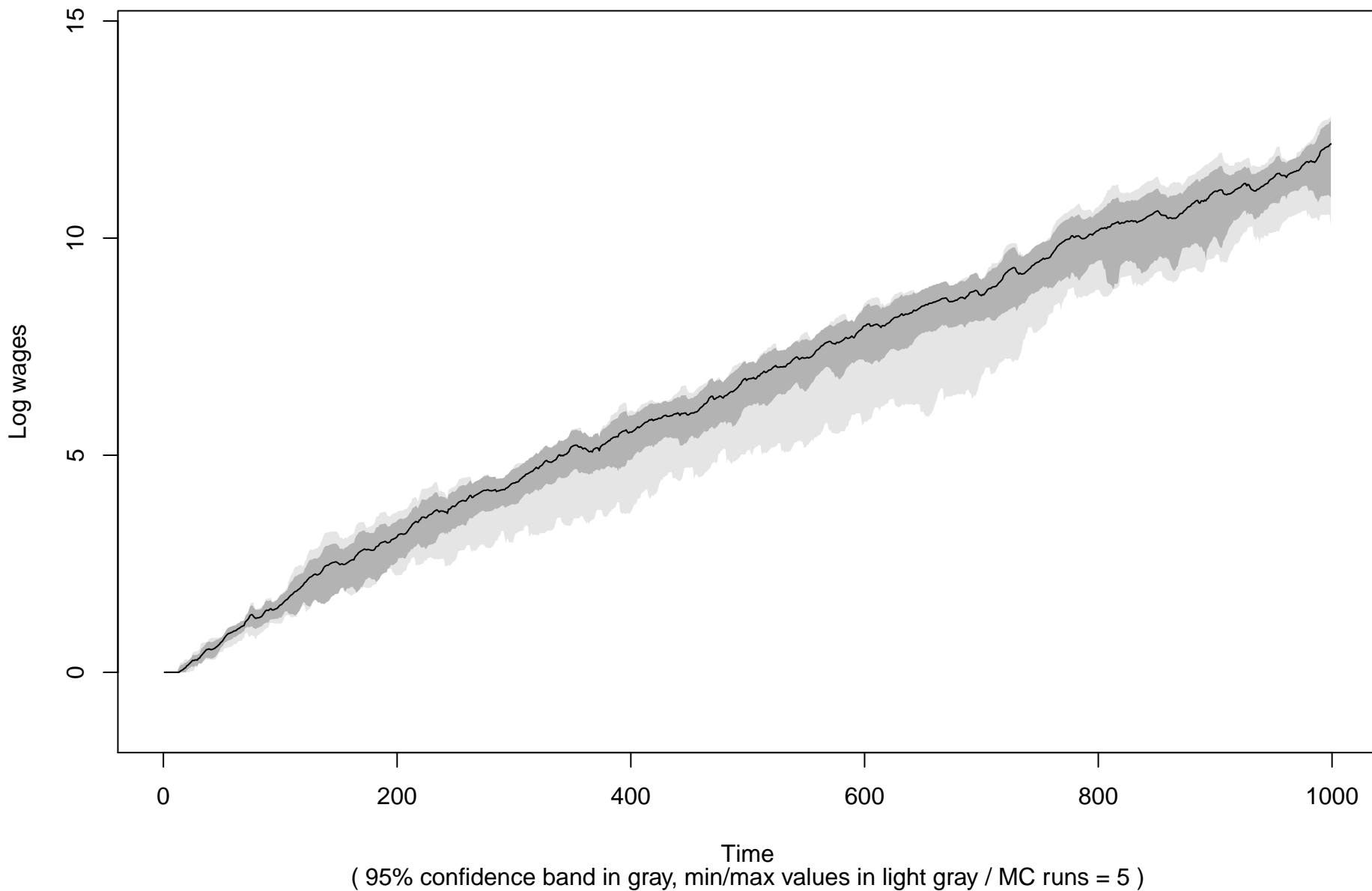
Unemployment and vacancy rates (Benchmark)



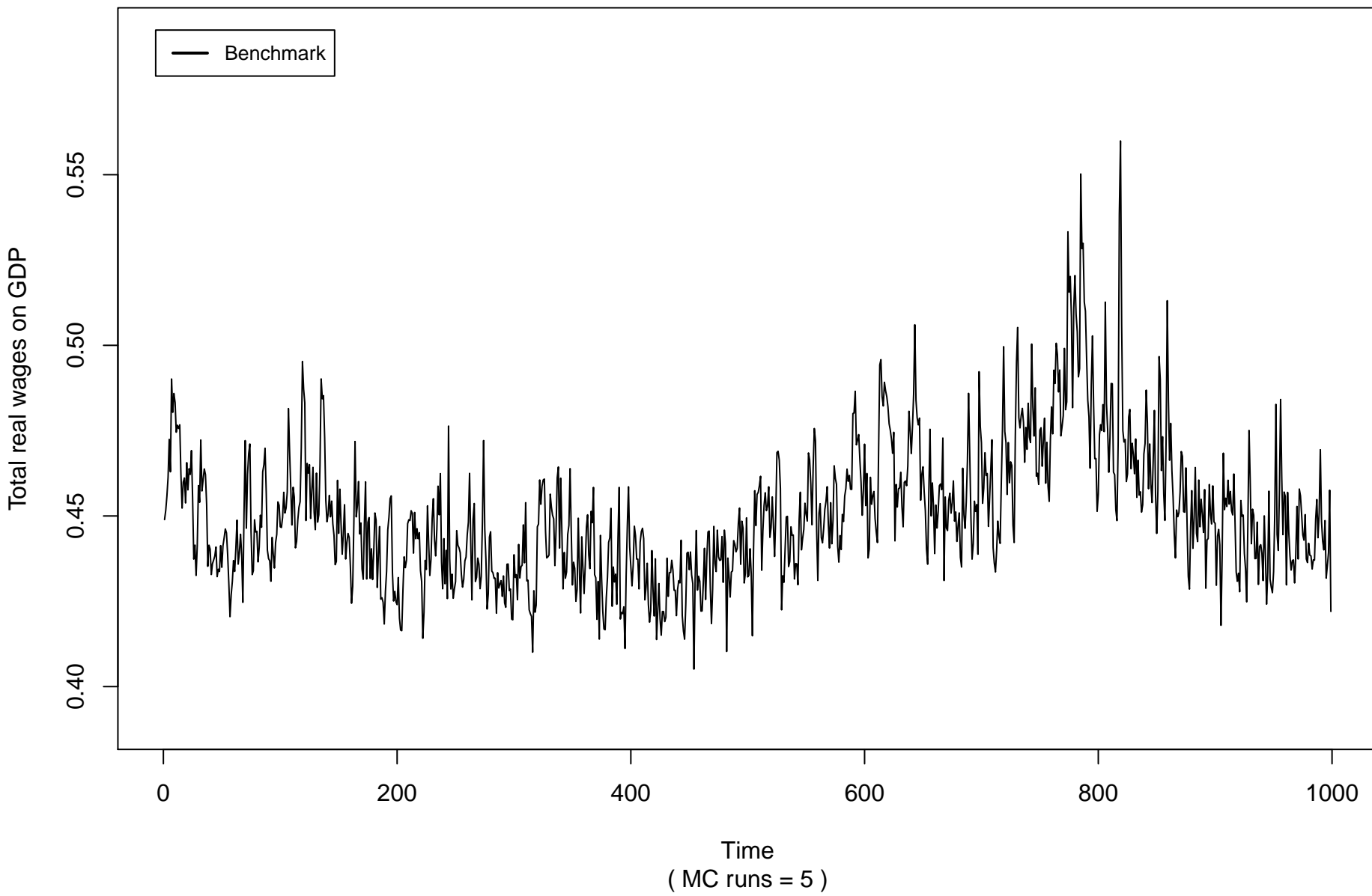
Real wages average (all experiments)



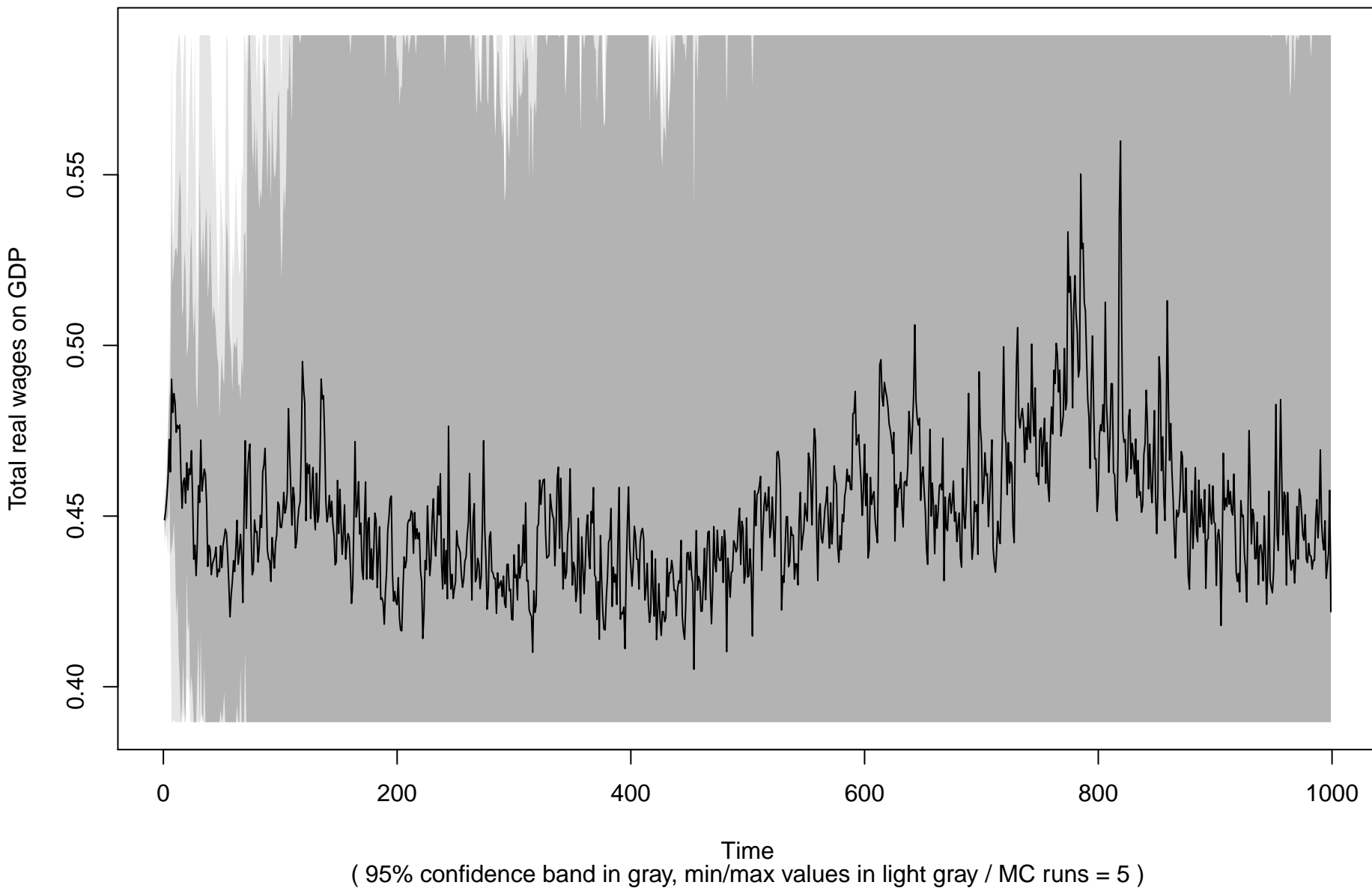
Real wages average (Benchmark)



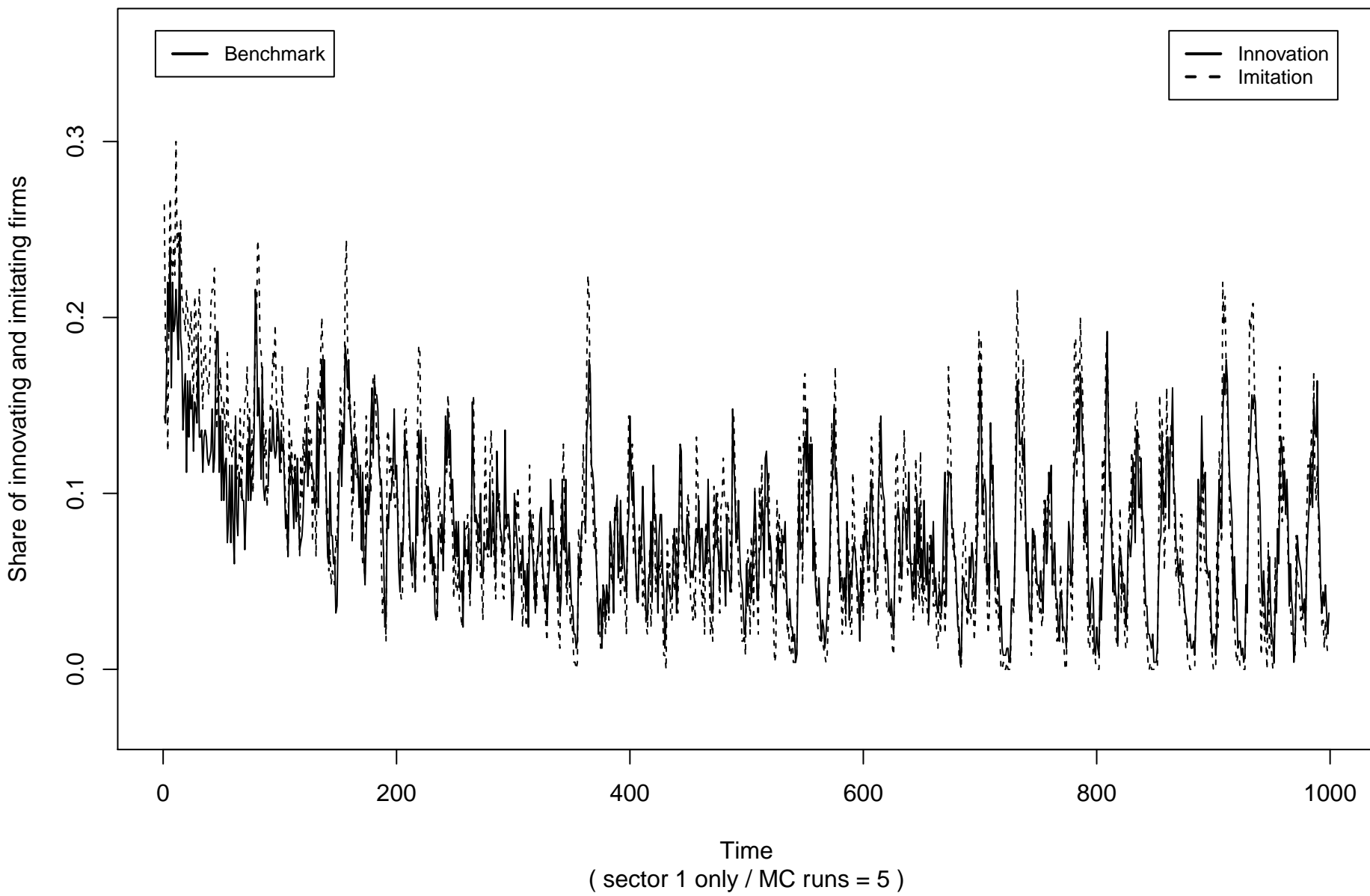
Wage share (all experiments)



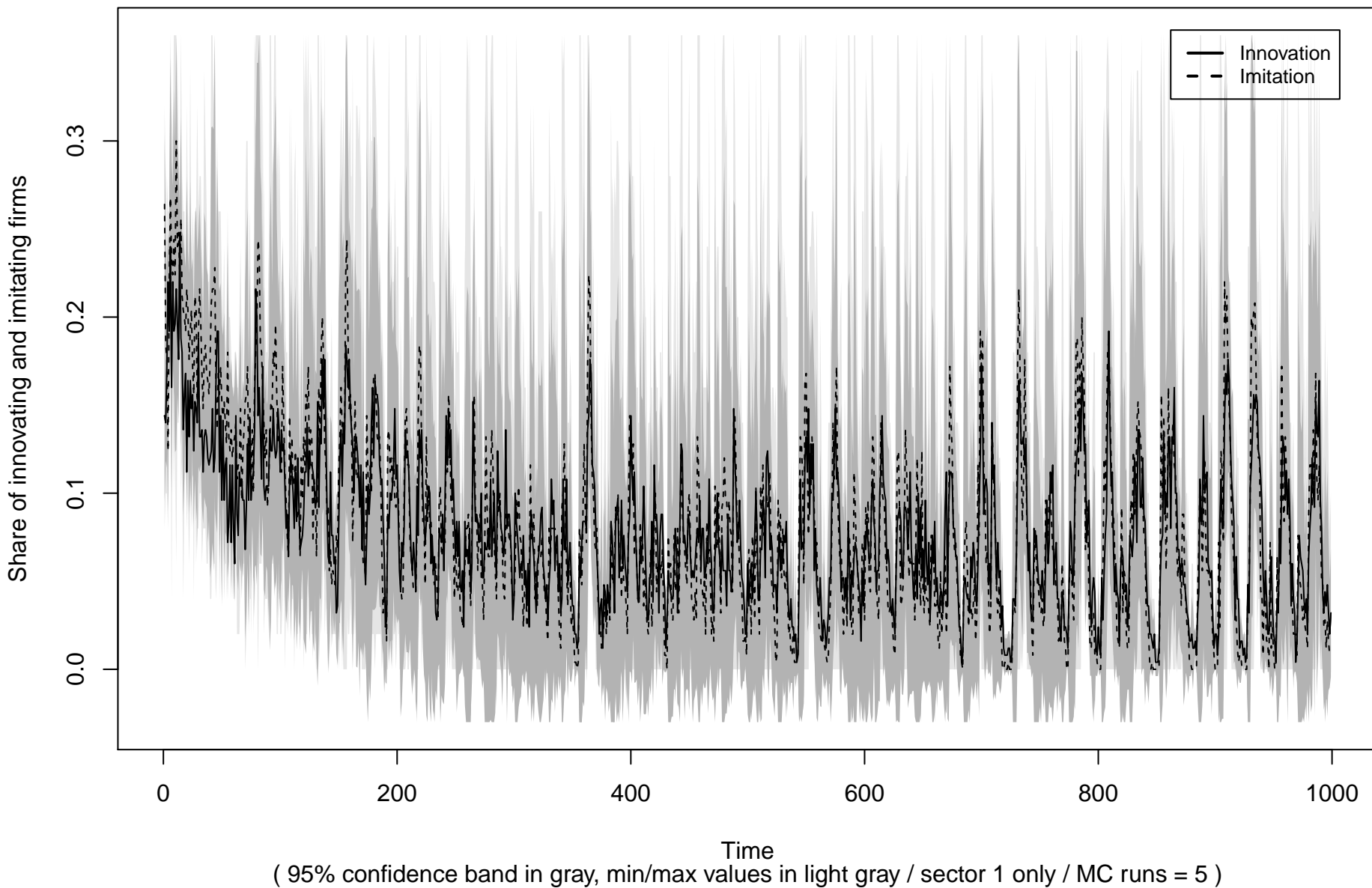
Wage share (Benchmark)



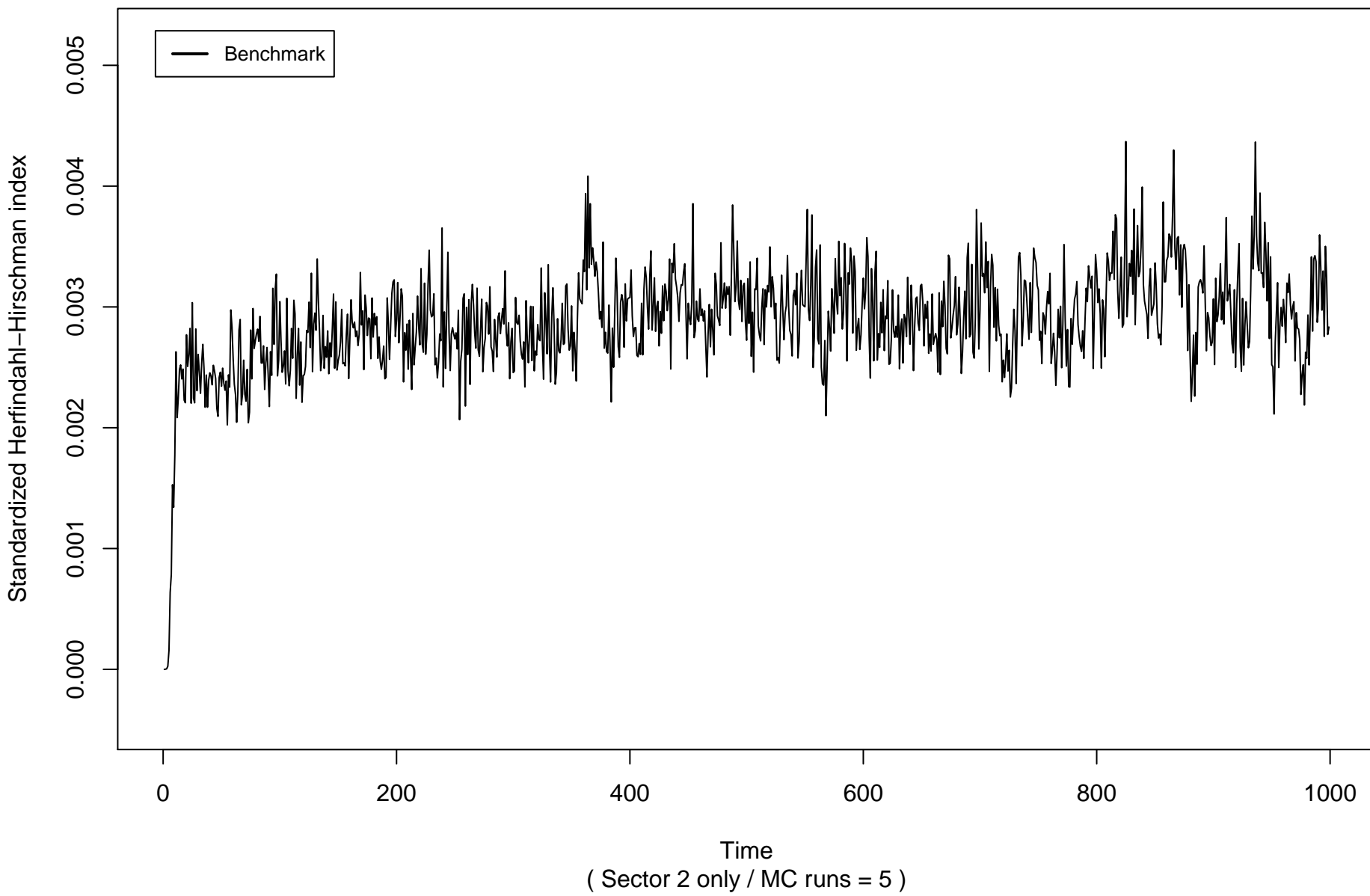
Innovation and imitation (all experiments)



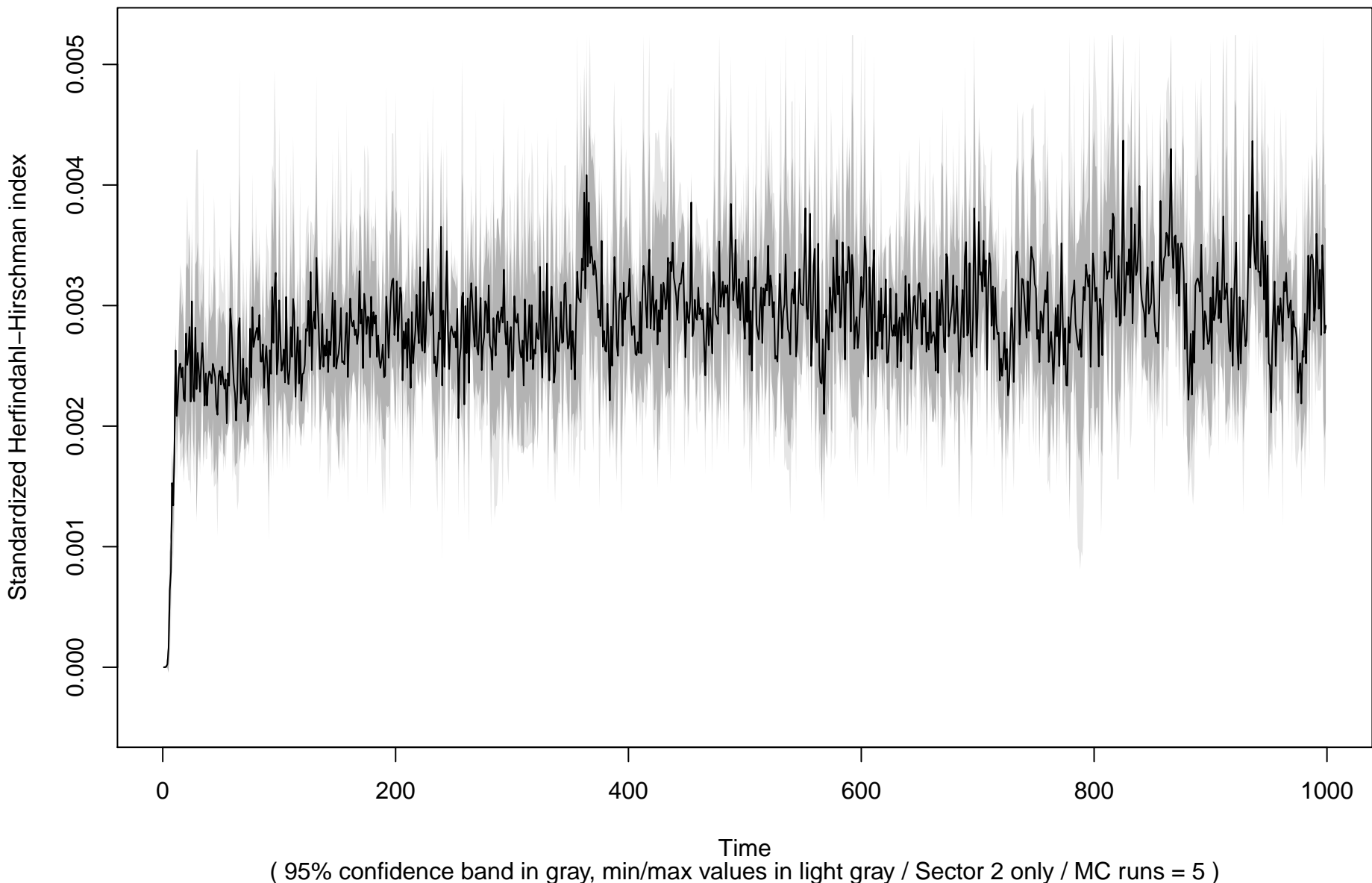
Innovation and imitation (Benchmark)



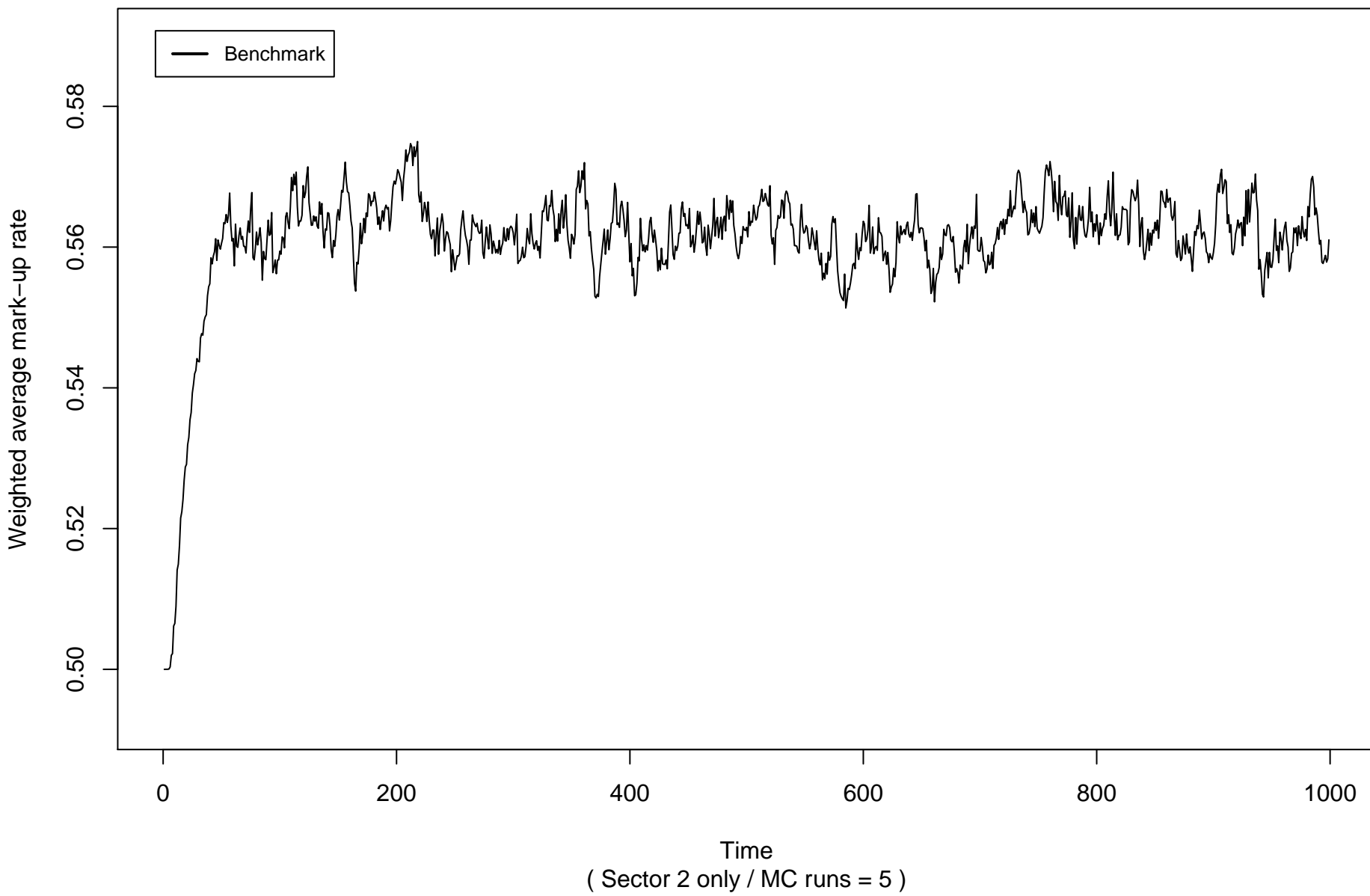
Market concentration (all experiments)



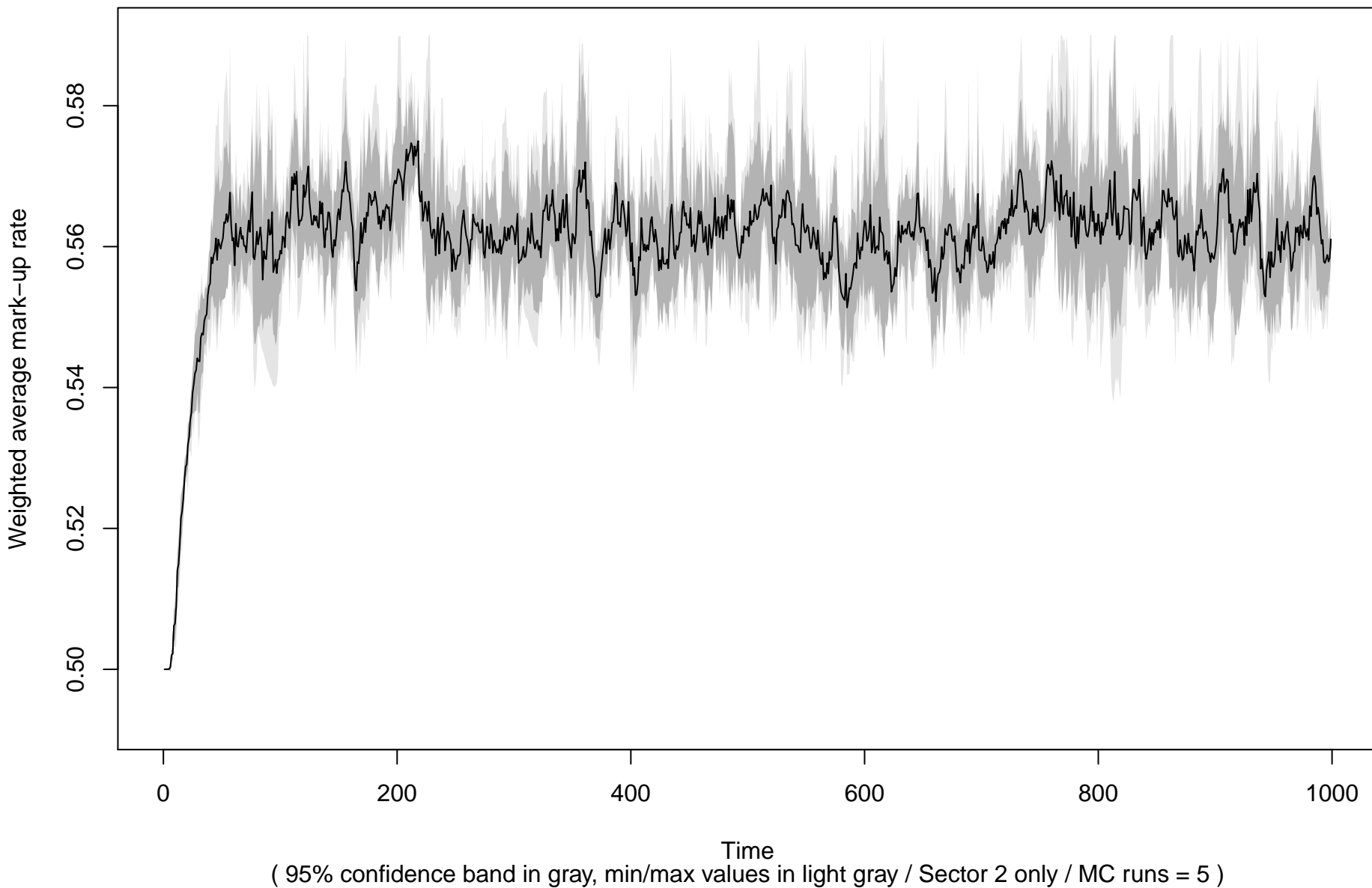
Market concentration (Benchmark)



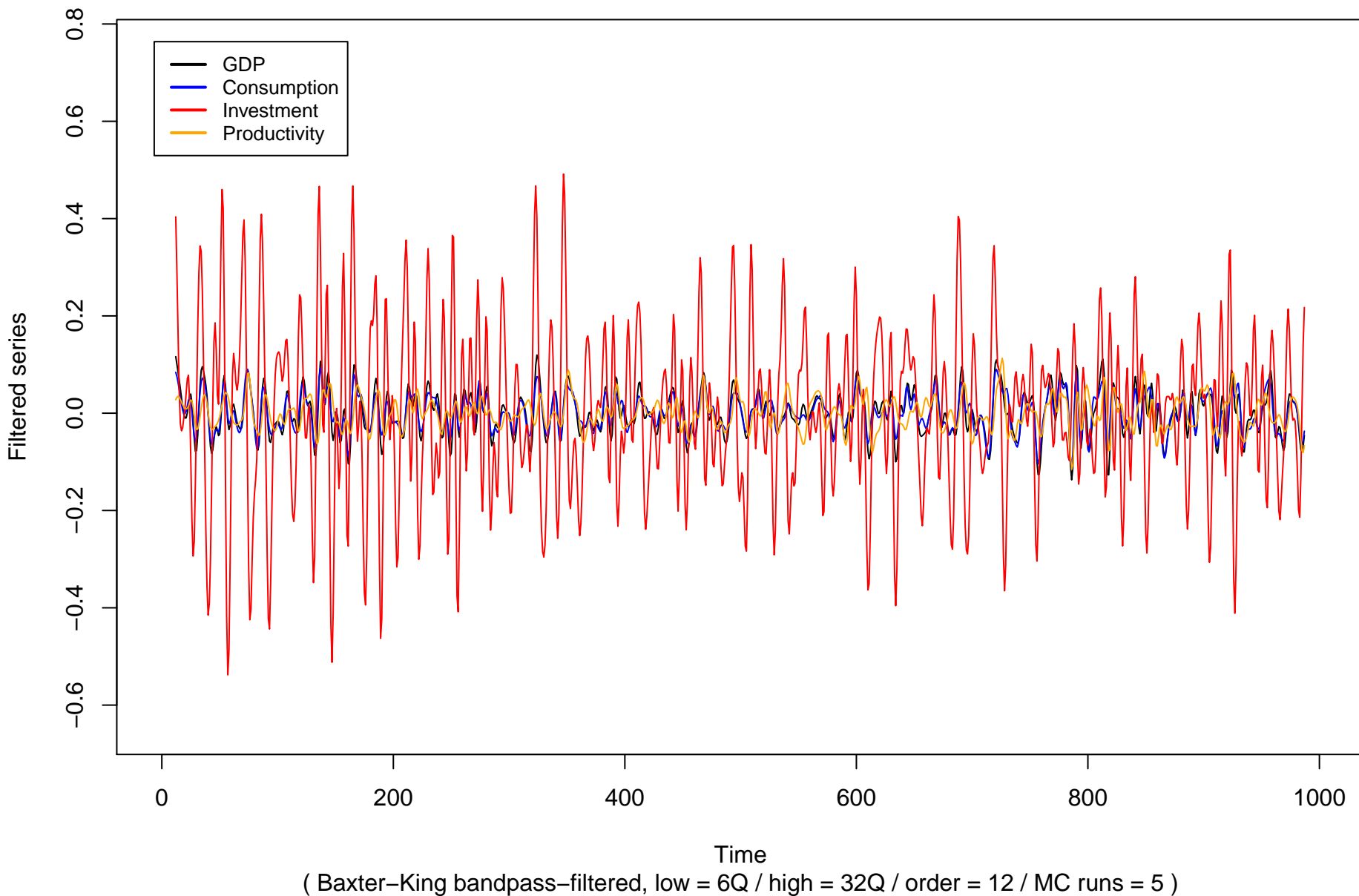
Mark-up average (all experiments)



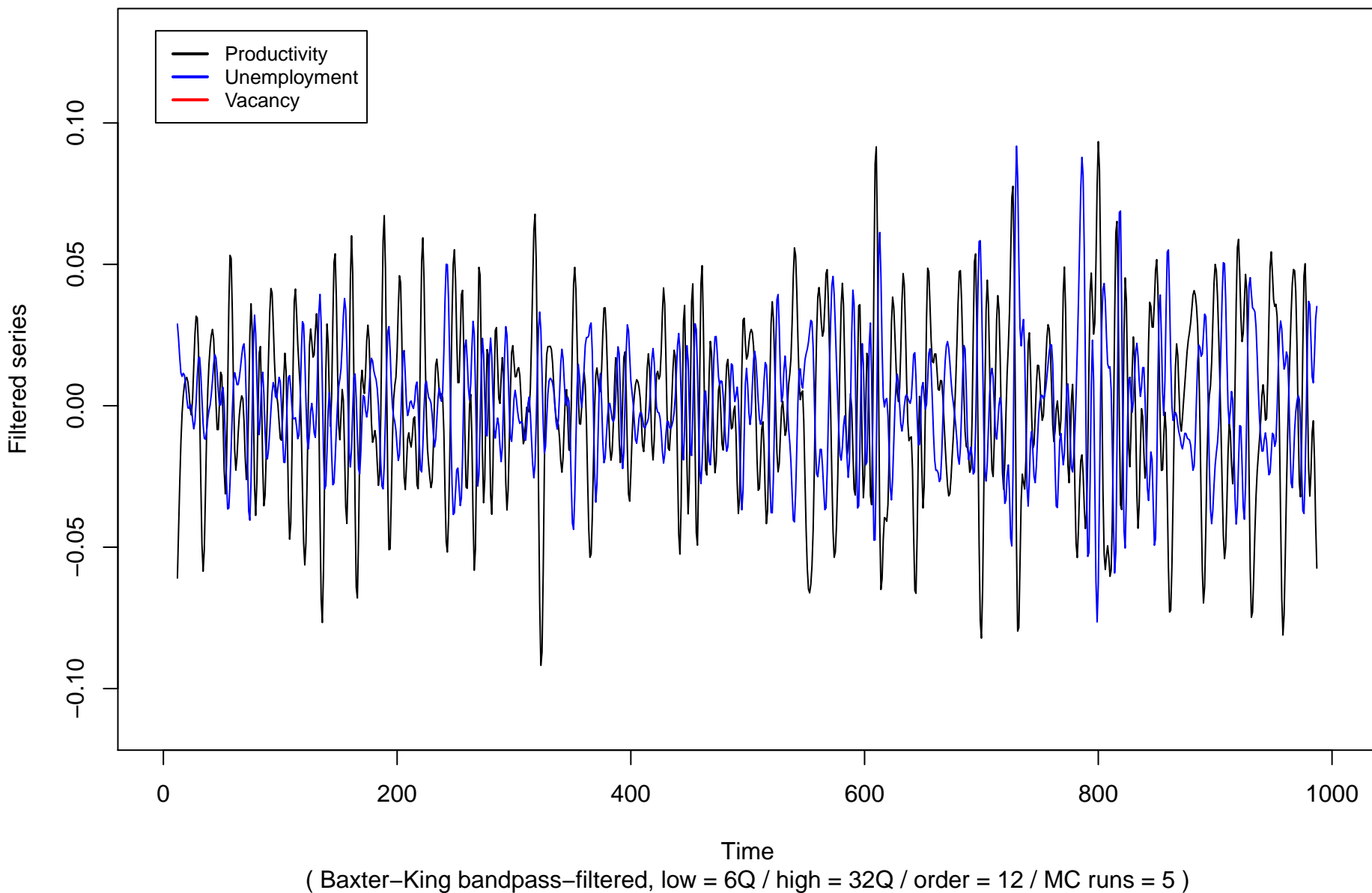
Mark-up average (Benchmark)



GDP cycles (Benchmark)



Shimer puzzle (Benchmark)



Key statistics and unit roots tests for cycles (Benchmark)

| | GDP (output) | Consumption | Investment | Product. | Real wage |
|----------------------------|---------------------|--------------------|-------------------|-----------------|------------------|
| avg. growth rate | 0.01254 | 0.01239 | 0.01363 | 0.01227 | 0.01181 |
| (s.e.) | 0.0004178 | 0.0004388 | 0.000306 | 0.0004373 | 0.000472 |
| ADF test (logs) | -3.002 | -2.849 | -11.24 | -3.107 | -2.792 |
| (s.e.) | 0.2965 | 0.2978 | 0.3838 | 0.2771 | 0.2346 |
| (p-val.) | 0.2148 | 0.2568 | 0.01 | 0.181 | 0.261 |
| (s.e.) | 0.09261 | 0.1046 | 0 | 0.07855 | 0.08706 |
| ADF test (bpf) | -11.88 | -11.12 | -14.48 | -11.66 | -11.31 |
| (s.e.) | 0.1742 | 0.1468 | 0.4027 | 0.3117 | 0.2372 |
| (p-val.) | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| (s.e.) | 0 | 0 | 0 | 0 | 0 |
| s.d. (bpf) | 0.08555 | 0.07121 | 1.648 | 0.06385 | 0.07258 |
| (s.e.) | 0.00221 | 0.001707 | 0.03146 | 0.001207 | 0.002149 |
| relative s.d. (GDP) | 1 | 0.8324 | 19.26 | 0.7464 | 0.8484 |

(bpf: Baxter–King bandpass–filtered series, low = 6Q / high = 32Q / order = 12 / MC runs = 5 / period = 2 – 1000)

(ADF test H0: there are unit roots / non–stationary at 5% level)

Correlation structure for GDP (Benchmark)

| | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 |
|---------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|
| GDP (output) | -0.02465 | 0.2426 | 0.5863 | 0.882 | 1 | 0.882 | 0.5863 | 0.2426 | -0.02465 |
| (s.e.) | 0.009062 | 0.007785 | 0.005042 | 0.001667 | 3.511e-17 | 0.001667 | 0.005042 | 0.007785 | 0.009062 |
| (p-val.) | 0.9927 | 1.022e-05 | 2.564e-08 | 5.124e-11 | NA | 5.124e-11 | 2.564e-08 | 1.022e-05 | 0.9927 |
| Consumption | 0.07335 | 0.2823 | 0.5559 | 0.8096 | 0.9384 | 0.876 | 0.6438 | 0.3318 | 0.04774 |
| (s.e.) | 0.02495 | 0.02706 | 0.02412 | 0.01556 | 0.005219 | 0.005541 | 0.009557 | 0.01035 | 0.01065 |
| (p-val.) | 0.3361 | 0.000619 | 1.679e-05 | 5.612e-07 | 3.772e-09 | 6.441e-09 | 2.181e-07 | 6.424e-06 | 0.8739 |
| Investment | -0.312 | -0.3182 | -0.2404 | -0.09569 | 0.06238 | 0.1752 | 0.2148 | 0.1973 | 0.1653 |
| (s.e.) | 0.03475 | 0.03817 | 0.0486 | 0.05981 | 0.05727 | 0.03629 | 0.01445 | 0.03546 | 0.05034 |
| (p-val.) | 0.0009888 | 0.001282 | 0.01068 | 0.2428 | 0.02288 | 0.01775 | 0.0002261 | 0.009412 | 0.05464 |
| Net investment | -0.249 | -0.2369 | -0.1532 | -0.02181 | 0.1044 | 0.1754 | 0.1775 | 0.1372 | 0.09945 |
| (s.e.) | 0.03427 | 0.03689 | 0.04992 | 0.06534 | 0.066 | 0.0462 | 0.01792 | 0.02741 | 0.04264 |
| (p-val.) | 0.002737 | 0.004515 | 0.07092 | 0.2339 | 0.008311 | 0.03505 | 0.001491 | 0.02586 | 0.2146 |
| Change in inventories | -0.1741 | -0.08084 | 0.07855 | 0.216 | 0.2507 | 0.1654 | 0.02277 | -0.08671 | -0.107 |
| (s.e.) | 0.01326 | 0.01095 | 0.008583 | 0.01527 | 0.02091 | 0.0216 | 0.01782 | 0.01127 | 0.00759 |
| (p-val.) | 0.0005362 | 0.08012 | 0.06287 | 0.0002716 | 0.0004177 | 0.004364 | 0.9578 | 0.04665 | 0.002032 |
| Unemployment rate | 0.2655 | 0.2326 | 0.07337 | -0.1492 | -0.3244 | -0.3622 | -0.2535 | -0.07002 | 0.08647 |
| (s.e.) | 0.03156 | 0.04081 | 0.0492 | 0.05565 | 0.06151 | 0.06598 | 0.06331 | 0.05071 | 0.03237 |
| (p-val.) | 0.001488 | 0.006952 | 0.09822 | 0.05213 | 0.006493 | 0.00521 | 0.01949 | 0.02987 | 0.2457 |
| Productivity | 0.2907 | 0.4671 | 0.6006 | 0.6489 | 0.5978 | 0.4687 | 0.3094 | 0.1629 | 0.04931 |
| (s.e.) | 0.03924 | 0.0333 | 0.02451 | 0.03385 | 0.06037 | 0.08231 | 0.08683 | 0.07138 | 0.04395 |
| (p-val.) | 0.002158 | 0.000131 | 1.268e-05 | 3.247e-05 | 0.0004451 | 0.003904 | 0.0232 | 0.1152 | 0.3497 |
| Mark-up (sector 2) | 0.3121 | 0.2565 | 0.1428 | 0.005262 | -0.1119 | -0.1787 | -0.1937 | -0.179 | -0.1607 |
| (s.e.) | 0.0325 | 0.01974 | 0.02179 | 0.03152 | 0.03438 | 0.02864 | 0.02111 | 0.02145 | 0.02516 |
| (p-val.) | 0.0007664 | 0.0002971 | 0.01033 | 0.6331 | 0.1102 | 0.00758 | 0.00168 | 0.002743 | 0.008596 |
| Total firm debt | 0.06913 | -0.01293 | -0.0757 | -0.1174 | -0.1463 | -0.1729 | -0.2002 | -0.2206 | -0.2222 |
| (s.e.) | 0.05056 | 0.05807 | 0.06707 | 0.07442 | 0.07668 | 0.07236 | 0.06229 | 0.05027 | 0.04264 |
| (p-val.) | 0.1073 | 0.2376 | 0.2267 | 0.1239 | 0.08358 | 0.05911 | 0.04538 | 0.01718 | 0.009918 |
| Liquidity-to-sales ratio | 0.01752 | -0.1652 | -0.3997 | -0.6208 | -0.7456 | -0.7159 | -0.5476 | -0.31 | -0.08945 |
| (s.e.) | 0.03026 | 0.02372 | 0.02351 | 0.02209 | 0.0173 | 0.01631 | 0.02079 | 0.0245 | 0.02576 |
| (p-val.) | 0.6561 | 0.006065 | 6.822e-05 | 7.253e-06 | 1.225e-06 | 1.156e-06 | 9.945e-06 | 0.000268 | 0.1732 |
| Bankruptcy rate | 0.2326 | 0.2078 | 0.128 | 0.03743 | -0.01736 | -0.02366 | -0.0097 | -0.02069 | -0.07605 |
| (s.e.) | 0.04456 | 0.05162 | 0.06086 | 0.06422 | 0.06309 | 0.06124 | 0.05737 | 0.04948 | 0.03802 |
| (p-val.) | 0.00931 | 0.02379 | 0.1695 | 0.2029 | 0.1457 | 0.2154 | 0.2755 | 0.3178 | 0.2003 |

(non-rate/ratio series are Baxter-King bandpass-filtered, low = 6Q / high = 32Q / order = 12 / MC runs = 5 / period = 2 – 1000)

(test H0: lag coefficient is not significant at 5% level)

Correlation structure for GDP (Benchmark)

| | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 |
|--------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|
| GDP (output) | -0.02465 | 0.2426 | 0.5863 | 0.882 | 1 | 0.882 | 0.5863 | 0.2426 | -0.02465 |
| (s.e.) | 0.009062 | 0.007785 | 0.005042 | 0.001667 | 3.511e-17 | 0.001667 | 0.005042 | 0.007785 | 0.009062 |
| (p-val.) | 0.9927 | 1.022e-05 | 2.564e-08 | 5.124e-11 | NA | 5.124e-11 | 2.564e-08 | 1.022e-05 | 0.9927 |
| Consumption | 0.07335 | 0.2823 | 0.5559 | 0.8096 | 0.9384 | 0.876 | 0.6438 | 0.3318 | 0.04774 |
| (s.e.) | 0.02495 | 0.02706 | 0.02412 | 0.01556 | 0.005219 | 0.005541 | 0.009557 | 0.01035 | 0.01065 |
| (p-val.) | 0.3361 | 0.000619 | 1.679e-05 | 5.612e-07 | 3.772e-09 | 6.441e-09 | 2.181e-07 | 6.424e-06 | 0.8739 |
| Investment | -0.312 | -0.3182 | -0.2404 | -0.09569 | 0.06238 | 0.1752 | 0.2148 | 0.1973 | 0.1653 |
| (s.e.) | 0.03475 | 0.03817 | 0.0486 | 0.05981 | 0.05727 | 0.03629 | 0.01445 | 0.03546 | 0.05034 |
| (p-val.) | 0.0009888 | 0.001282 | 0.01068 | 0.2428 | 0.02288 | 0.01775 | 0.0002261 | 0.009412 | 0.05464 |
| Productivity | 0.2907 | 0.4671 | 0.6006 | 0.6489 | 0.5978 | 0.4687 | 0.3094 | 0.1629 | 0.04931 |
| (s.e.) | 0.03924 | 0.0333 | 0.02451 | 0.03385 | 0.06037 | 0.08231 | 0.08683 | 0.07138 | 0.04395 |
| (p-val.) | 0.002158 | 0.000131 | 1.268e-05 | 3.247e-05 | 0.0004451 | 0.003904 | 0.0232 | 0.1152 | 0.3497 |
| Entry | -0.05109 | 0.09149 | 0.2085 | 0.2775 | 0.2988 | 0.2883 | 0.2656 | 0.2386 | 0.2043 |
| (s.e.) | 0.04582 | 0.04108 | 0.02214 | 0.01172 | 0.04233 | 0.0611 | 0.06058 | 0.04458 | 0.02581 |
| (p-val.) | 0.4678 | 0.009945 | 0.001351 | 2.569e-05 | 0.002502 | 0.01038 | 0.01415 | 0.008321 | 0.002637 |
| Wage | 0.2771 | 0.4444 | 0.581 | 0.6552 | 0.6488 | 0.5647 | 0.4263 | 0.2648 | 0.1074 |
| (s.e.) | 0.0187 | 0.0156 | 0.02711 | 0.04099 | 0.04889 | 0.04755 | 0.03764 | 0.02548 | 0.022 |
| (p-val.) | 0.0001632 | 8.21e-06 | 2.193e-05 | 6.626e-05 | 0.0001381 | 0.0002264 | 0.0003189 | 0.0006752 | 0.05395 |
| Unemployment rate | 0.2655 | 0.2326 | 0.07337 | -0.1492 | -0.3244 | -0.3622 | -0.2535 | -0.07002 | 0.08647 |
| (s.e.) | 0.03156 | 0.04081 | 0.0492 | 0.05565 | 0.06151 | 0.06598 | 0.06331 | 0.05071 | 0.03237 |
| (p-val.) | 0.001488 | 0.006952 | 0.09822 | 0.05213 | 0.006493 | 0.00521 | 0.01949 | 0.02987 | 0.2457 |
| Vacancy rate | 0.1013 | -0.07643 | -0.2079 | -0.2367 | -0.1689 | -0.0685 | -0.009867 | -0.02758 | -0.09777 |
| (s.e.) | 0.03206 | 0.02578 | 0.02467 | 0.03605 | 0.05289 | 0.069 | 0.07777 | 0.07387 | 0.05753 |
| (p-val.) | 0.1435 | 0.3025 | 0.002047 | 0.004181 | 0.0566 | 0.291 | 0.1654 | 0.2019 | 0.2279 |

(non-rate/ratio series are Baxter–King bandpass-filtered, low = 6Q / high = 32Q / order = 12 / MC runs = 5 / period = 2 – 1000)
(test H0: lag coefficient is not significant at 5% level)

Stationarity, i.i.d. and ergodicity tests (Benchmark)

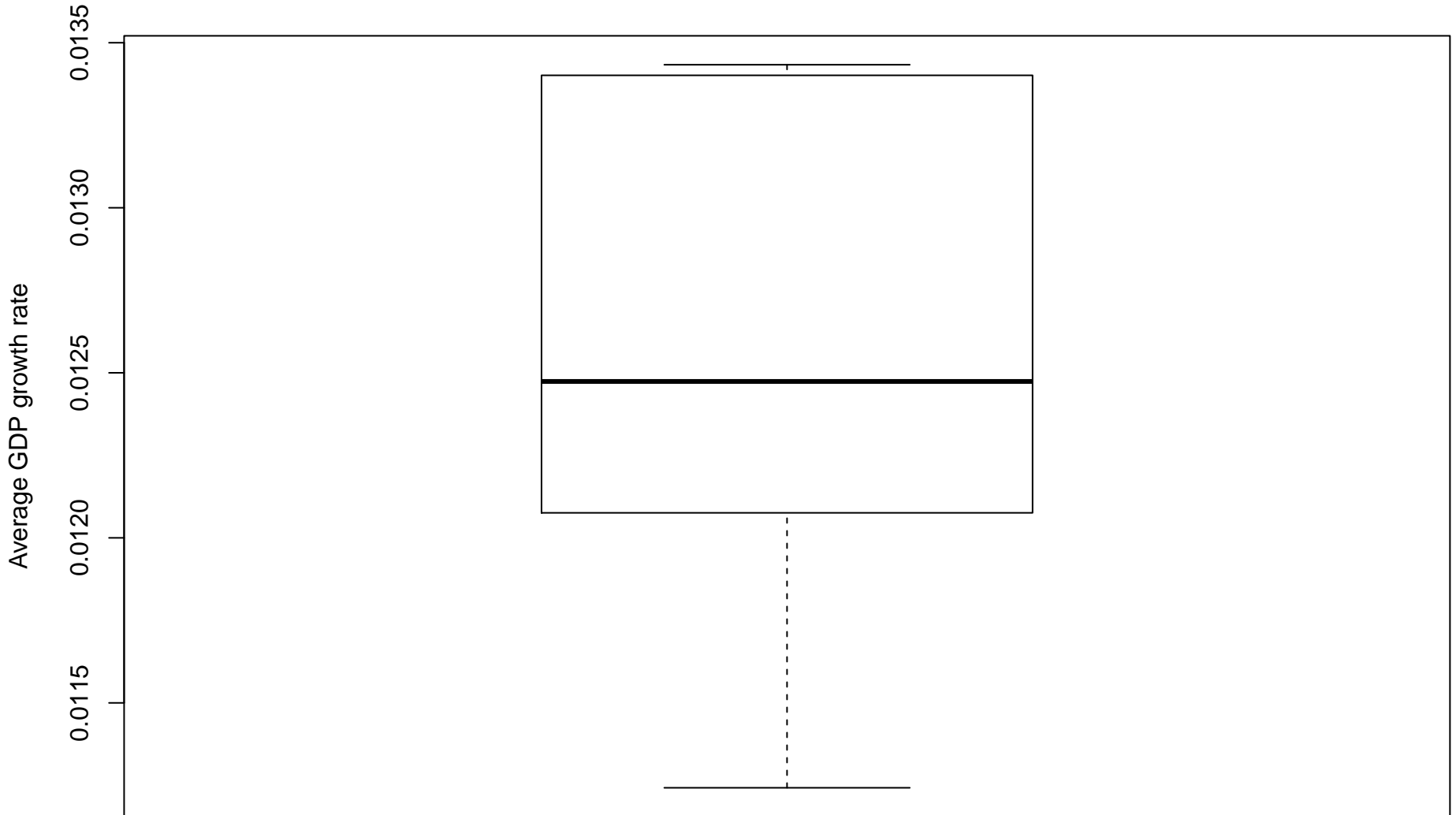
| | avg.ADF | rej.ADF | avg.PP | rej.PP | avg.KPSS | rej.KPSS | avg.BDS | rej.BDS | avg.KS | rej.KS | AD | V |
|--------|---------|---------|--------|--------|----------|----------|---------|---------|--------|--------|------|---|
| dGDP | 0.01 | 1.00 | 0.01 | 1.00 | 0.10 | 0.00 | 0.12 | 0.40 | 0.73 | 0.00 | 0.96 | C |
| dA | 0.01 | 1.00 | 0.01 | 1.00 | 0.09 | 0.00 | 0.00 | 1.00 | 0.32 | 0.40 | 0.00 | C |
| dw | 0.01 | 1.00 | 0.01 | 1.00 | 0.09 | 0.00 | 0.00 | 1.00 | 0.31 | 0.40 | 0.00 | C |
| V | 0.01 | 1.00 | 0.01 | 1.00 | 0.01 | 1.00 | 0.00 | 1.00 | 0.23 | 0.70 | 0.00 | C |
| U | 0.01 | 1.00 | 0.01 | 1.00 | 0.01 | 1.00 | 0.00 | 1.00 | 0.09 | 0.70 | 0.00 | C |
| mu2avg | 0.01 | 1.00 | 0.01 | 1.00 | 0.05 | 0.60 | 0.00 | 1.00 | 0.05 | 0.80 | 0.00 | C |
| HH1 | 0.01 | 1.00 | 0.01 | 1.00 | 0.10 | 0.00 | 0.00 | 1.00 | 0.15 | 0.40 | 0.00 | C |
| HH2 | 0.01 | 1.00 | 0.01 | 1.00 | 0.01 | 1.00 | 0.00 | 1.00 | 0.28 | 0.40 | 0.01 | C |

(average p-values for testing H0 and rate of rejection of H0 / MC runs = 5 / period = 2 – 1000)

(ADF/PP H0: non-stationary, KPSS H0: stationary, BDS H0: i.i.d., KS/AD/WW H0: ergodic)

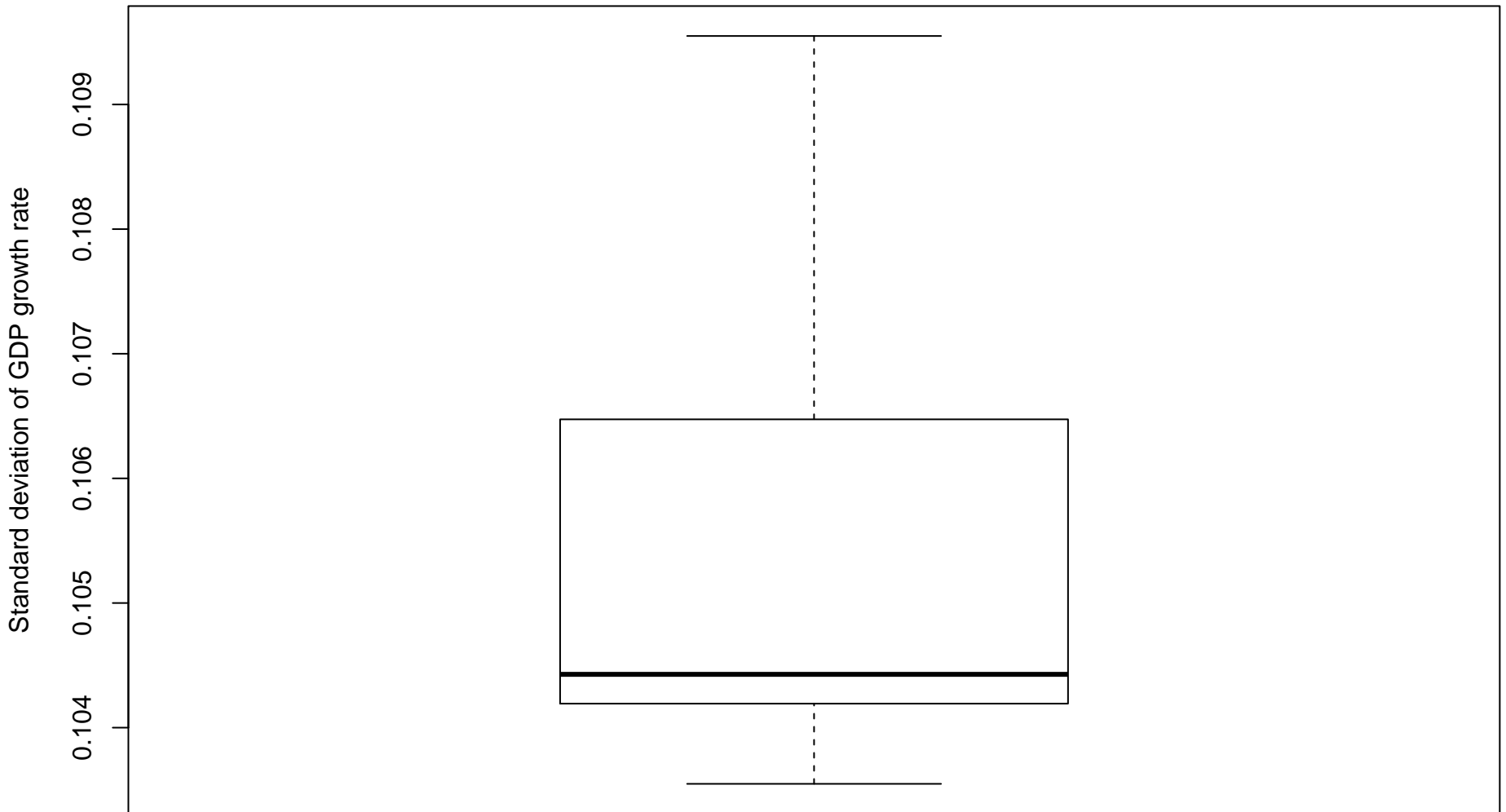
(significance = 0.05)

GDP growth



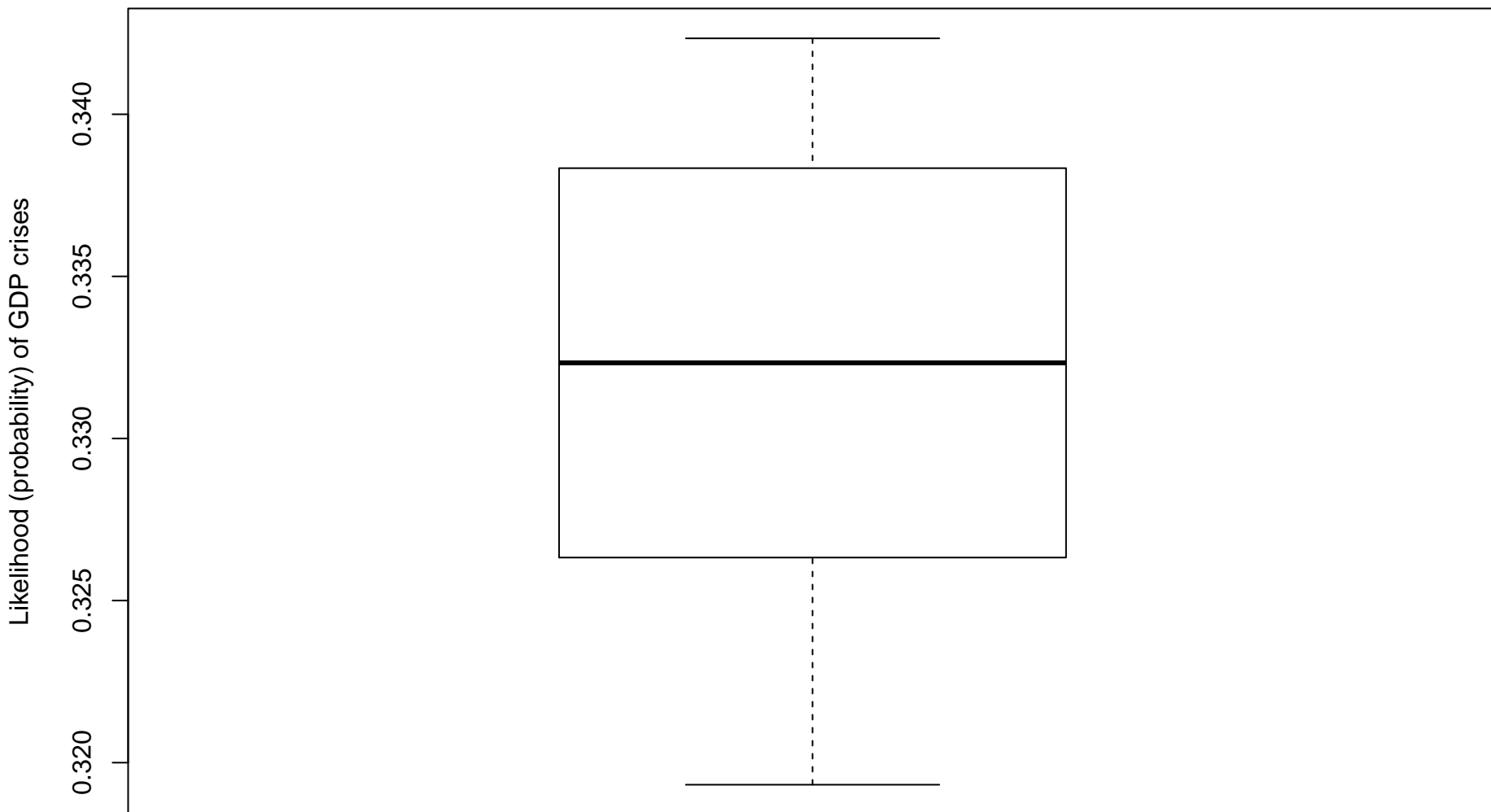
(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 2 – 1000)

Volatility of GDP growth



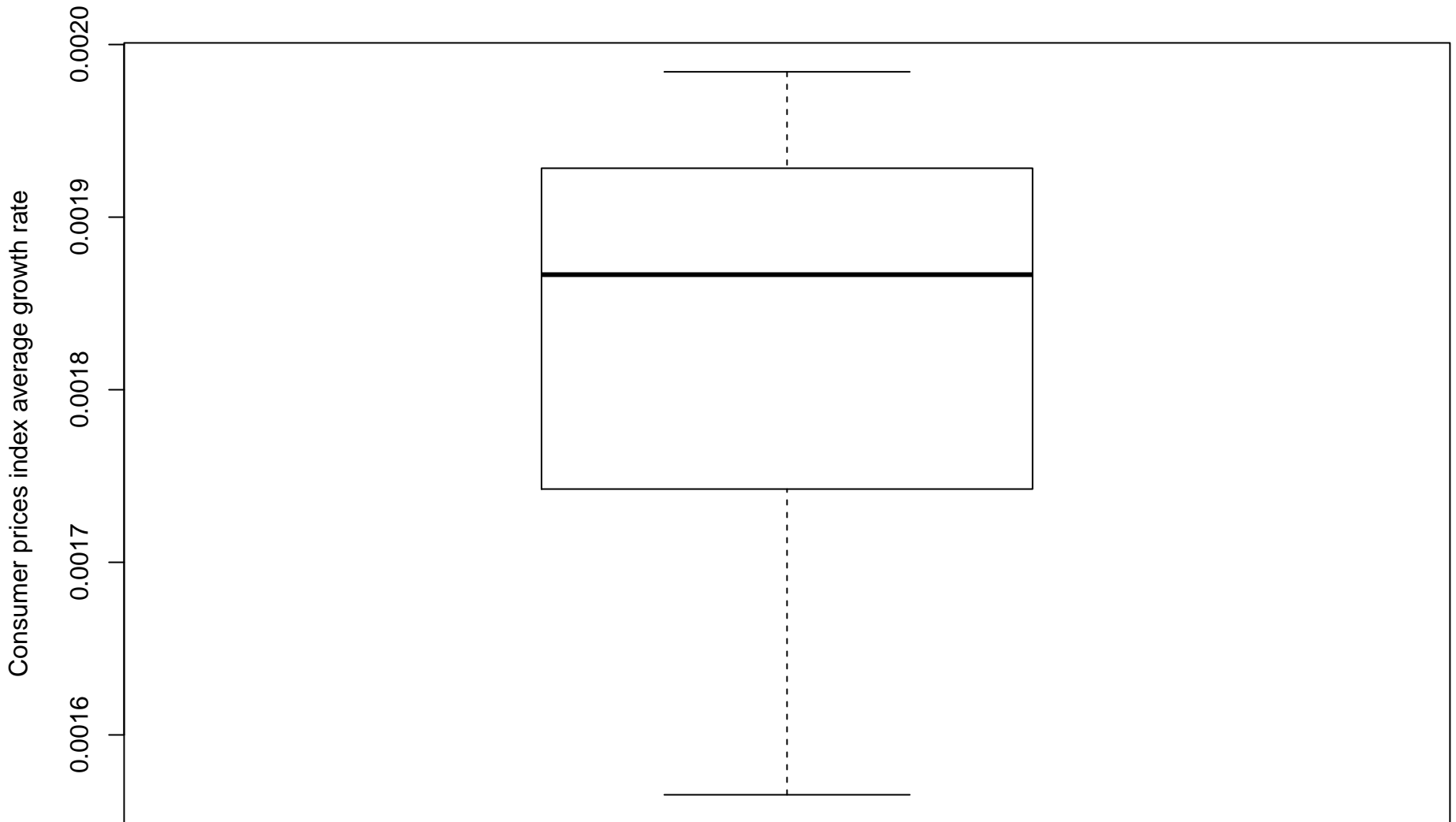
(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 2 – 1000)

Likelihood of GDP crises



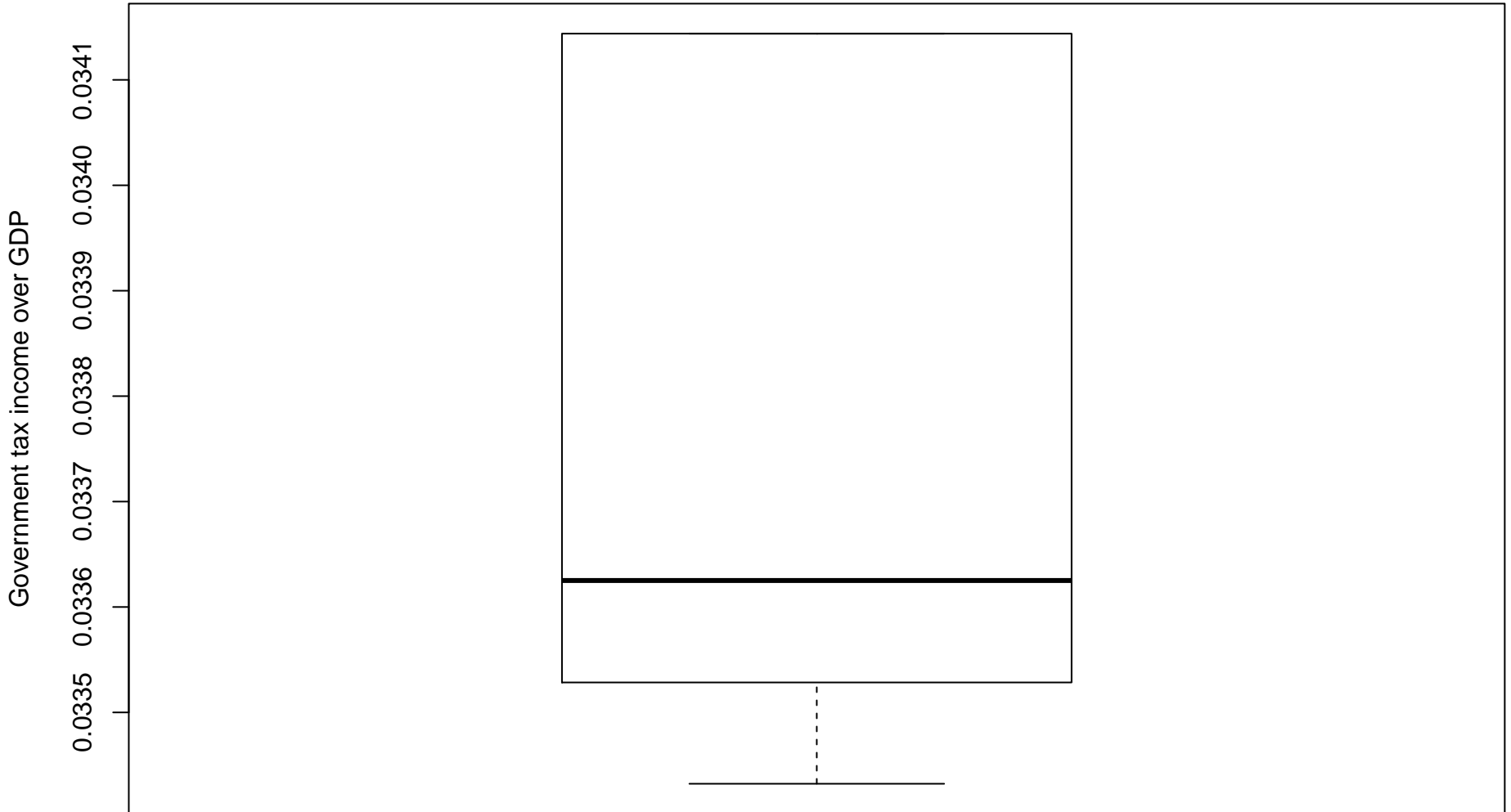
(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 2 – 1000)

Inflation



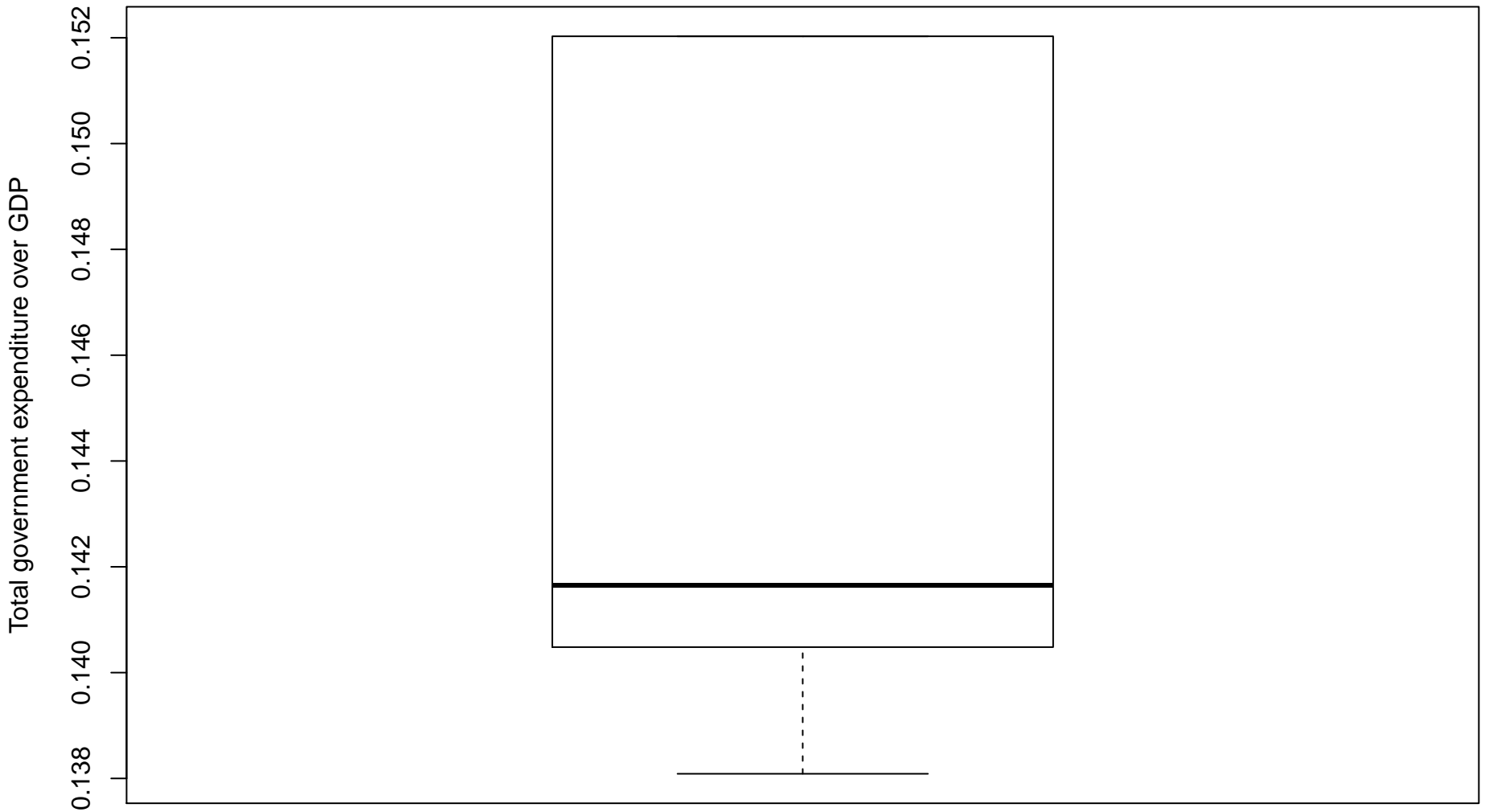
(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 2 – 1000)

Tax



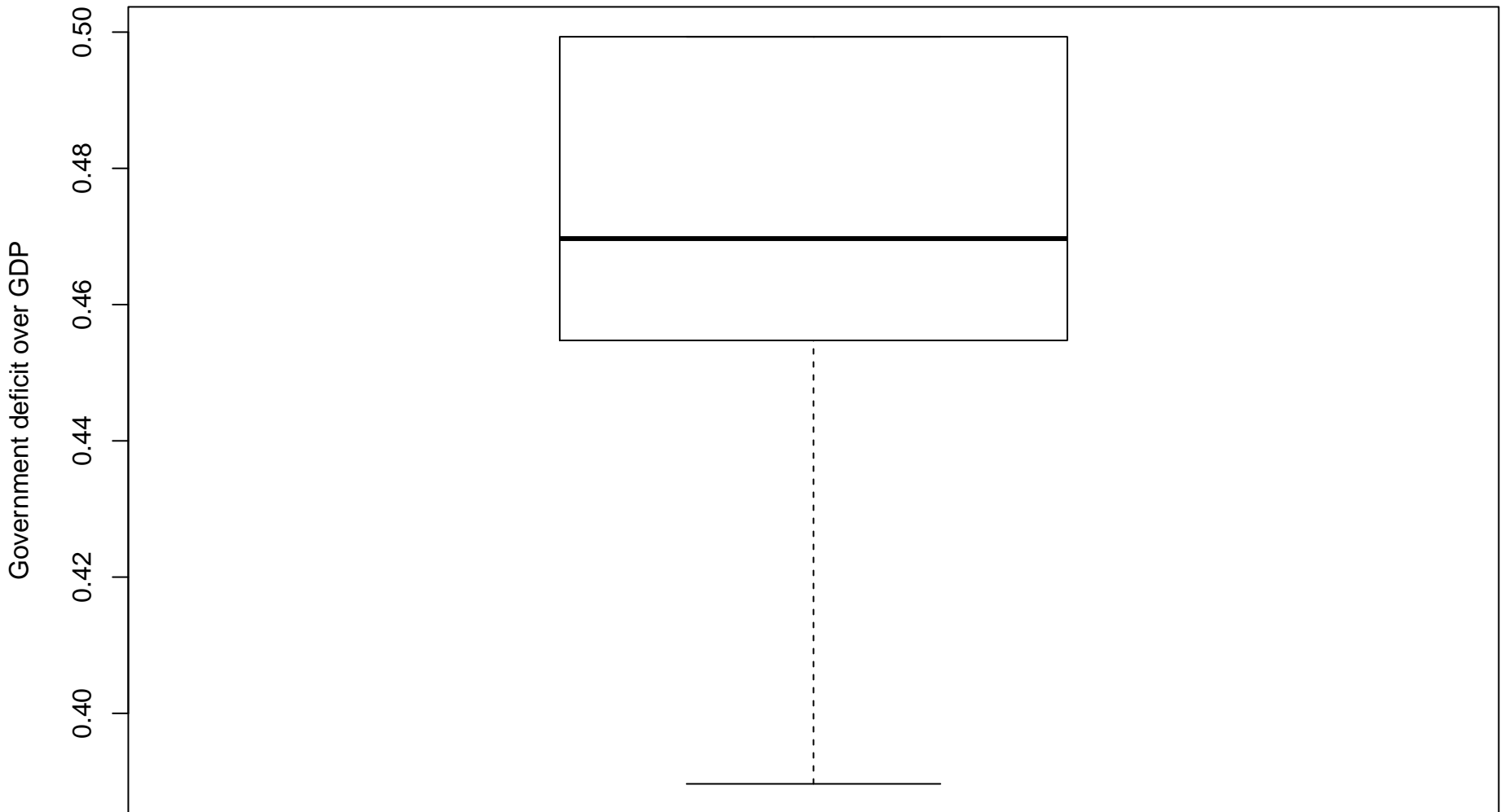
(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 2 – 1000)

Government total expenditure



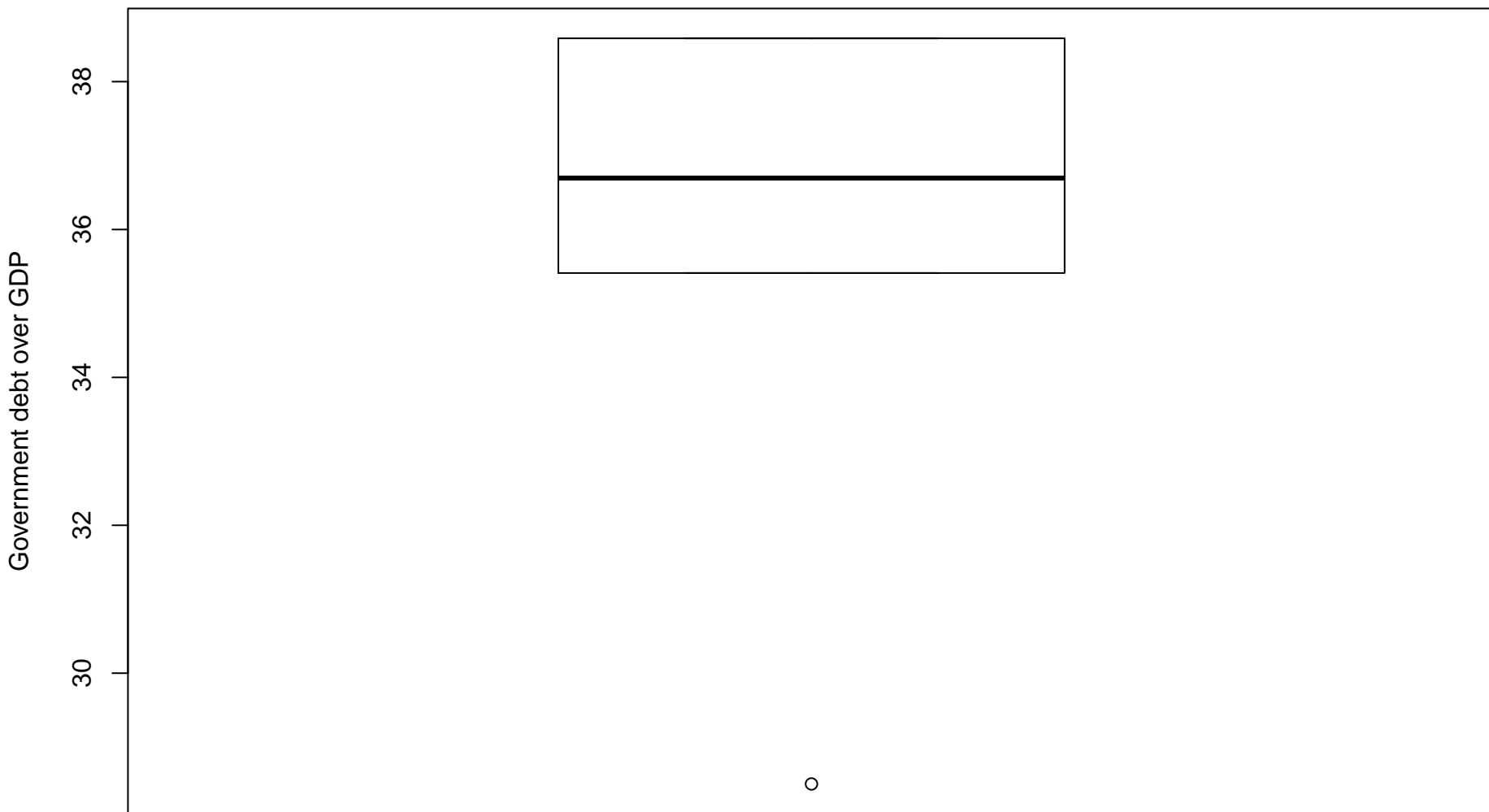
(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 2 – 1000)

Government deficit



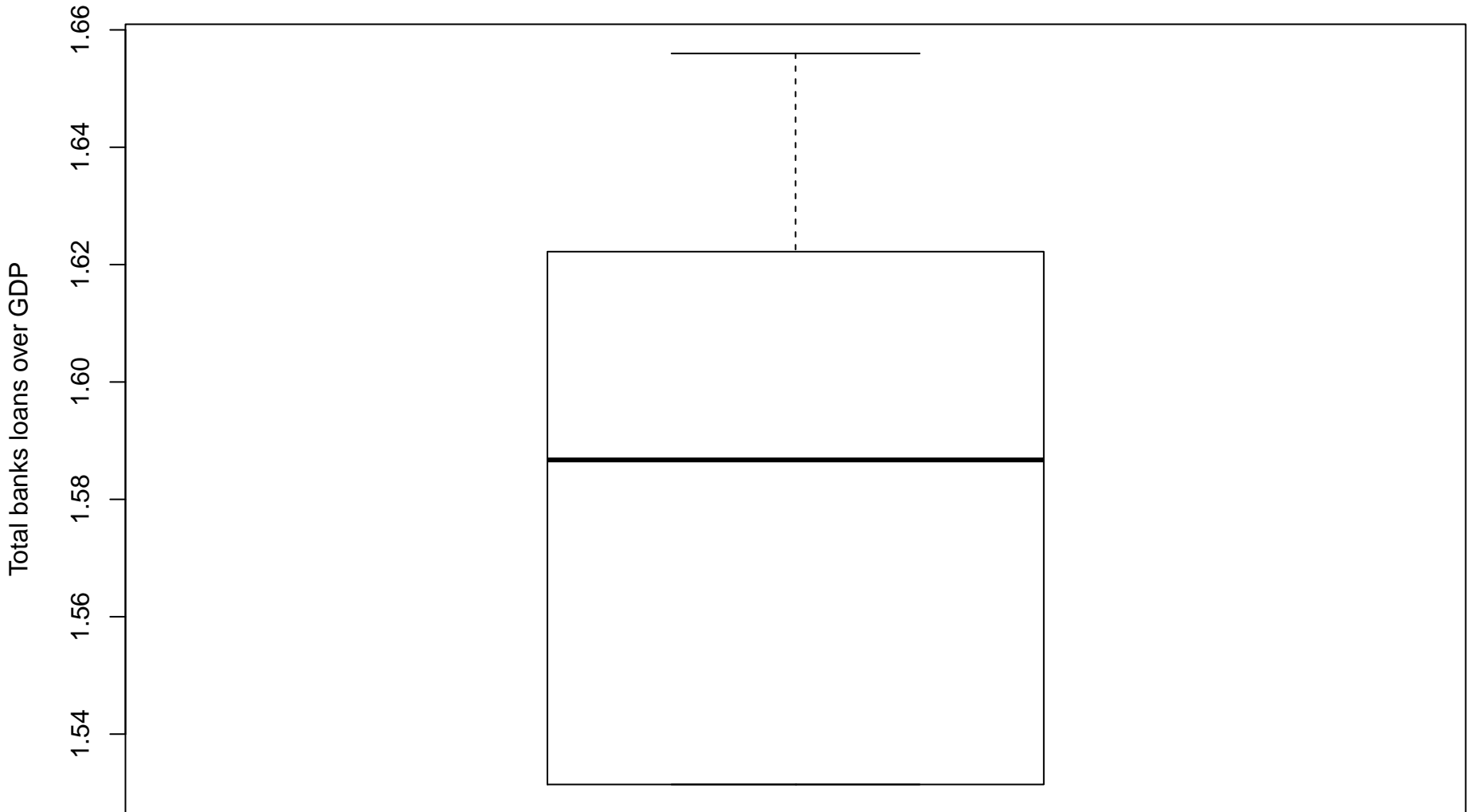
(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 2 – 1000)

Government debt



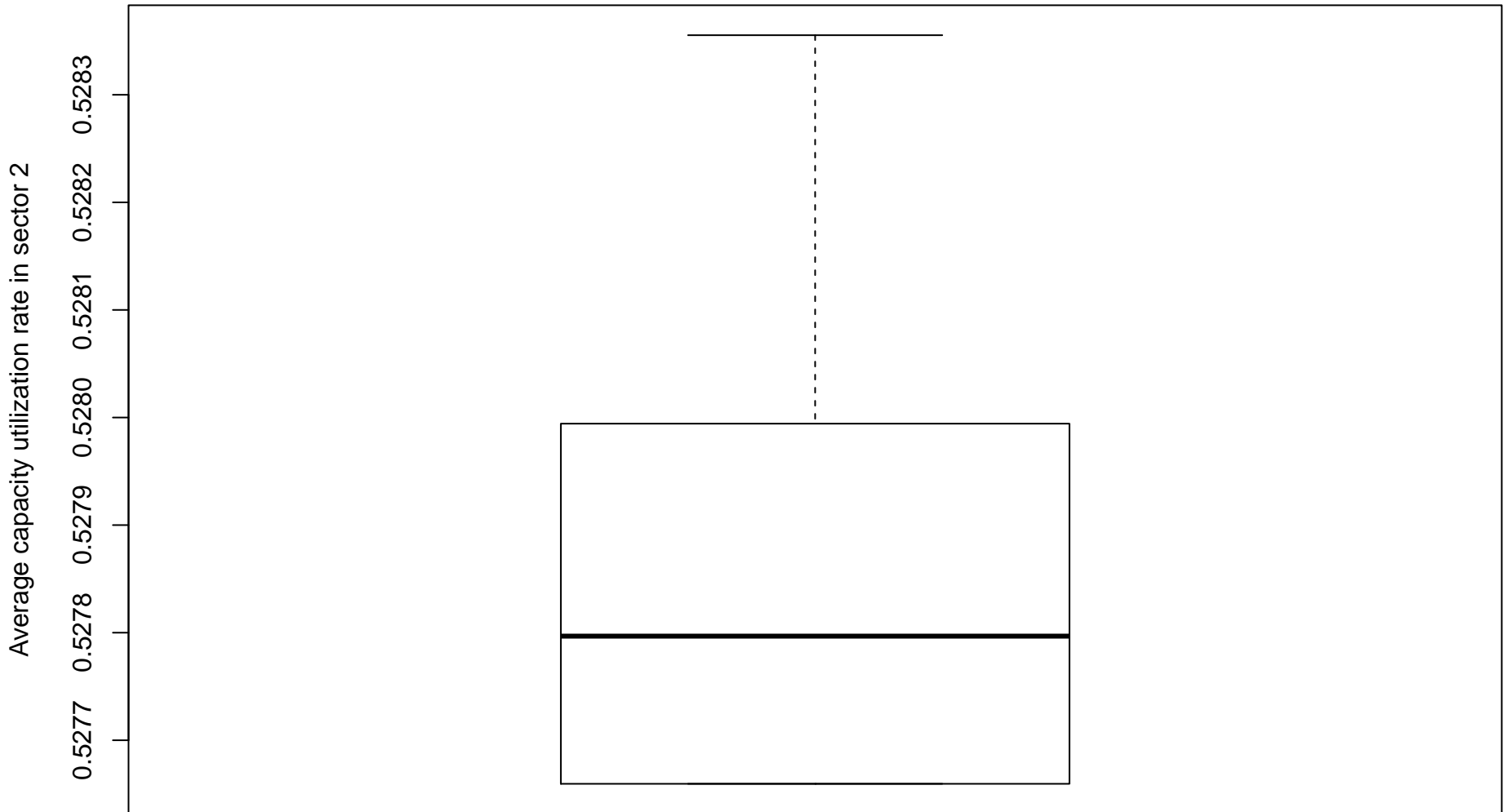
(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 2 – 1000)

Loans



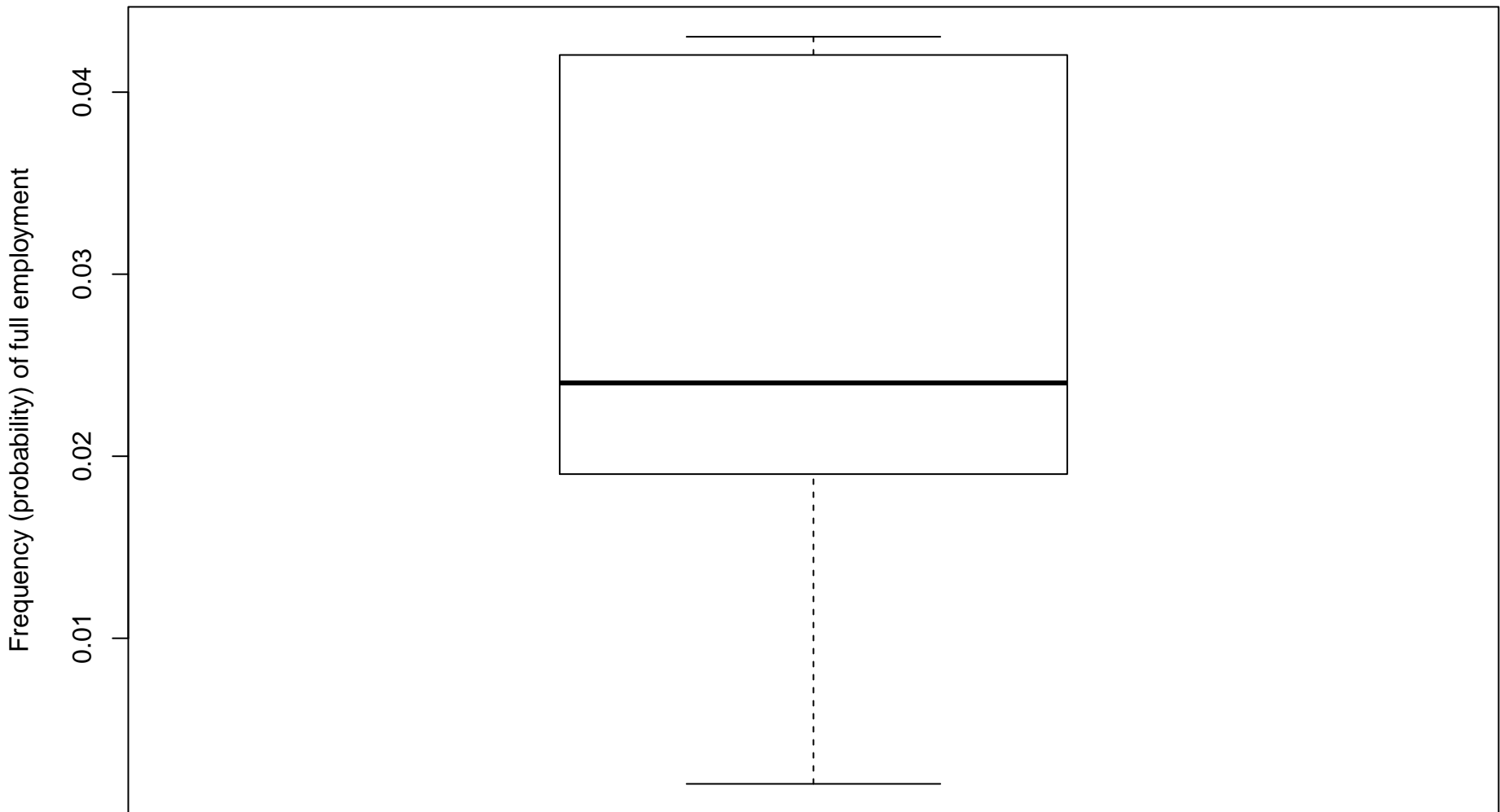
(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 2 – 1000)

Capacity utilization



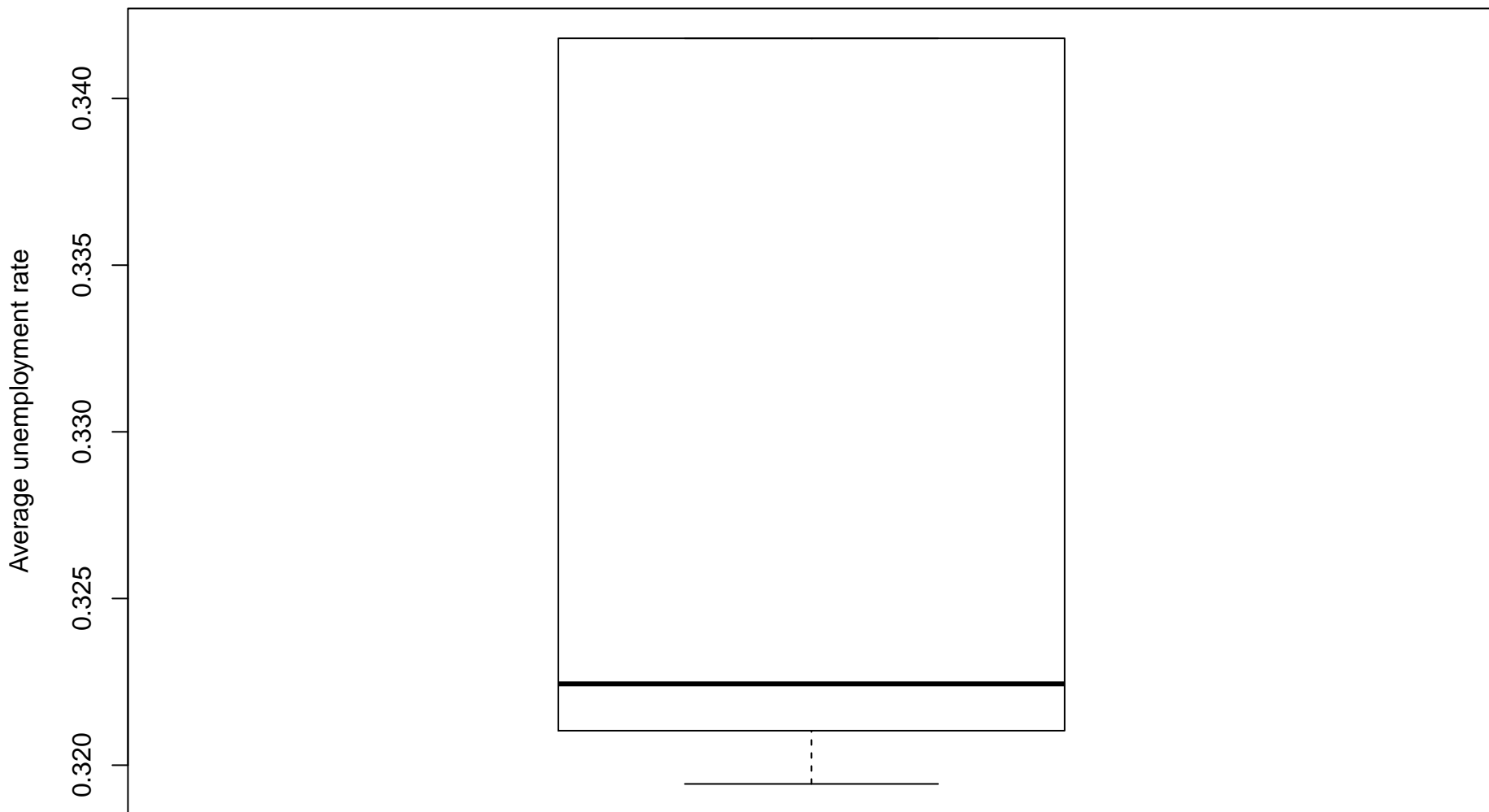
(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 2 – 1000)

Full employment frequency



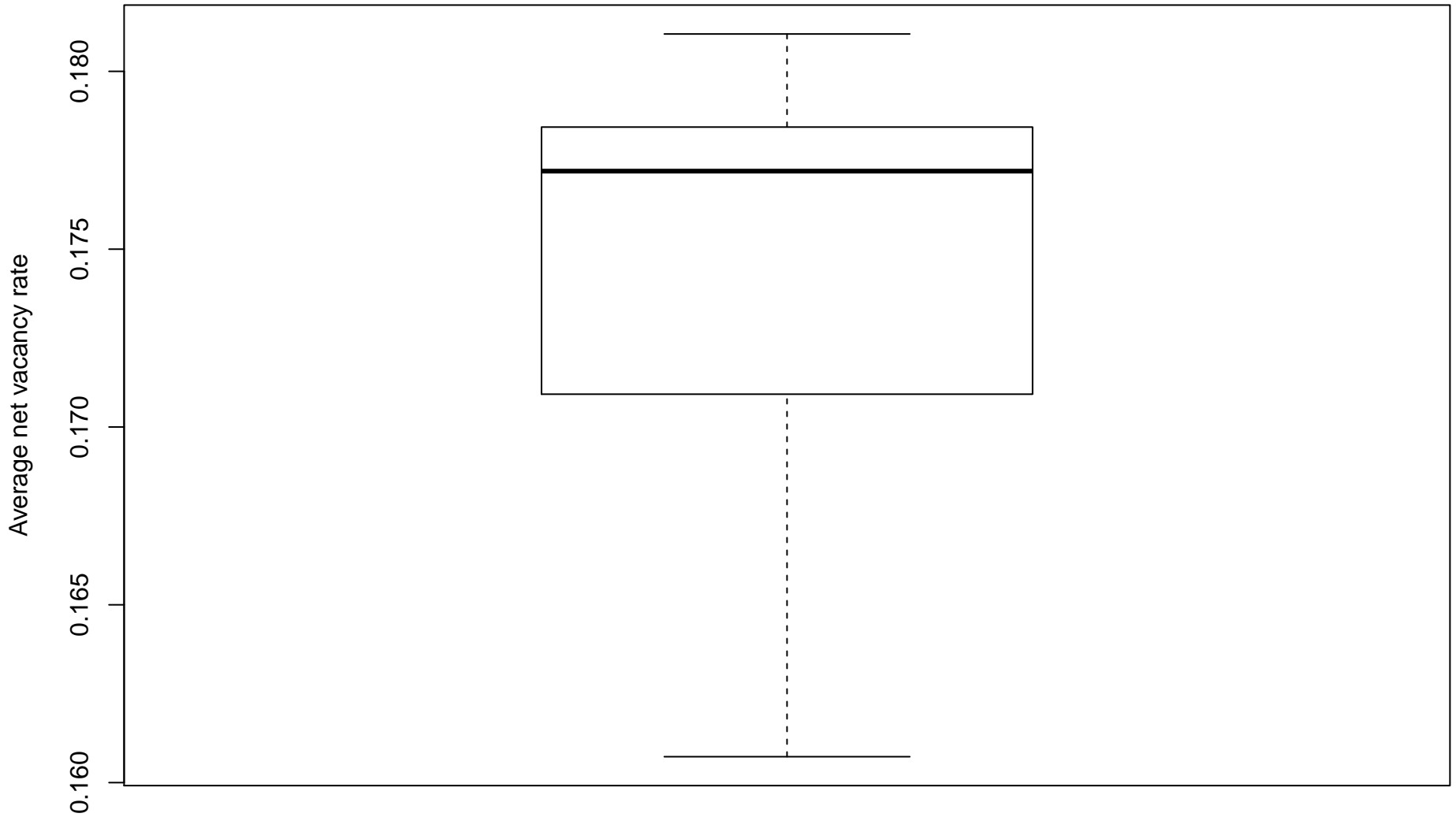
(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 2 – 1000)

Unemployment



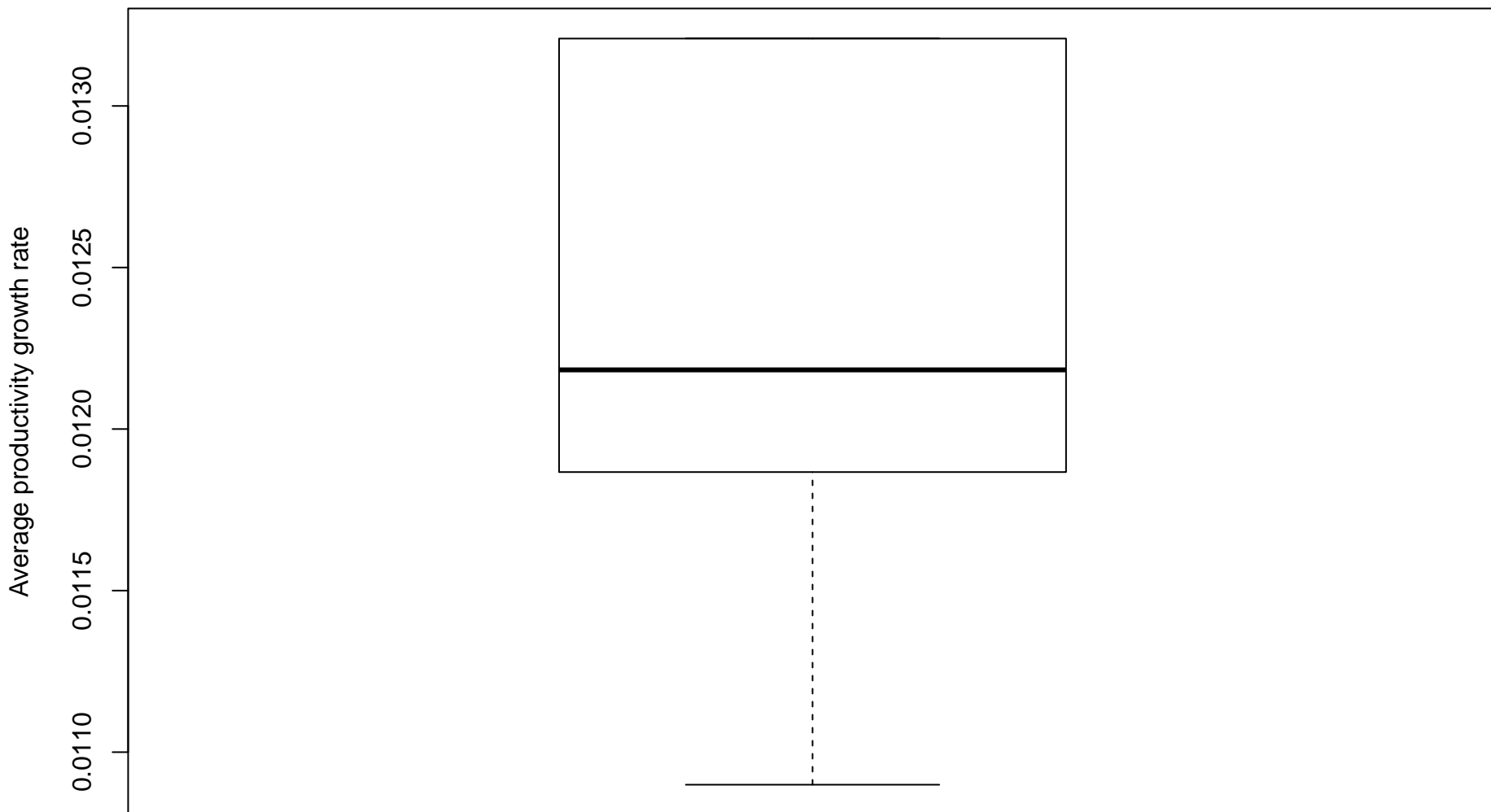
(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 2 – 1000)

Vacancy



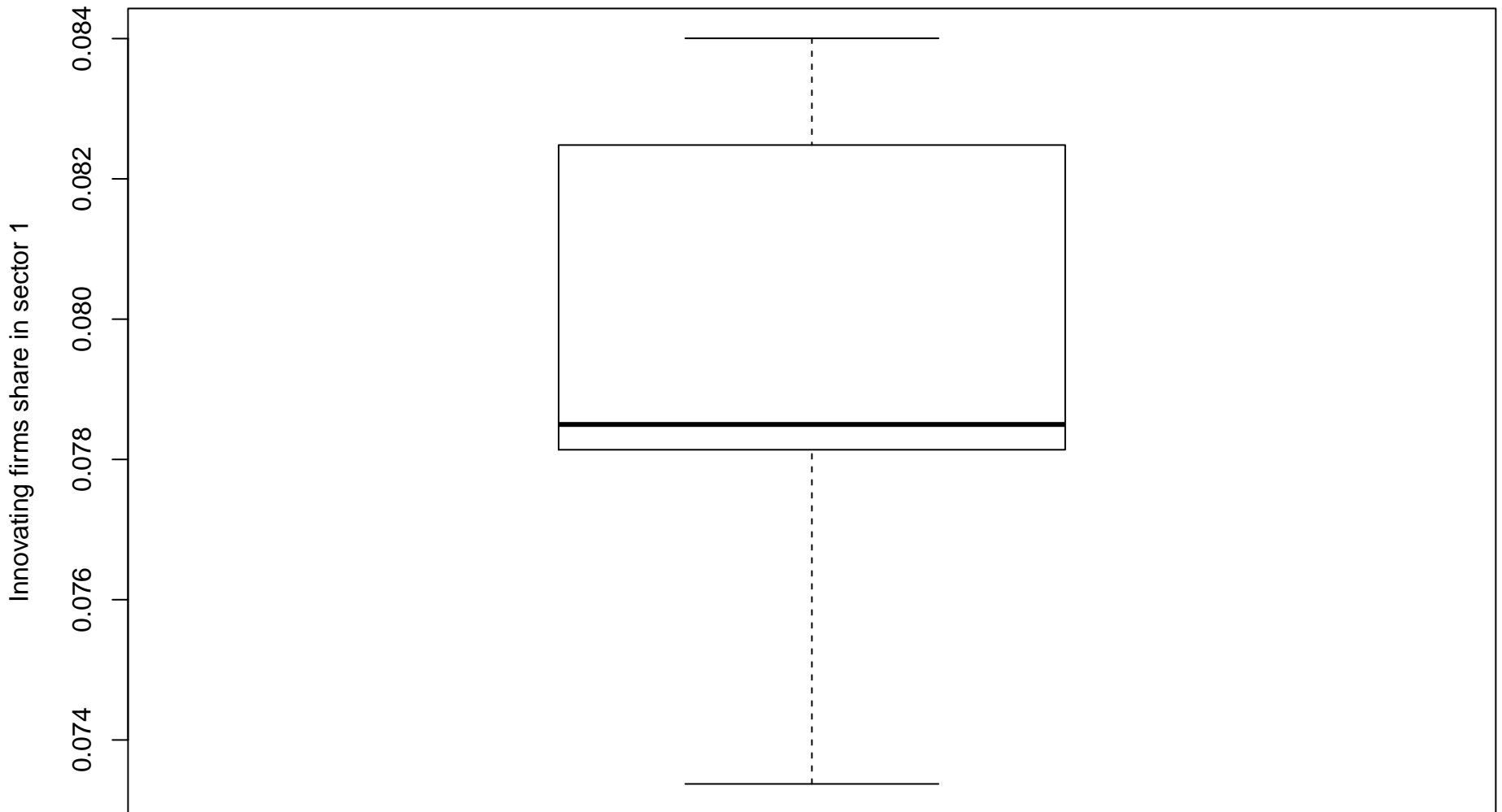
(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 2 – 1000)

Productivity growth



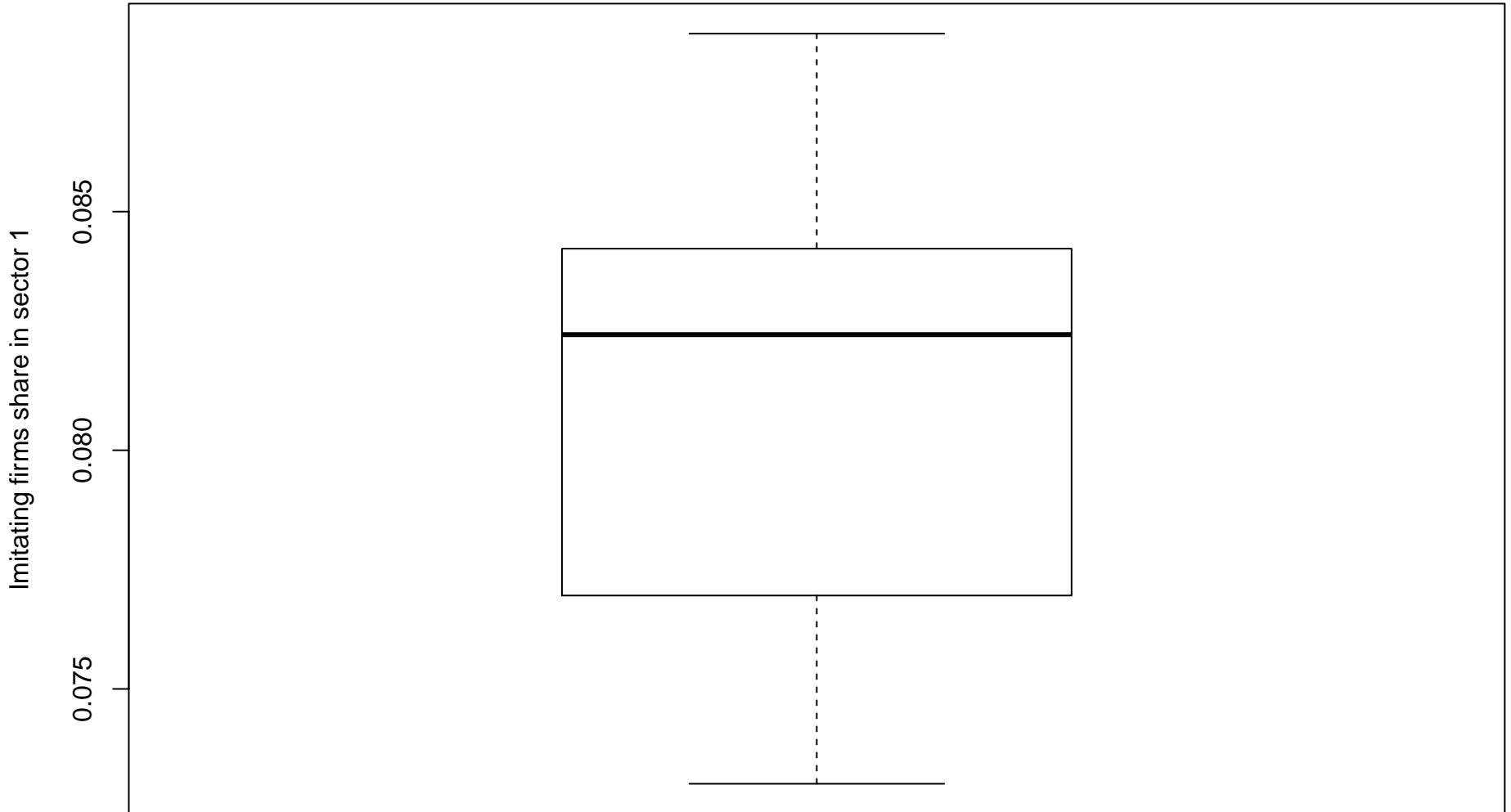
(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 2 – 1000)

Innovation



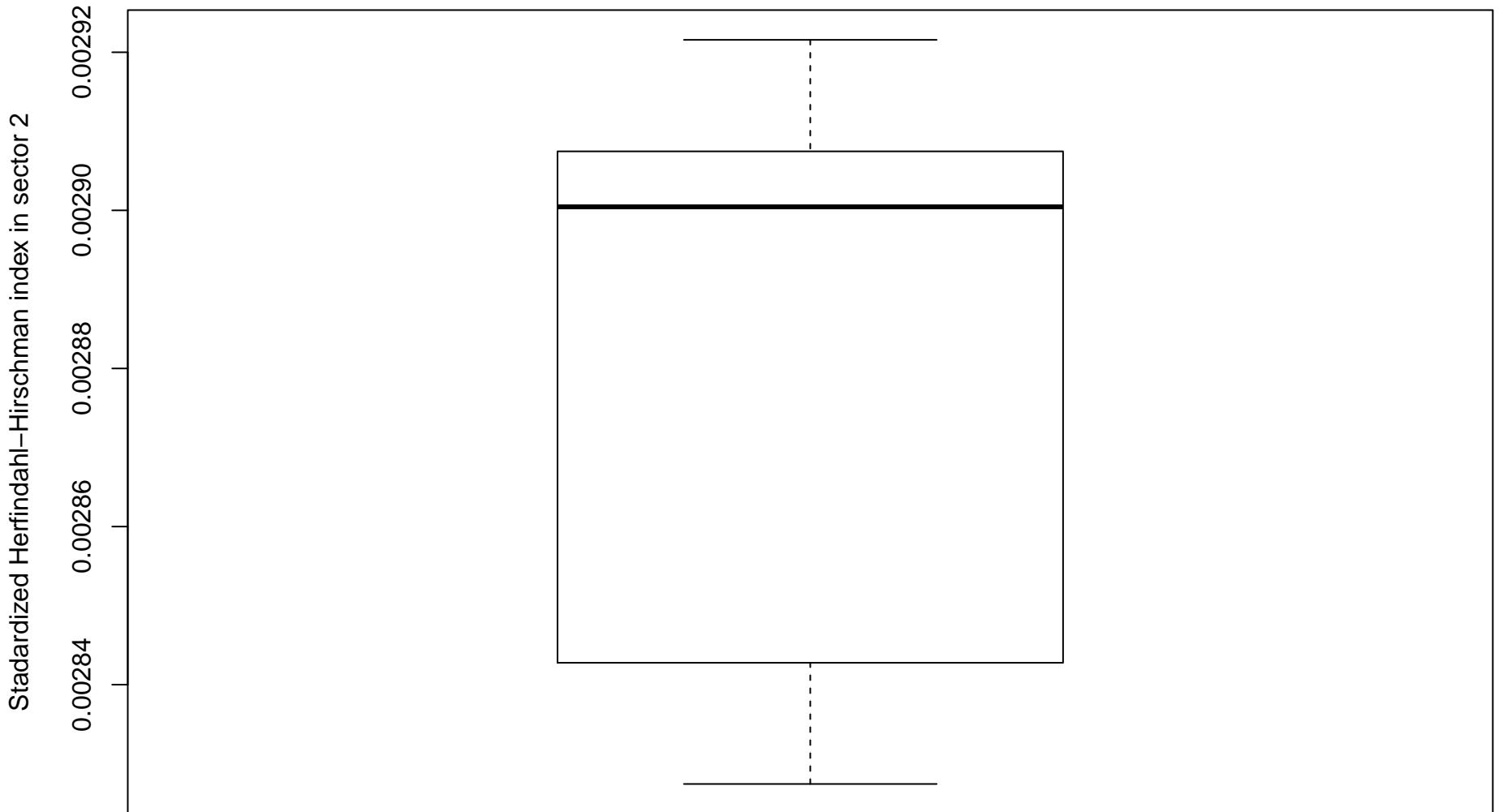
(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 2 – 1000)

Imitation



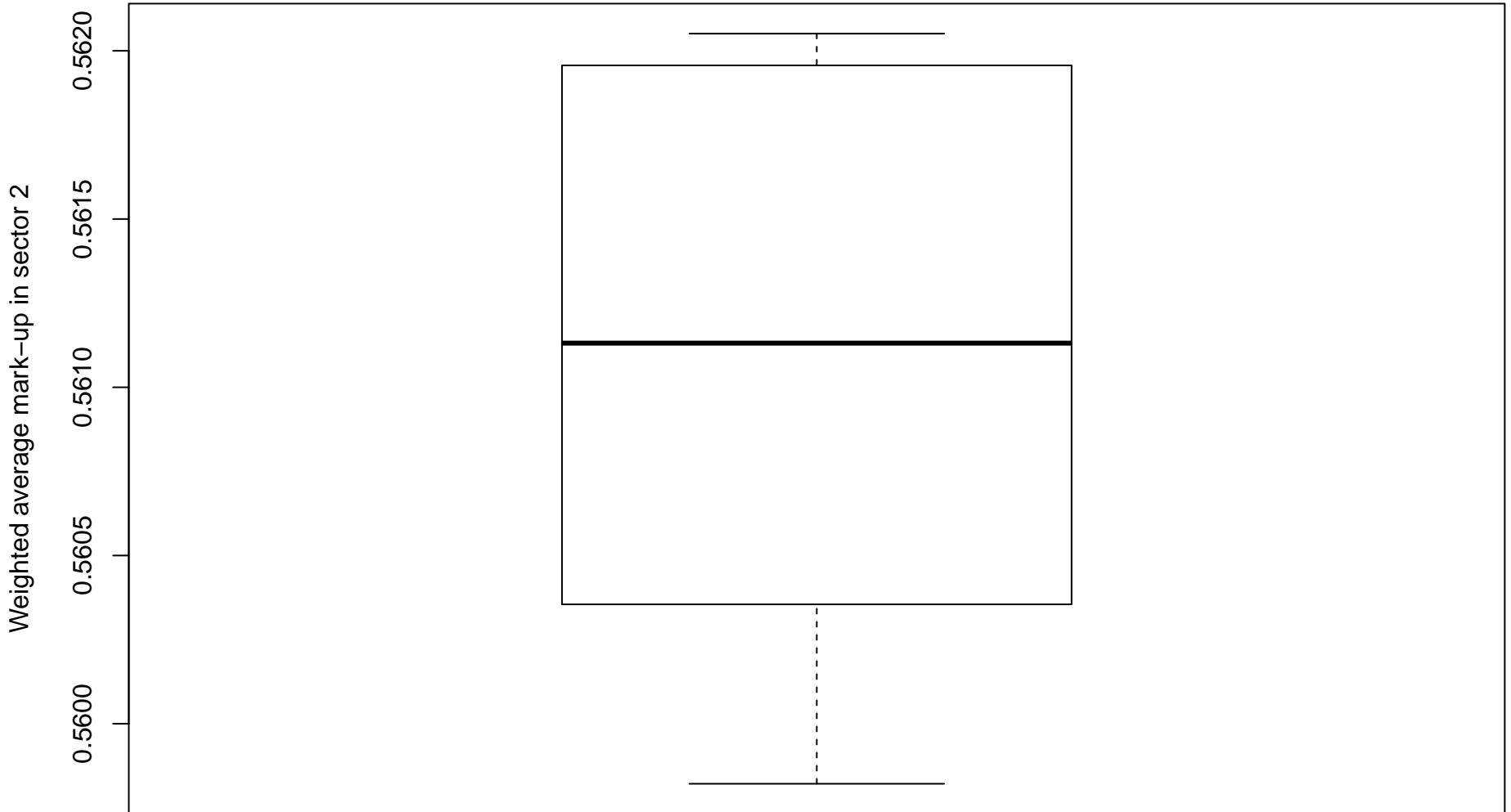
(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 2 – 1000)

Market concentration



(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 2 – 1000)

Mark-ups



(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 2 – 1000)

Monte Carlo descriptive statistics (all experiments)

| | Avg[1] | SD[1] | Min[1] | Max[1] |
|-------------------------------------|---------------|--------------|---------------|---------------|
| GDP growth | 0.01253 | 0.0009275 | 0.01124 | 0.01343 |
| Volatility of GDP growth | 0.1056 | 0.002445 | 0.1035 | 0.1095 |
| Likelihood of GDP crises | 0.3317 | 0.009218 | 0.3193 | 0.3423 |
| Inflation | 0.001817 | 0.0001671 | 0.001565 | 0.001984 |
| Tax | 0.03397 | 0.0007055 | 0.03343 | 0.03514 |
| Government total expenditure | 0.1519 | 0.02054 | 0.1381 | 0.1874 |
| Government deficit | 0.5345 | 0.1859 | 0.3896 | 0.8593 |
| Government debt | 42.14 | 16.85 | 28.5 | 71.5 |
| Loans | 1.526 | 0.1706 | 1.232 | 1.656 |
| Capacity utilization | 0.5259 | 0.004518 | 0.5179 | 0.5284 |
| Full employment frequency | 0.02603 | 0.01715 | 0.002002 | 0.04304 |
| Unemployment | 0.3412 | 0.03486 | 0.3194 | 0.4014 |
| Vacancy | 0.1737 | 0.008134 | 0.1607 | 0.1811 |
| Productivity growth | 0.01227 | 0.0009762 | 0.0109 | 0.01321 |
| Innovation | 0.0793 | 0.004165 | 0.07337 | 0.084 |
| Imitation | 0.08107 | 0.00617 | 0.07301 | 0.08873 |
| Market concentration | 0.00288 | 4.198e-05 | 0.002827 | 0.002922 |
| Mark-ups | 0.5611 | 0.0009775 | 0.5598 | 0.5621 |

Experiments: [1] Benchmark

(numbers in brackets indicate the experiment number / MC runs = 5 / period = 2 – 1000)