GDP, investment and consumption (all experiments)

Free entry

GDP
Investment
Consumption

Logs

Time
(MC runs = 5)
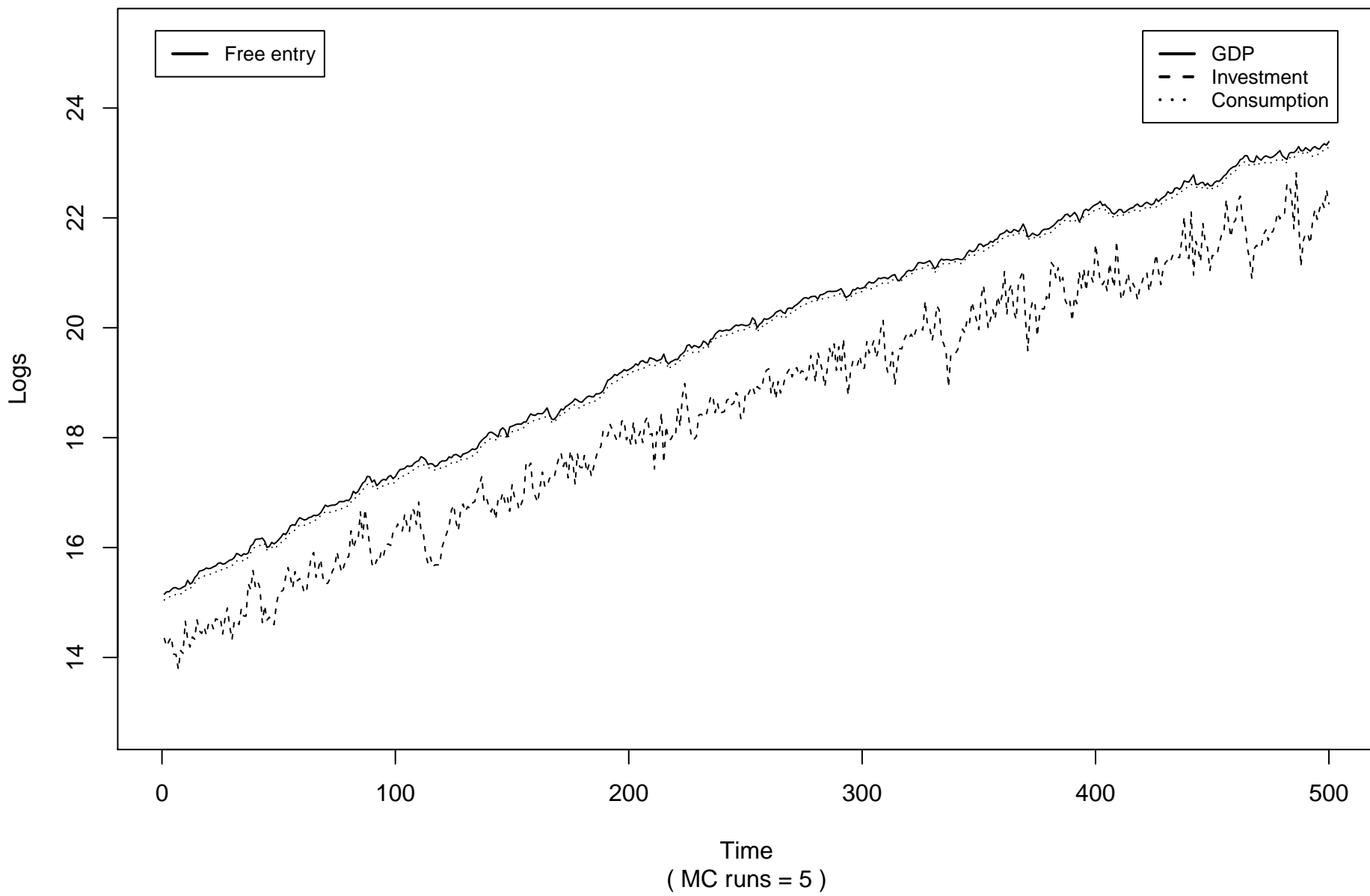
GDP, investment and consumption (Free entry)

Logs

Time
(95% confidence band in gray, min/max values in light gray / MC runs = 5)

Legend:
- GDP
- Investment
- Consumption

GDP (all experiments)

Log GDP

Time
(MC runs = 5)

Legend: Free entry

Effective GDP
GDP @ 100% utilization

GDP (Free entry)

Time
(95% confidence band in gray, min/max values in light gray / MC runs = 5)
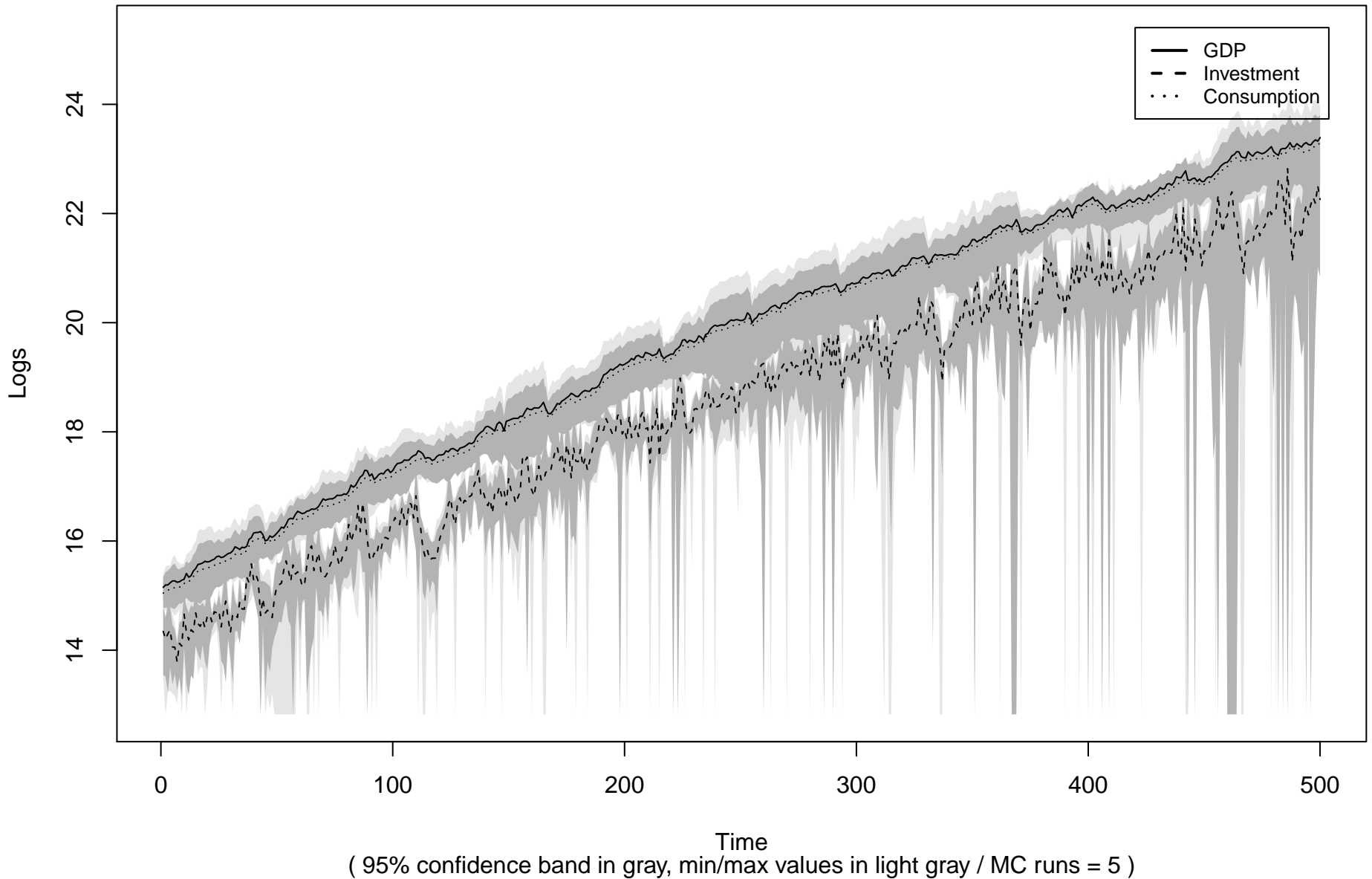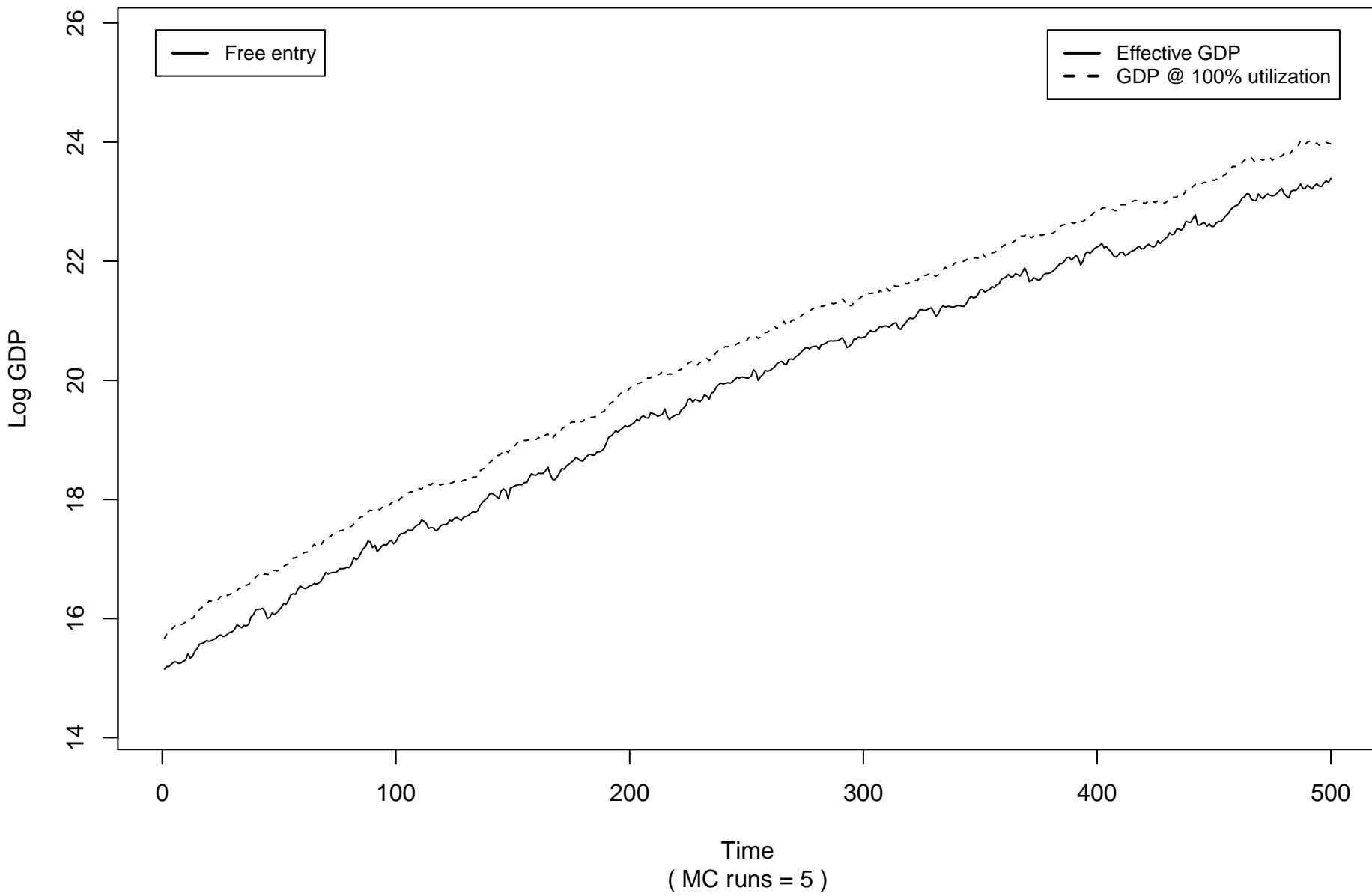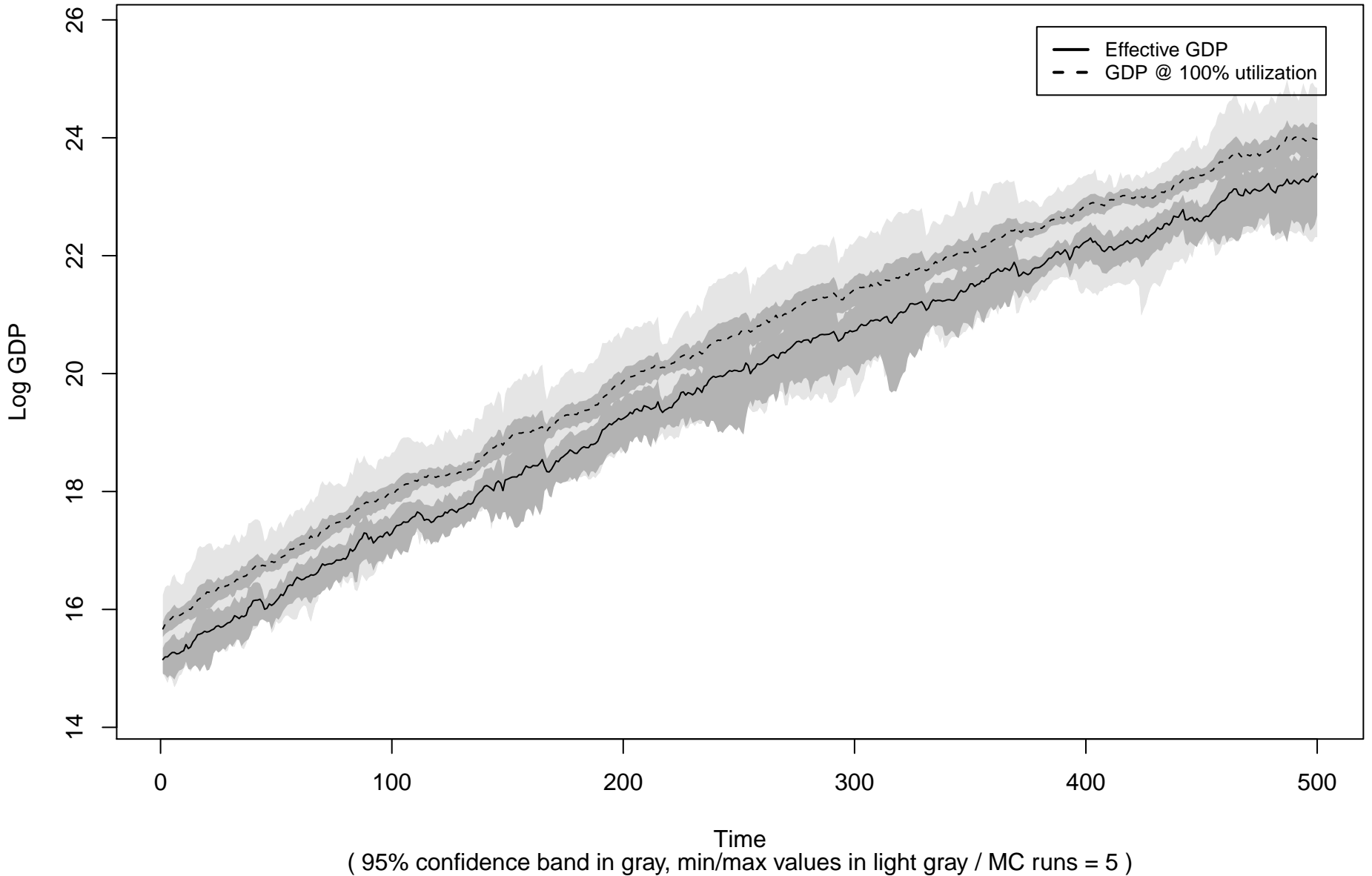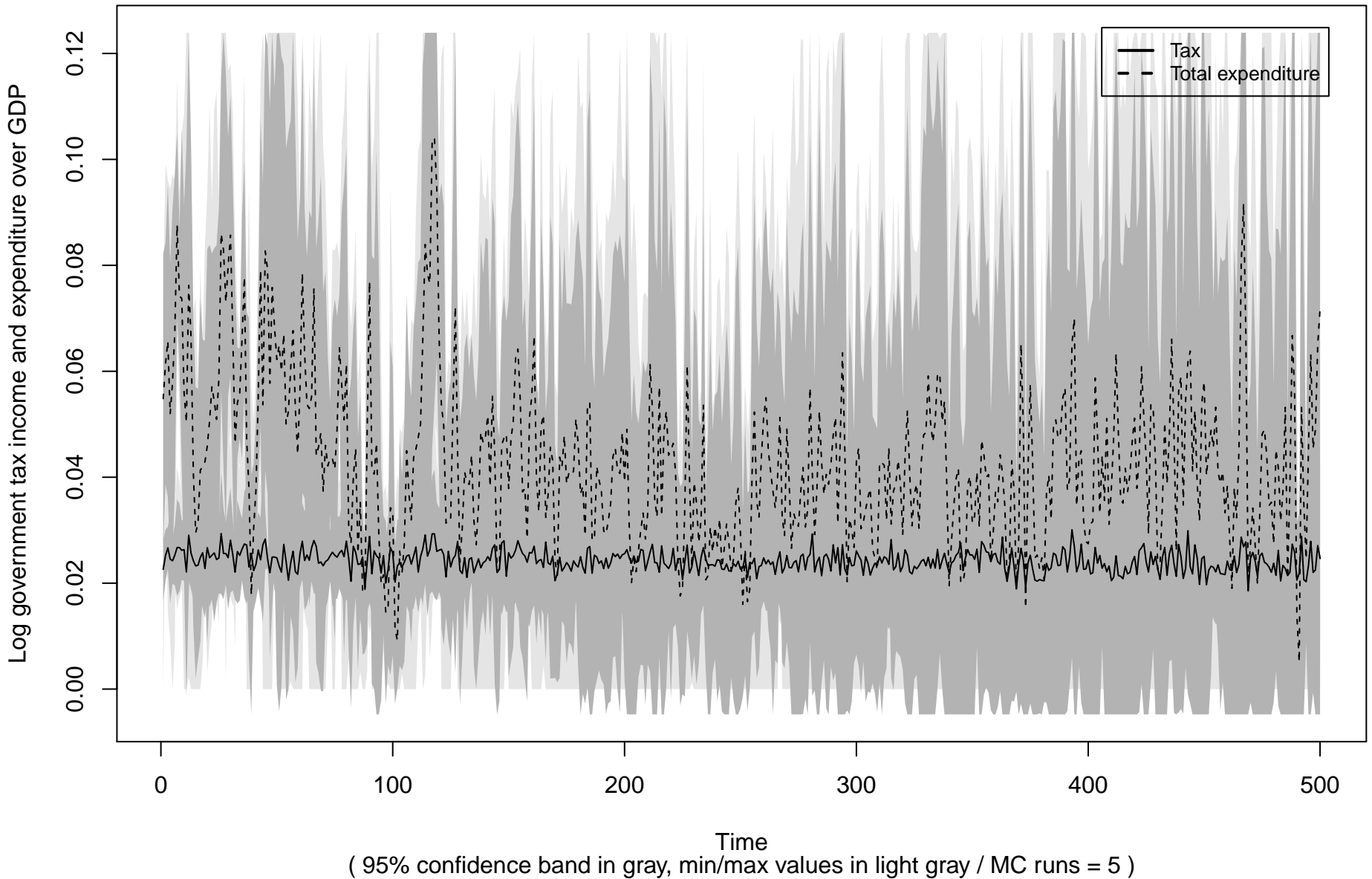
Government income and expenditure on GDP (all experiments)

Log government tax income and expenditure over GDP

Free entry

Tax
Total expenditure

Time
(MC runs = 5)
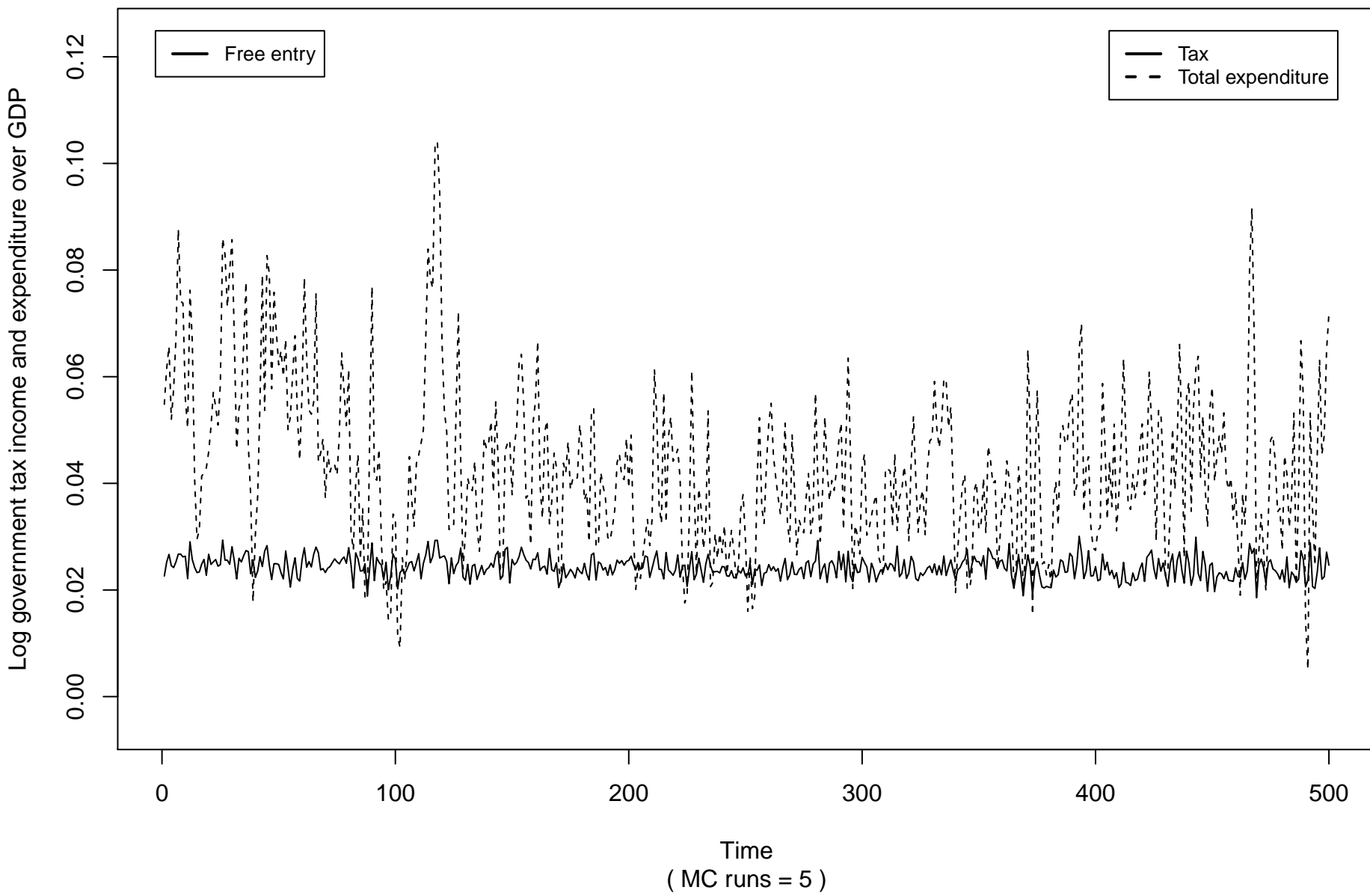
Government income and expenditure on GDP (Free entry)

Log government tax income and expenditure over GDP

Time
(95% confidence band in gray, min/max values in light gray / MC runs = 5)

Government deficit on GDP (all experiments)

Government deficit over GDP

— Free entry

Time
(MC runs = 5)
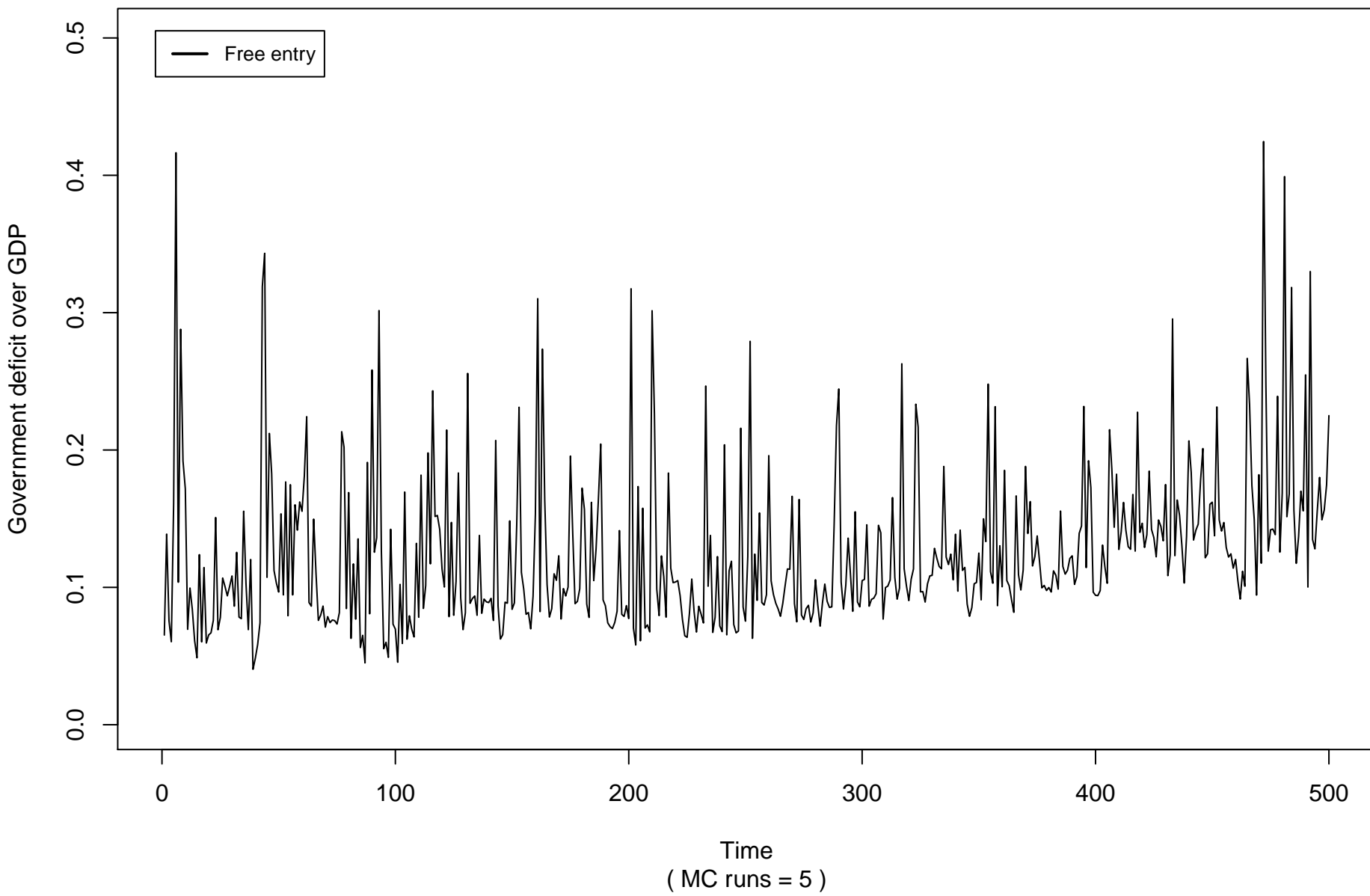
Government deficit on GDP (Free entry)

Time
(95% confidence band in gray, min/max values in light gray / MC runs = 5)
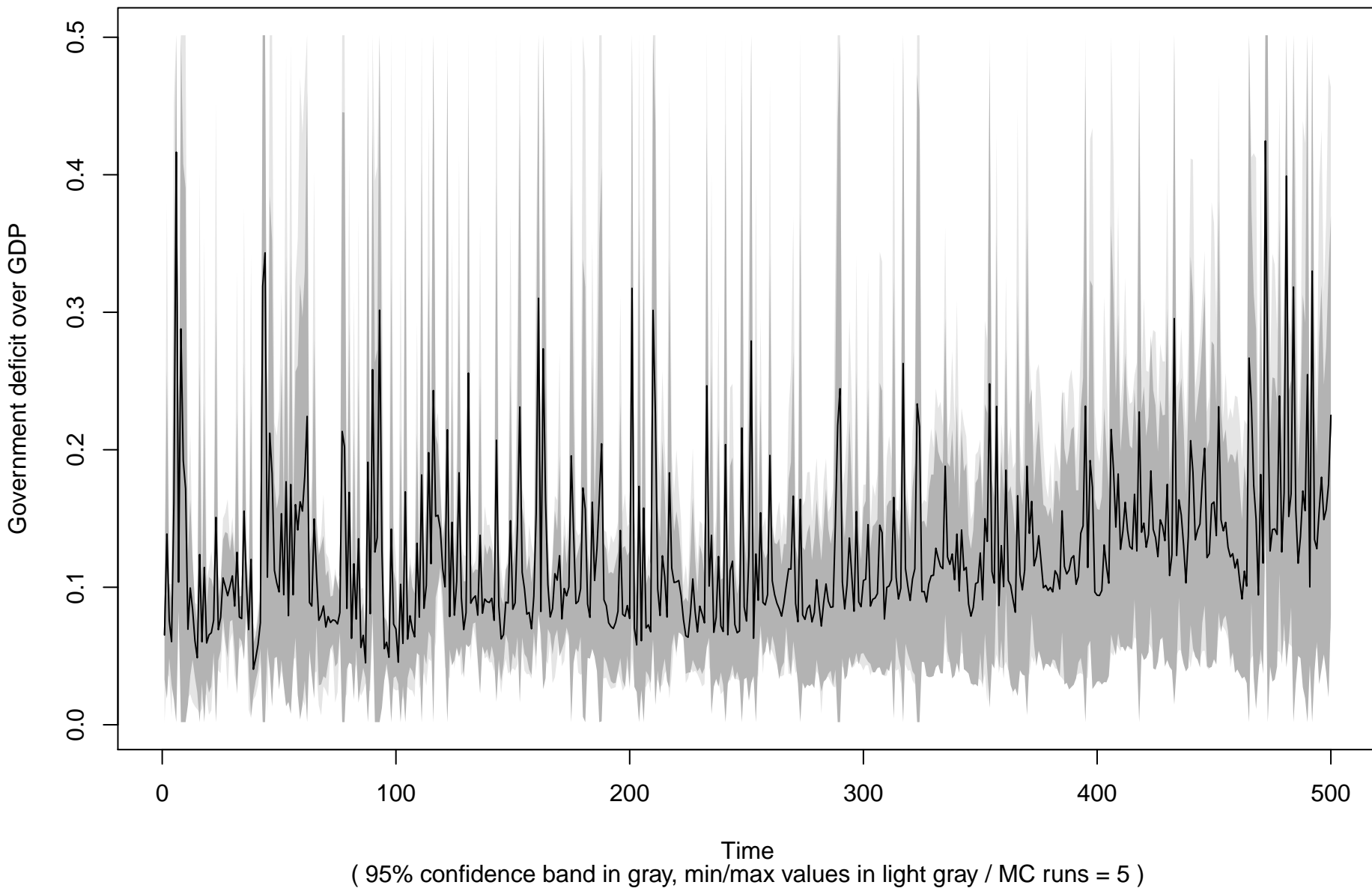
Government debt on GDP (all experiments)

Government debt over GDP

Free entry

Time
(MC runs = 5)
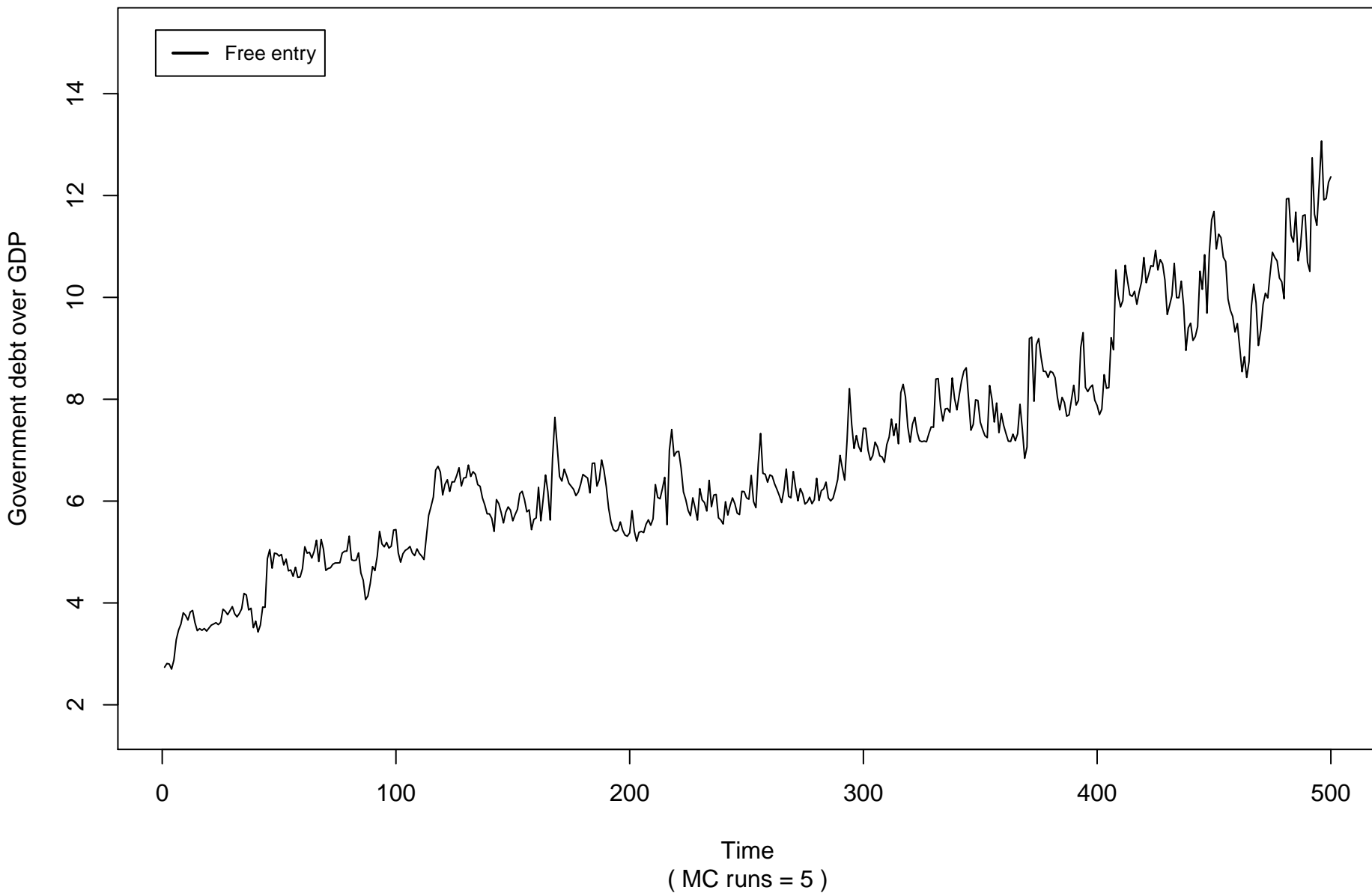
Government debt on GDP (Free entry)

Time
(95% confidence band in gray, min/max values in light gray / MC runs = 5)
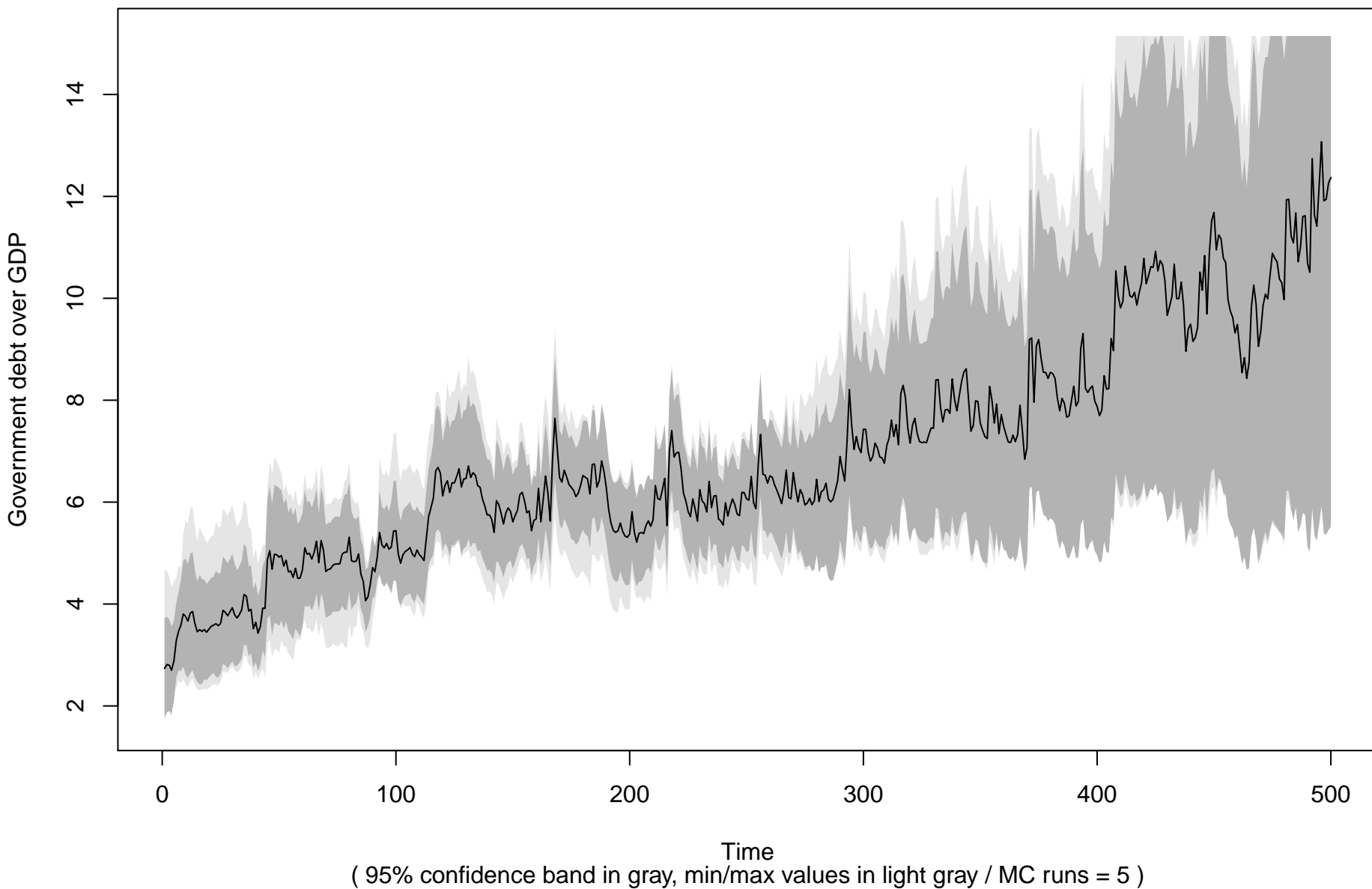
Total credit supply and loans on GDP (all experiments)

Free entry

Total credit
Loans

Total banks credit supply and firms loans debt over GDP

Time
(MC runs = 5)
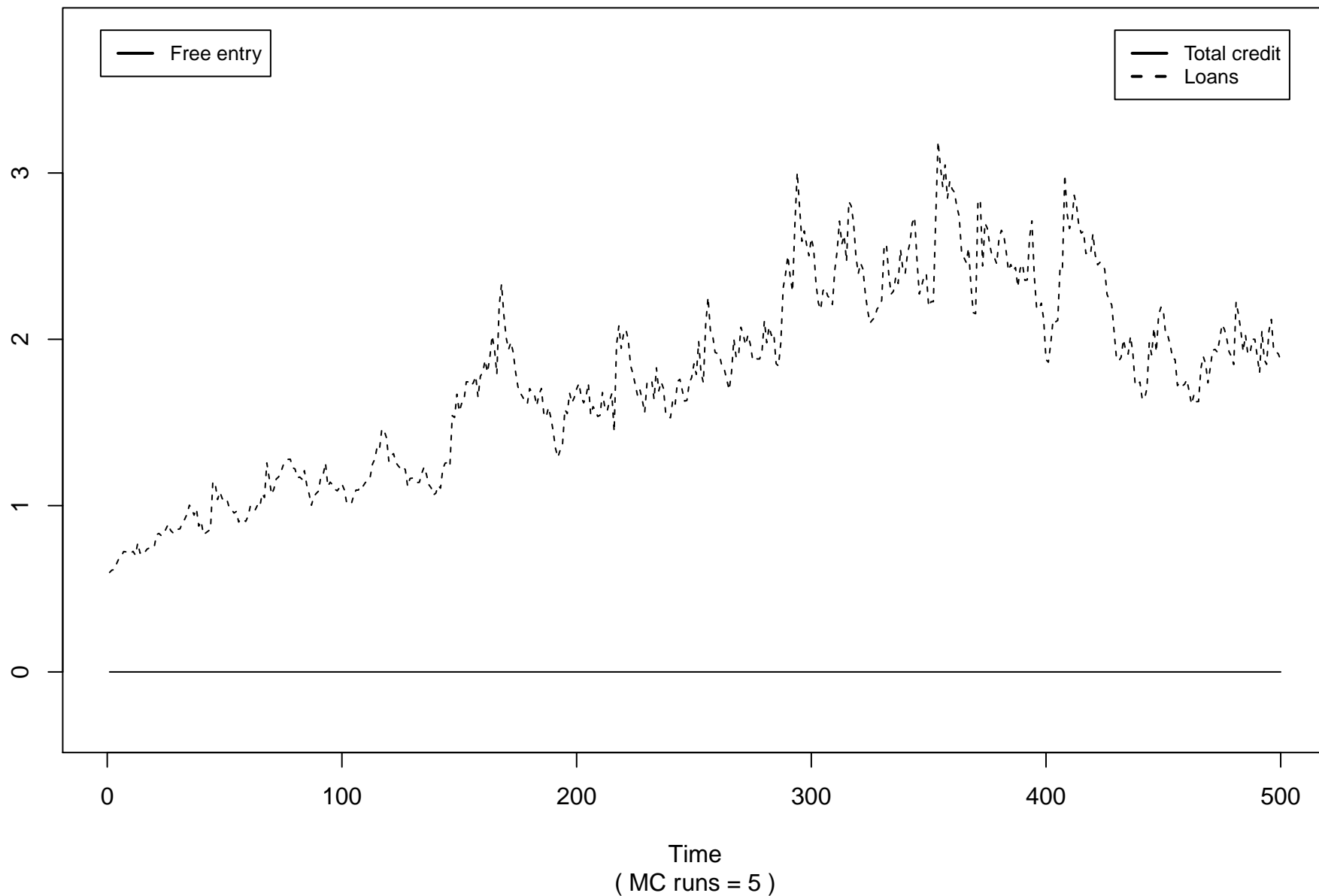
Total credit supply and loans on GDP (Free entry)

Total banks credit supply and firms loans debt over GDP

Time
(95% confidence band in gray, min/max values in light gray / MC runs = 5)

Legend:
- Total credit
- Loans
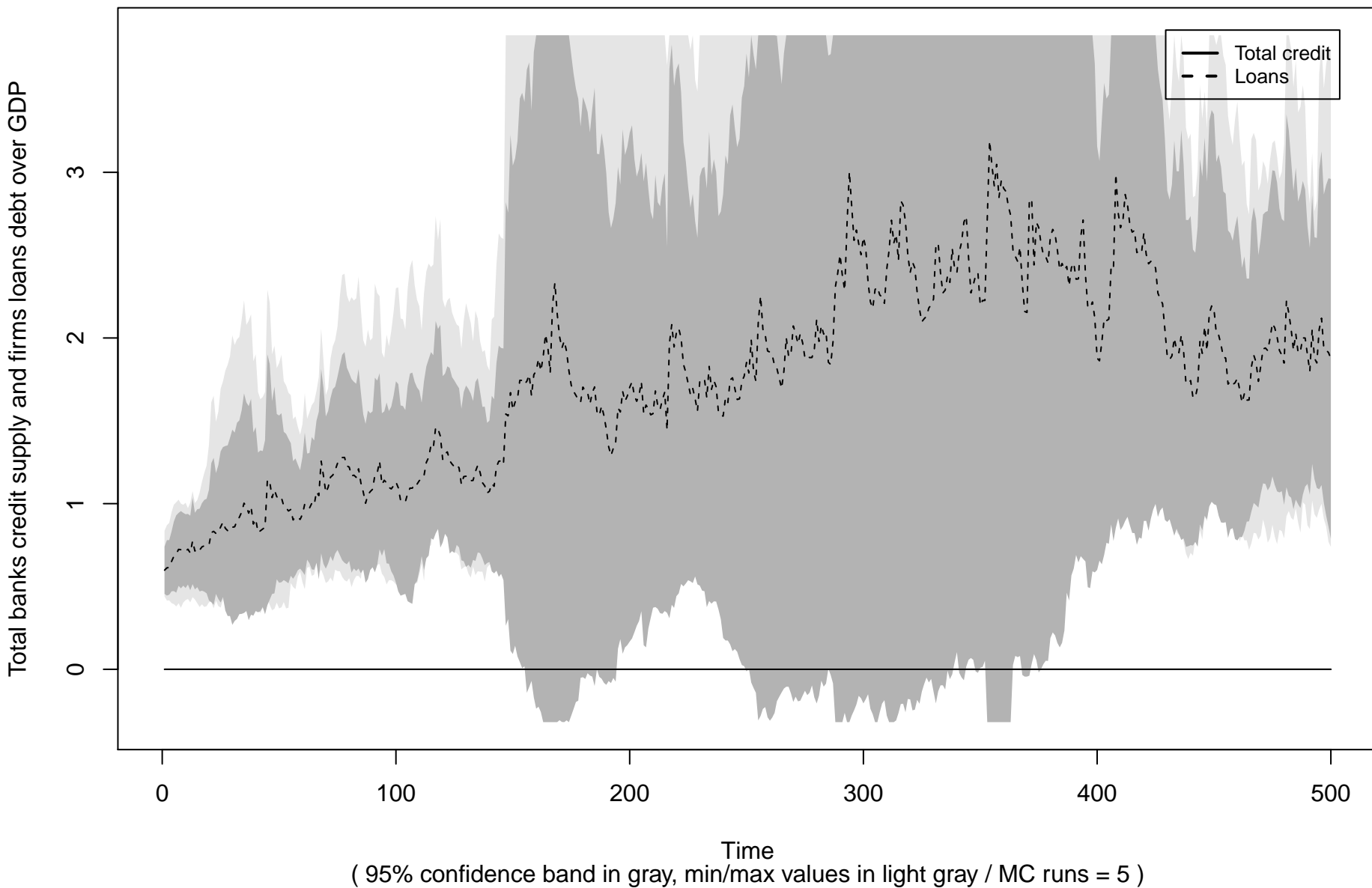
Unemployment and vacancy rates (all experiments)

Free entry

Unemployment
Vacancy

Rate

Time
(MC runs = 5)
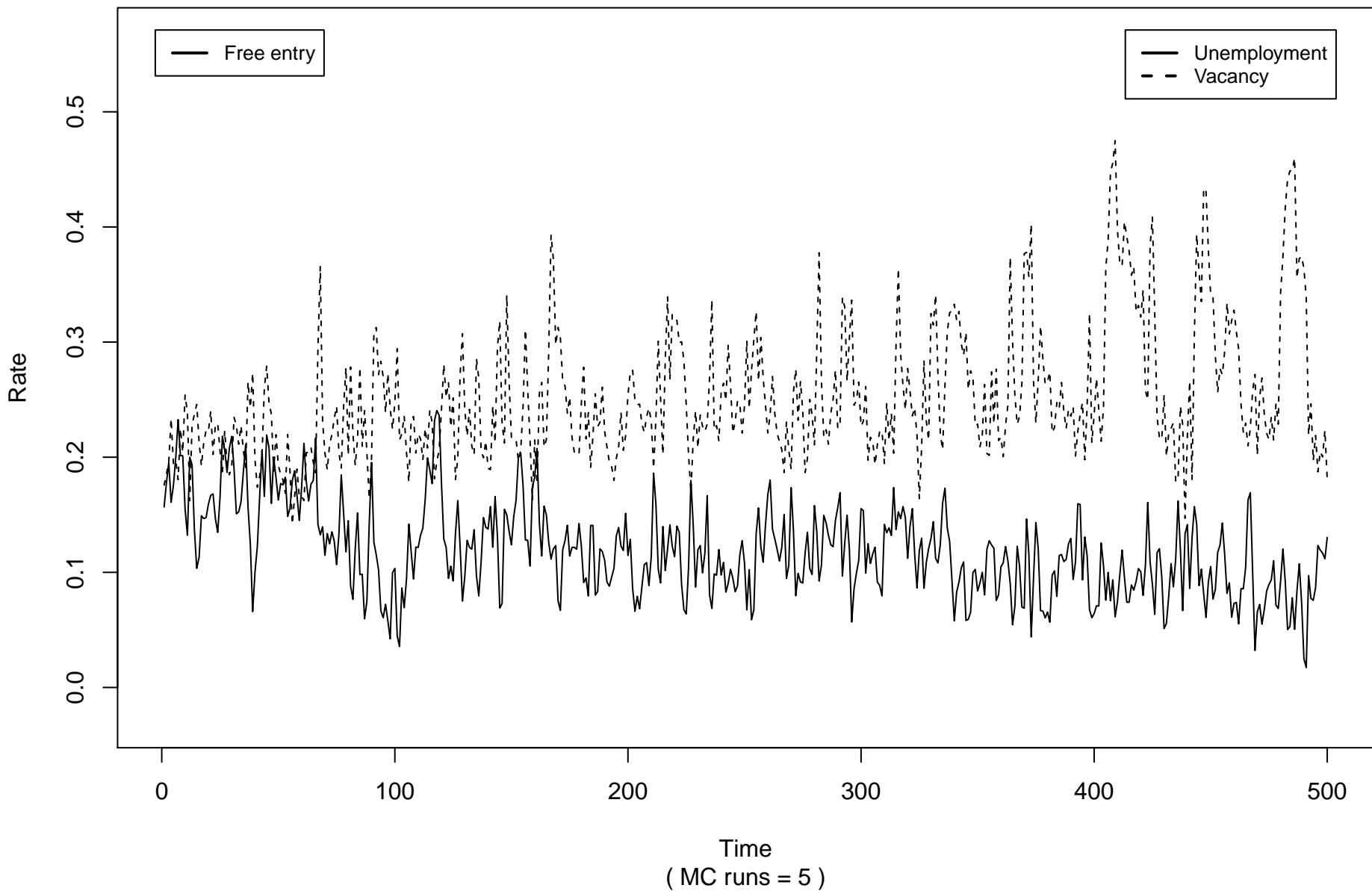
Unemployment and vacancy rates (Free entry)

Rate

Time
(95% confidence band in gray, min/max values in light gray / MC runs = 5)
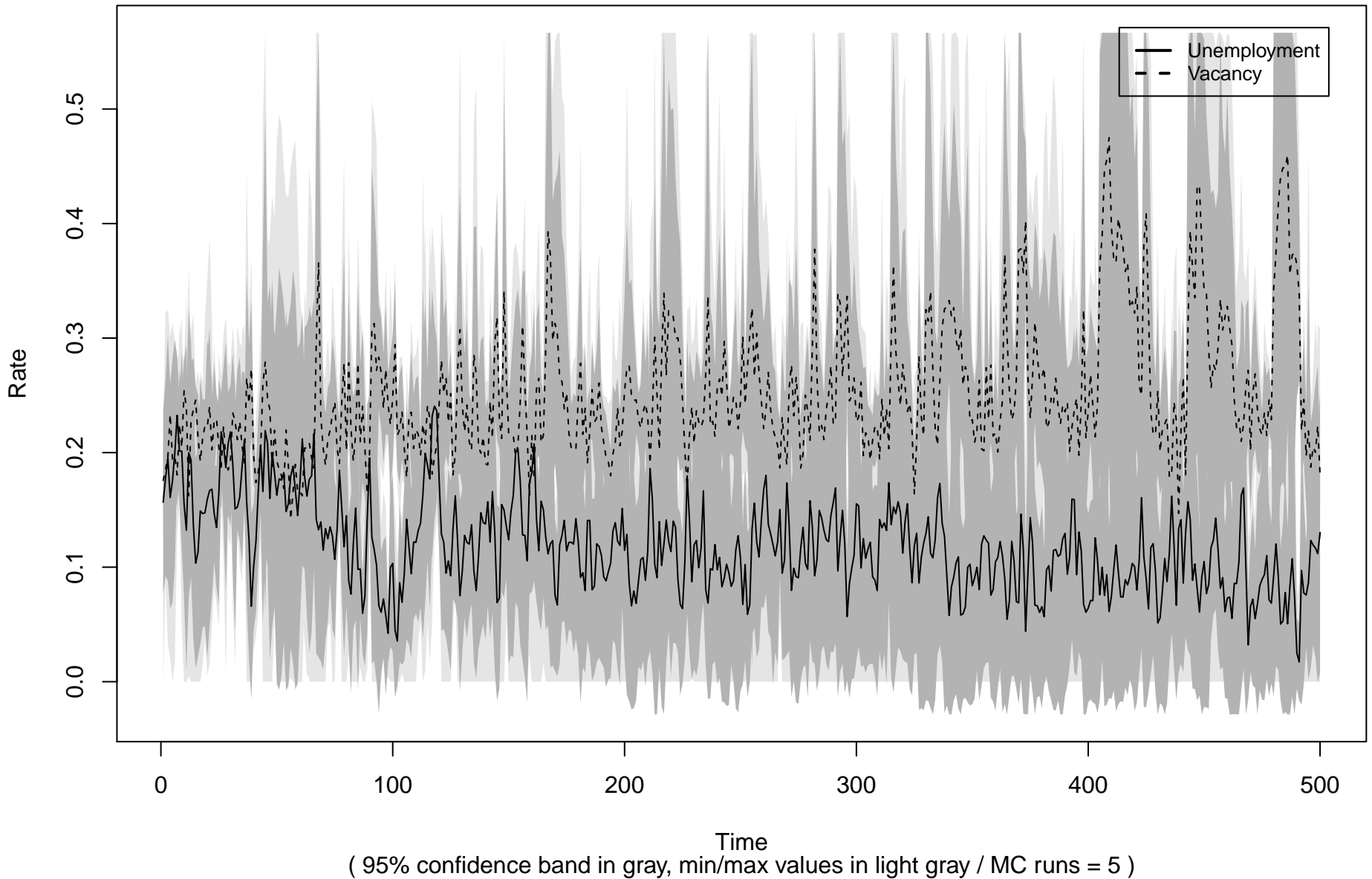
Real wages average (all experiments)

Log wages

Free entry

12

10

8

6

4

2

0   100   200   300   400   500

Time
(MC runs = 5)
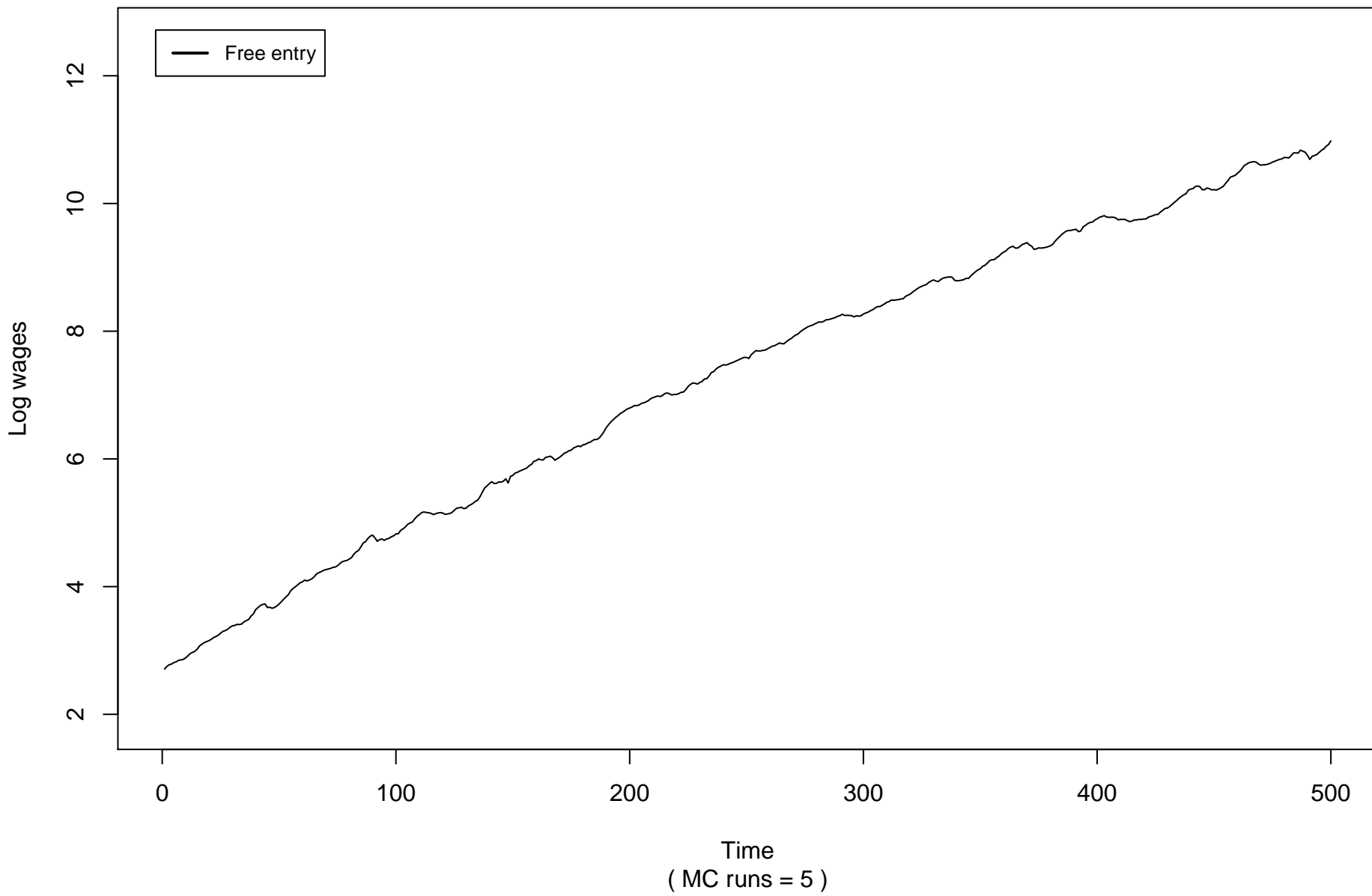
Real wages average (Free entry)

Log wages

Time
(95% confidence band in gray, min/max values in light gray / MC runs = 5)
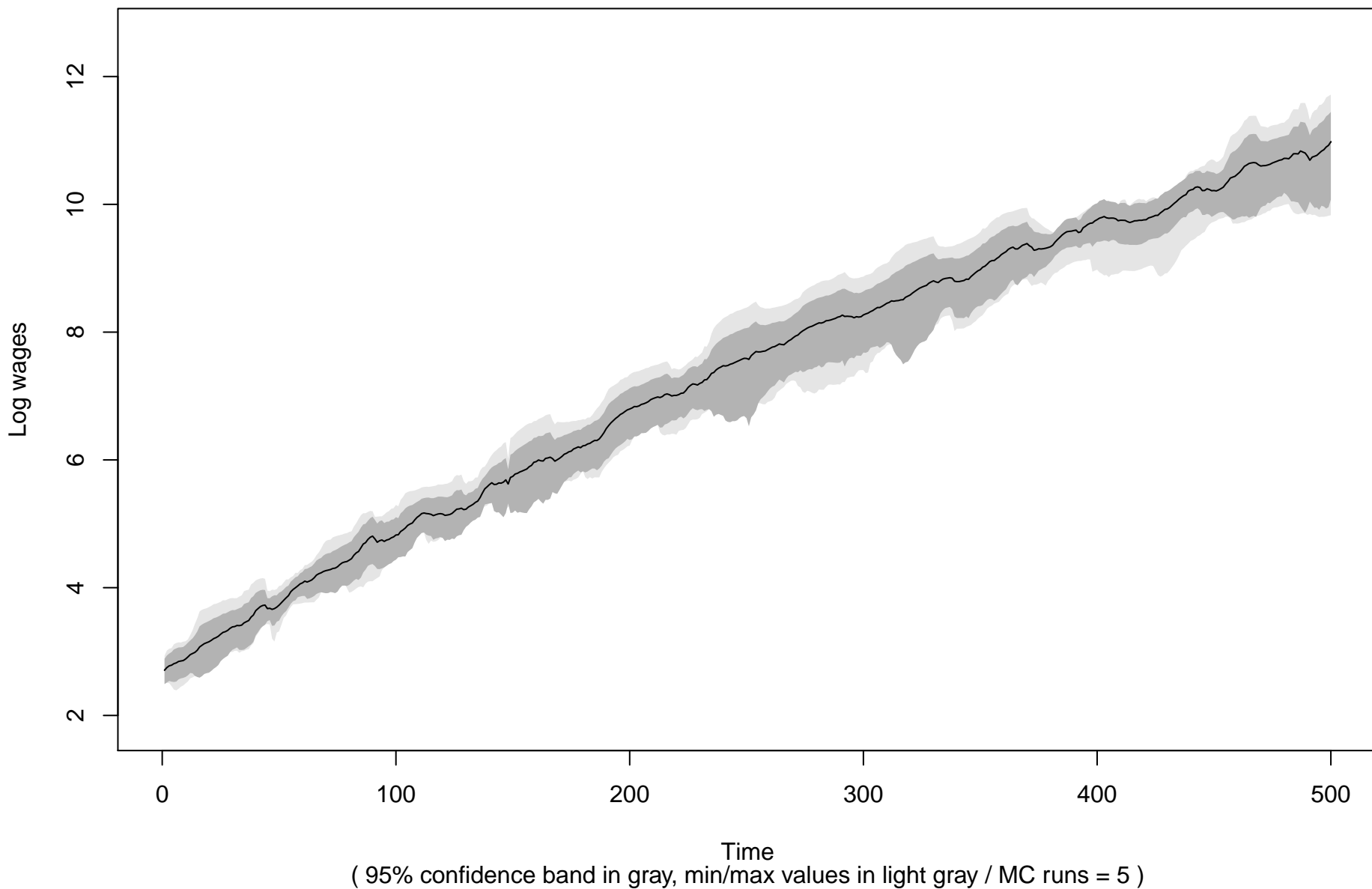
Wage share (all experiments)

Total real wages on GDP

Time
(MC runs = 5)

Legend: Free entry

Wage share (Free entry)

Total real wages on GDP

Time
(95% confidence band in gray, min/max values in light gray / MC runs = 5)
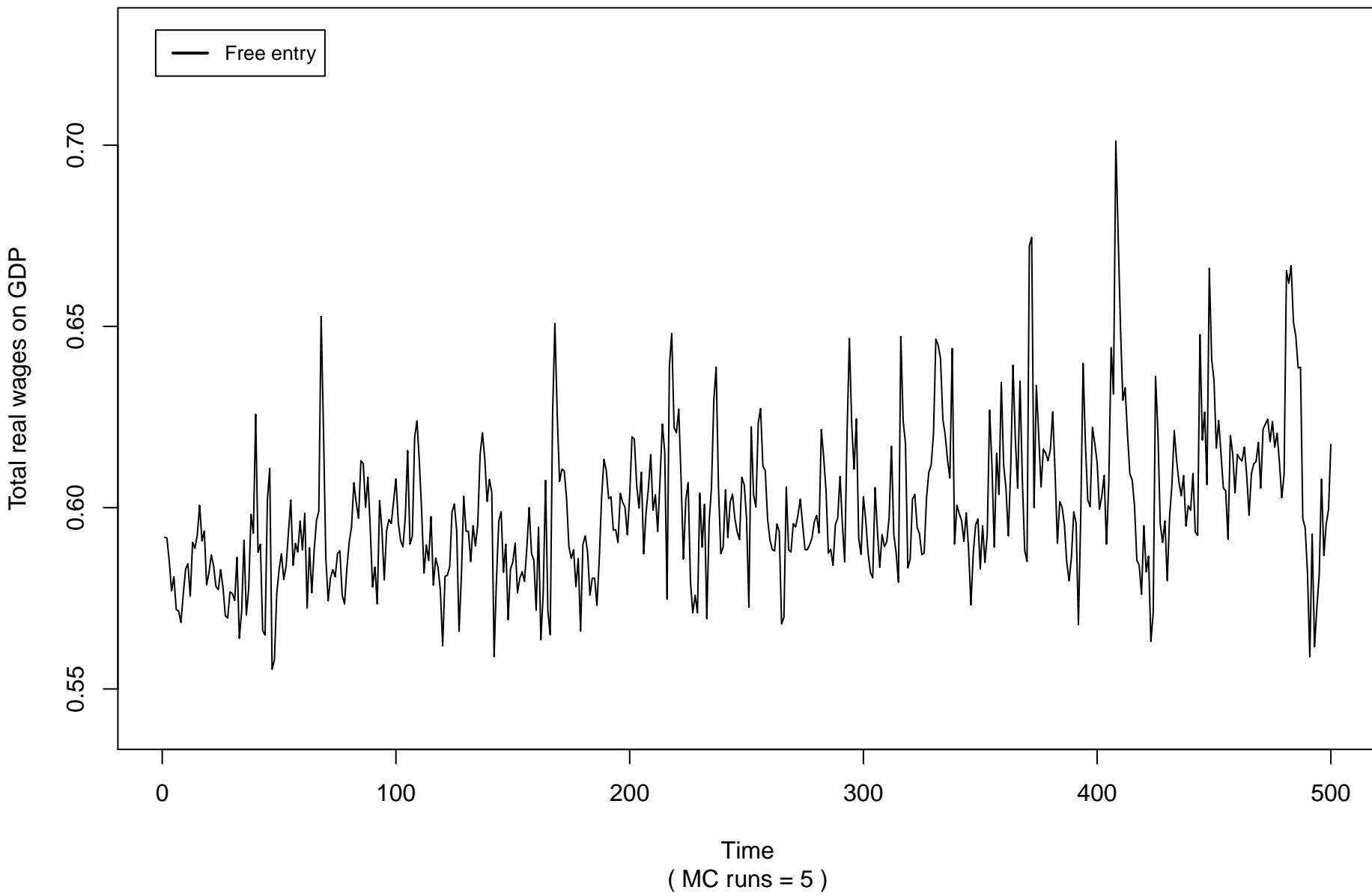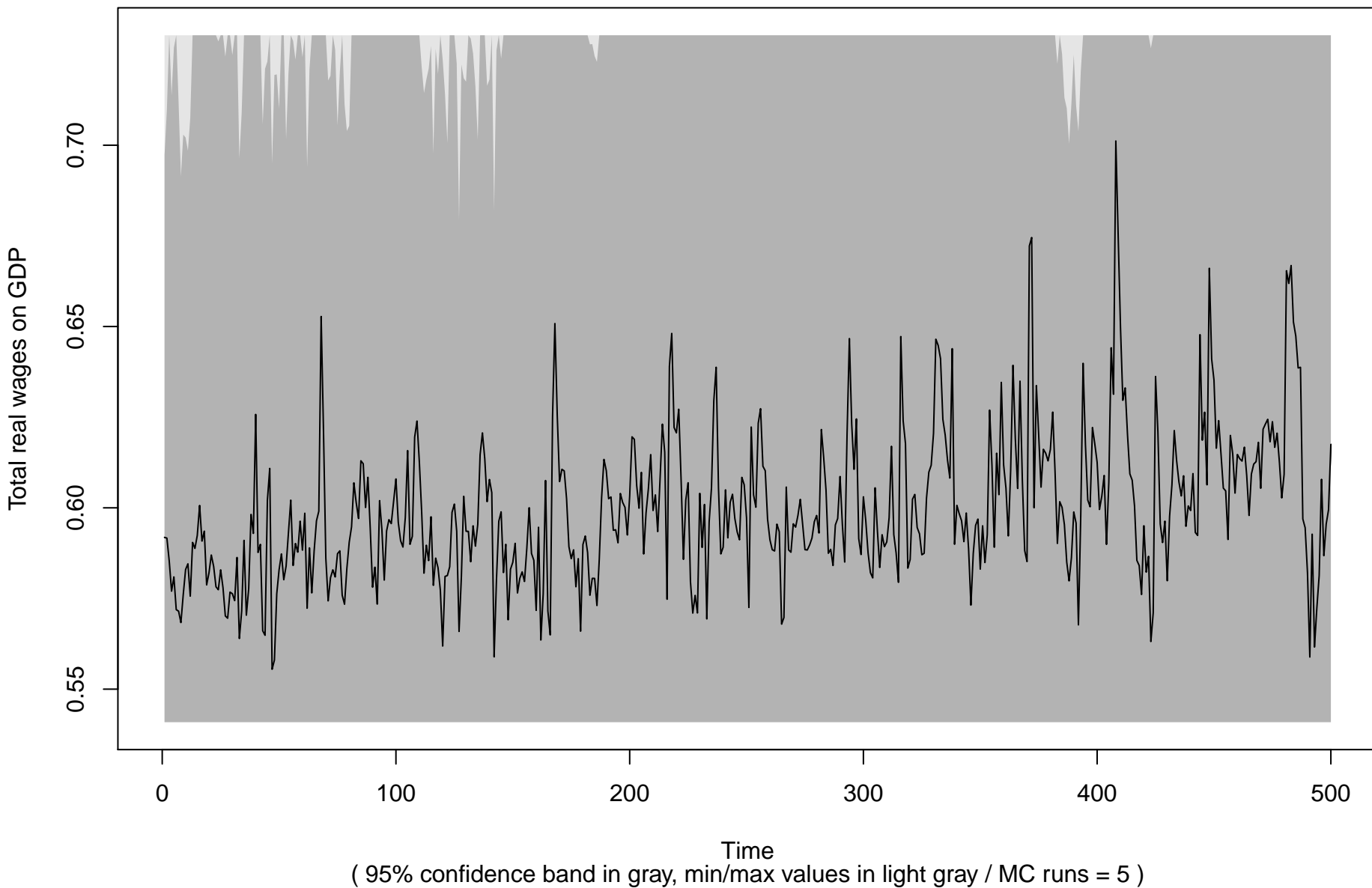
Innovation and imitation (all experiments)

Free entry

Innovation
Imitation

Share of innovating and imitating firms

Time
(sector 1 only / MC runs = 5)
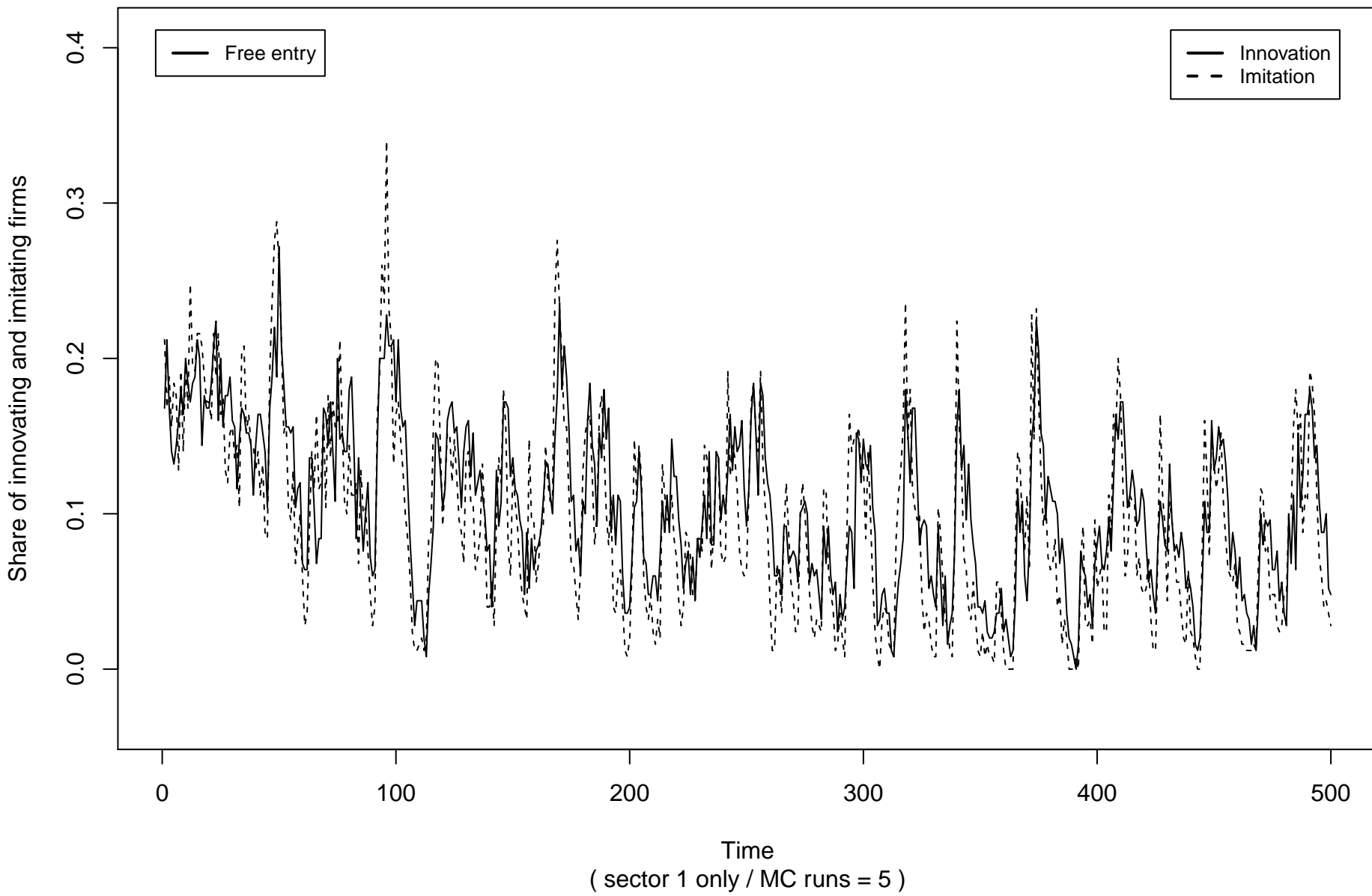
Innovation and imitation (Free entry)

Share of innovating and imitating firms
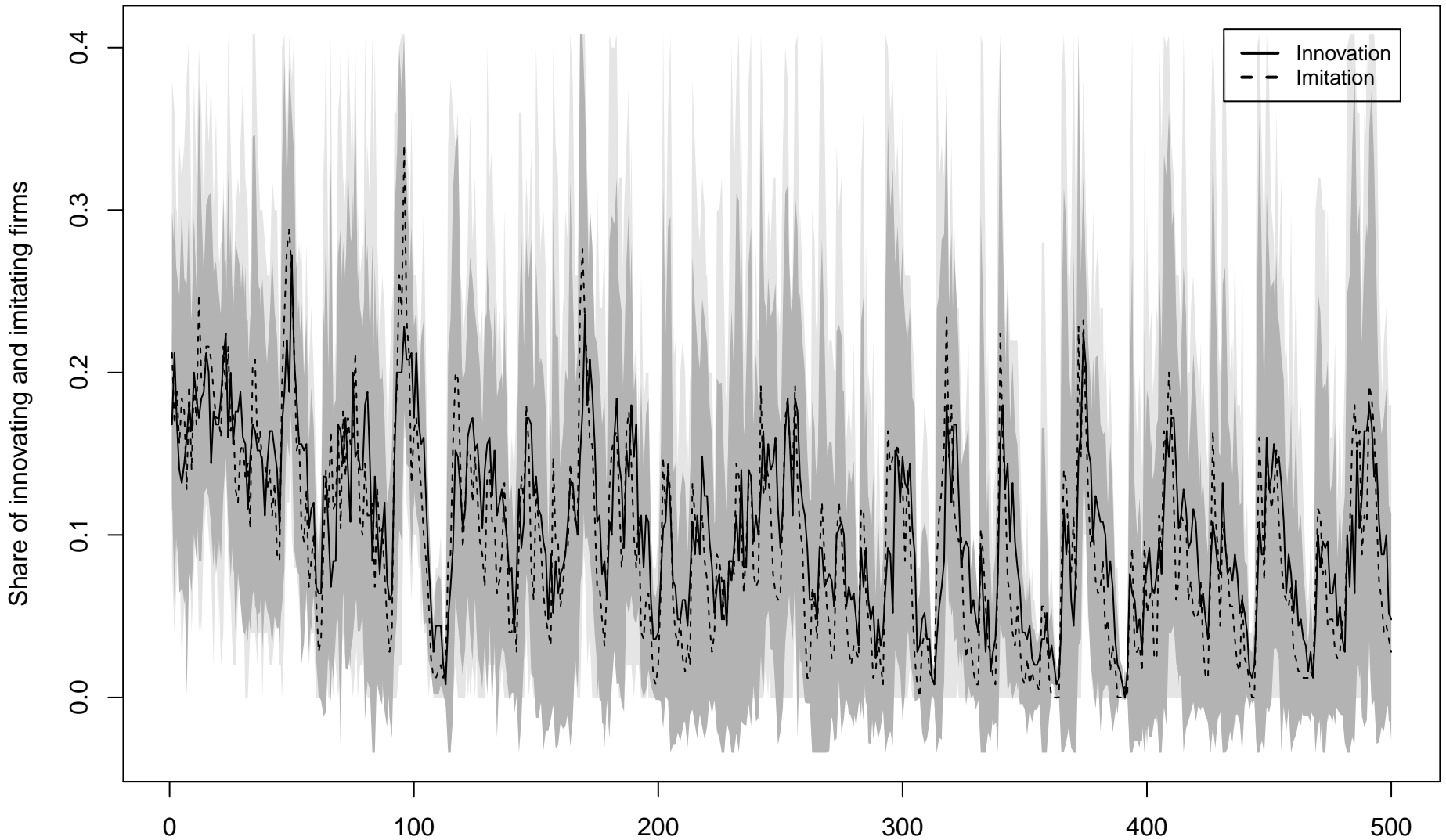
Time
(95% confidence band in gray, min/max values in light gray / sector 1 only / MC runs = 5)

Net entry of firms trend (all experiments)

Free entry

Consumption−good sector

Capital−good sector

Number of net entrant firms (HP−filtered)

Time
(MC runs = 5)
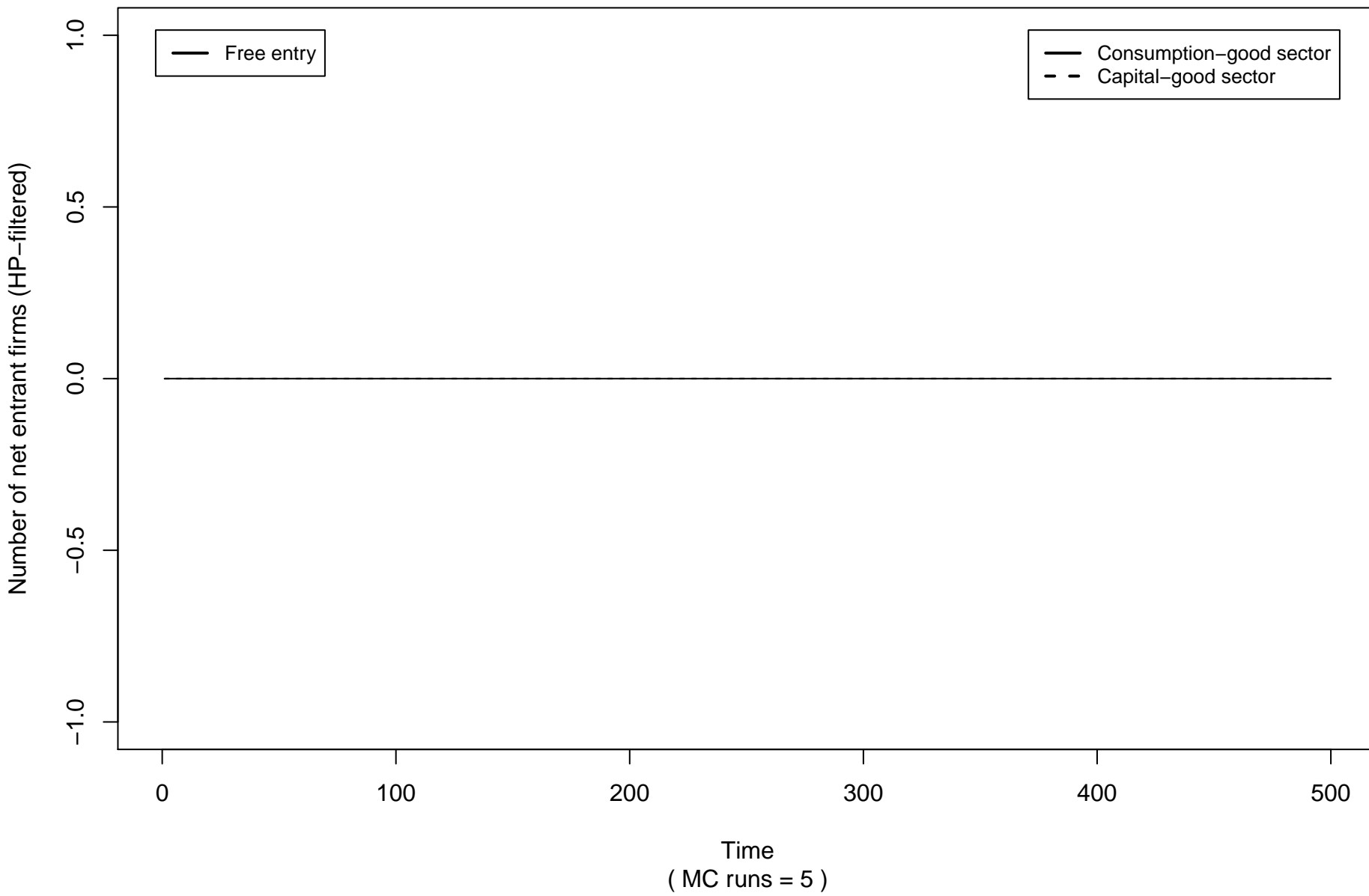
Net entry of firms trend (Free entry)

Number of net entrant firms (HP-filtered)

Consumption−good sector
Capital−good sector

Time
(95% confidence band in gray, min/max values in light gray / MC runs = 5)
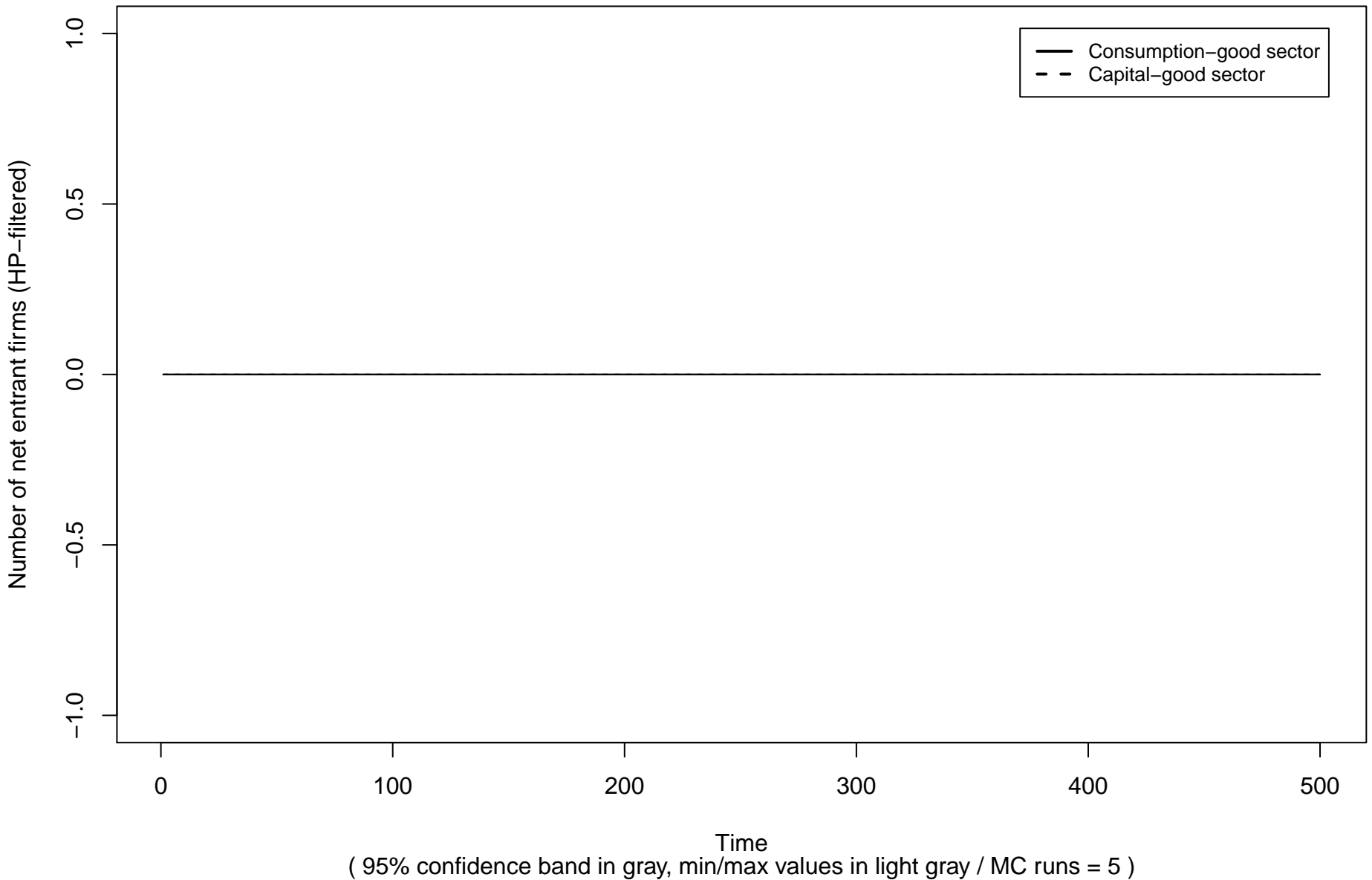
Market concentration (all experiments)

Standardized Herfindahl–Hirschman index

Free entry

Time
(Sector 2 only / MC runs = 5)
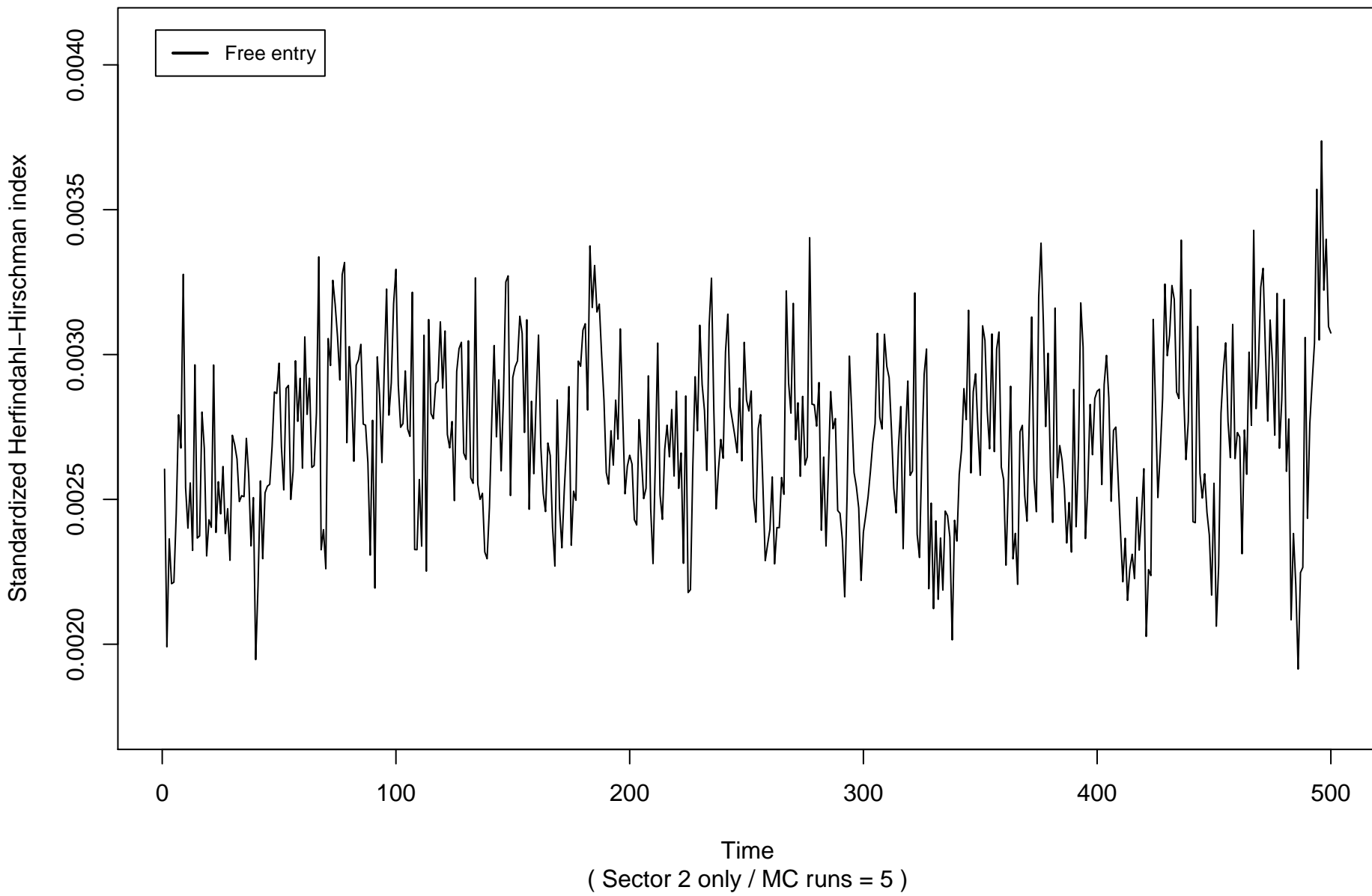
Market concentration (Free entry)

Standardized Herfindahl–Hirschman index
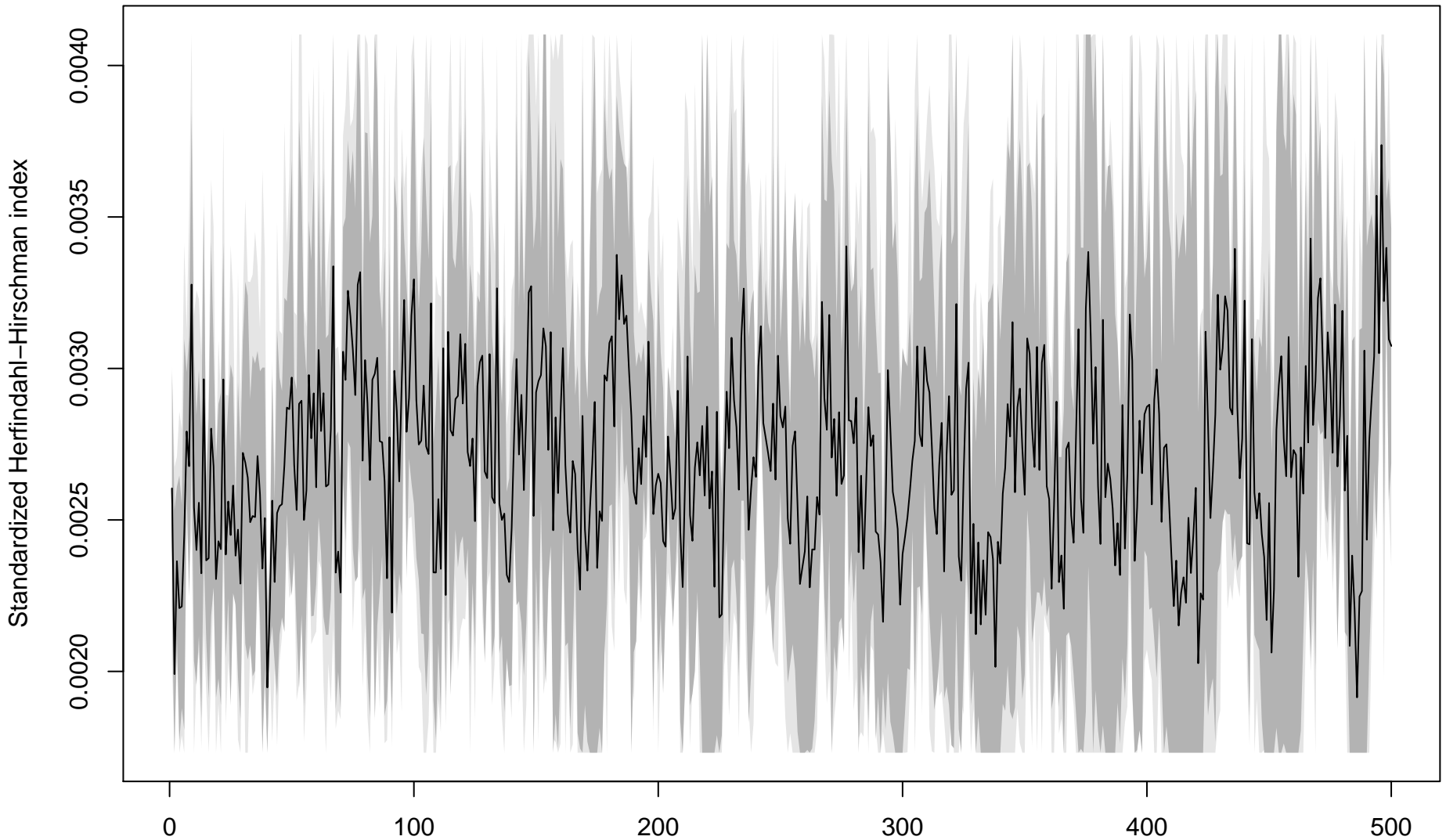
Time
(95% confidence band in gray, min/max values in light gray / Sector 2 only / MC runs = 5)

Mark−up average (all experiments)

Weighted average mark−up rate

Time
(Sector 2 only / MC runs = 5)
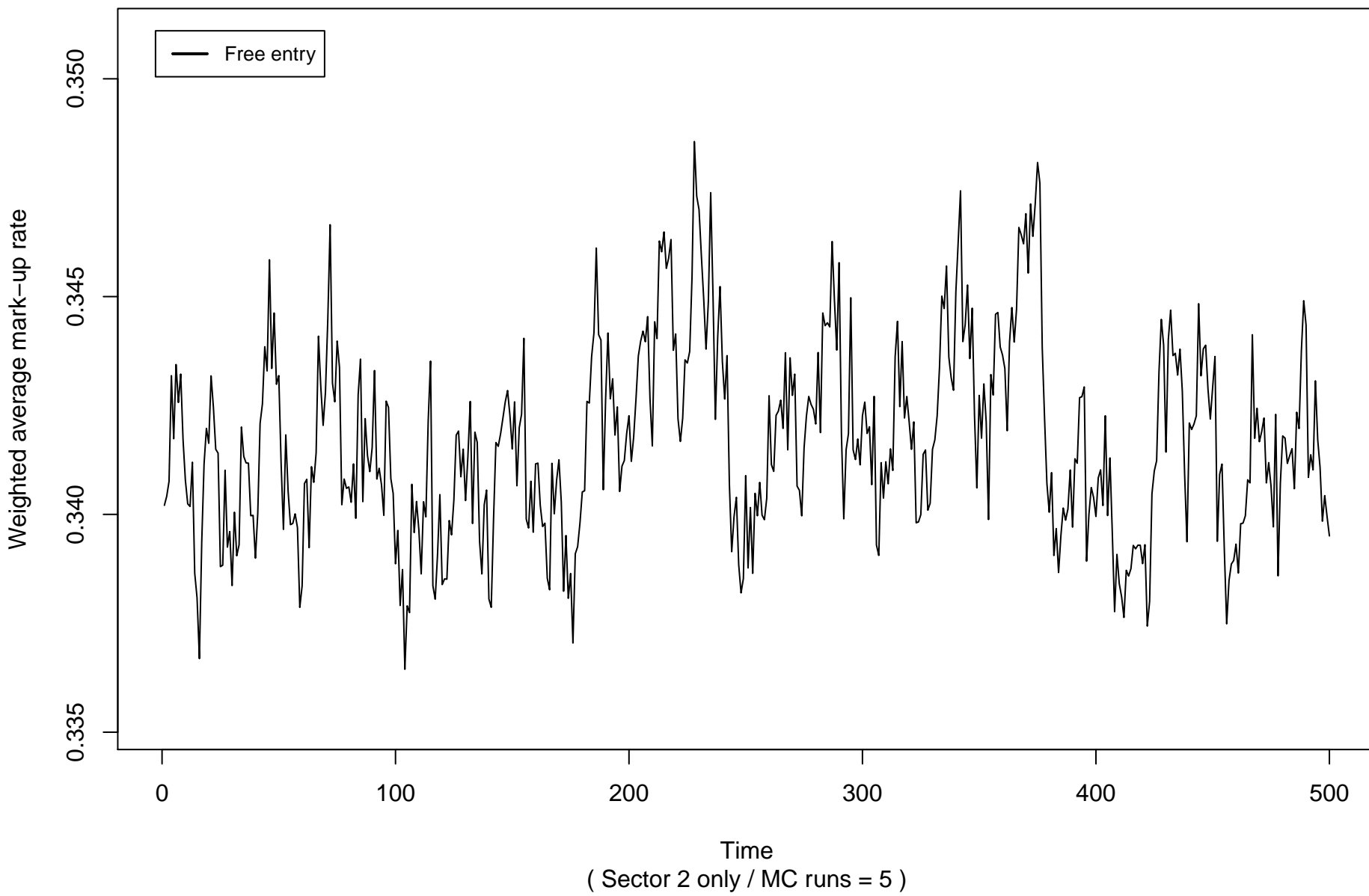
Free entry

Mark−up average (Free entry)

Weighted average mark−up rate

Time
(95% confidence band in gray, min/max values in light gray / Sector 2 only / MC runs = 5)

GDP cycles (Free entry)

Legend:
- GDP
- Consumption
- Investment
- Productivity
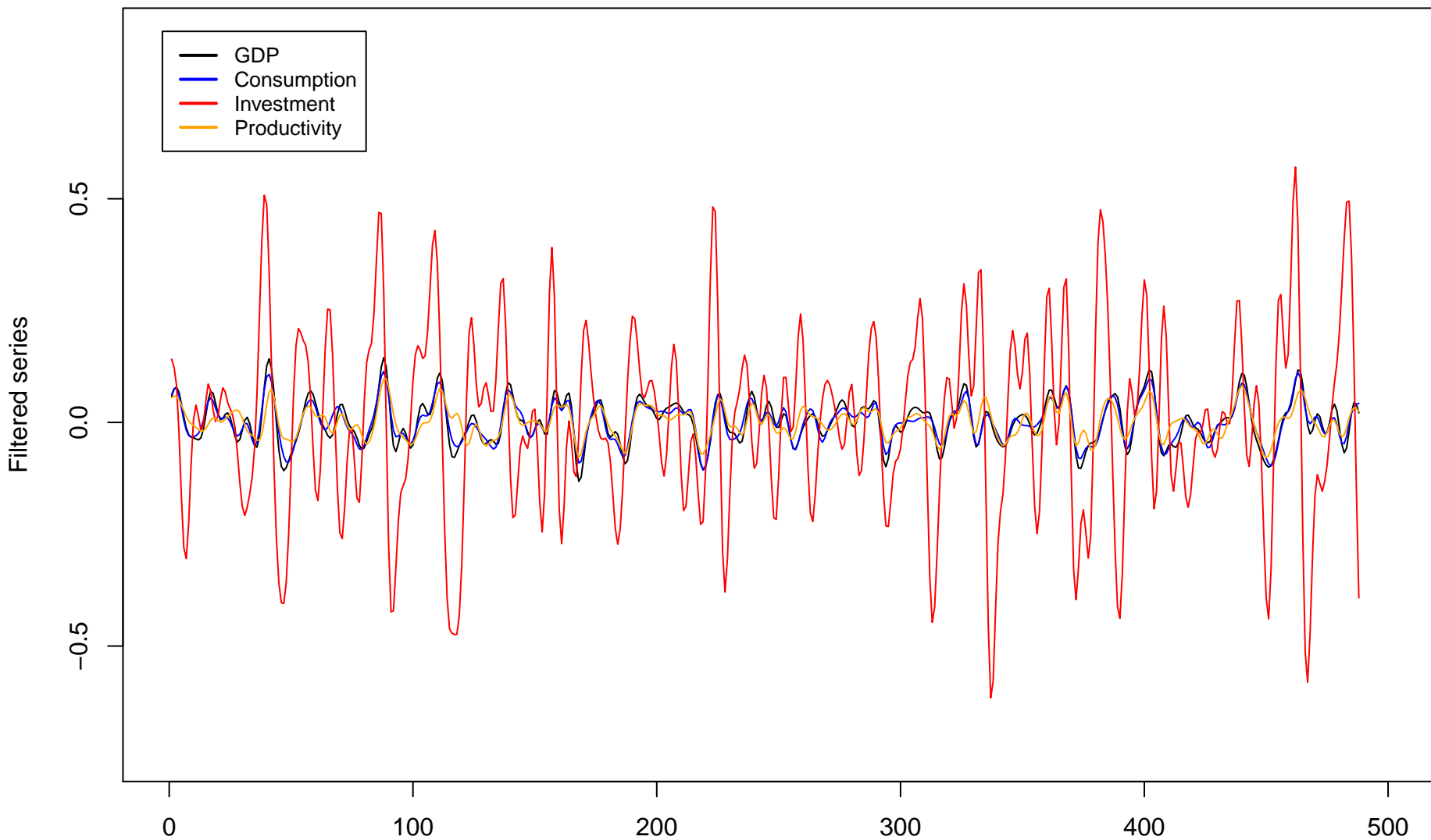
Time

(Baxter−King bandpass−filtered, low = 6Q / high = 32Q / order = 12 / MC runs = 5)

Shimer puzzle (Free entry)

Legend:
- Productivity (black)
- Unemployment (blue)
- Vacancy (red)

Filtered series

Time

(Baxter−King bandpass−filtered, low = 6Q / high = 32Q / order = 12 / MC runs = 5)
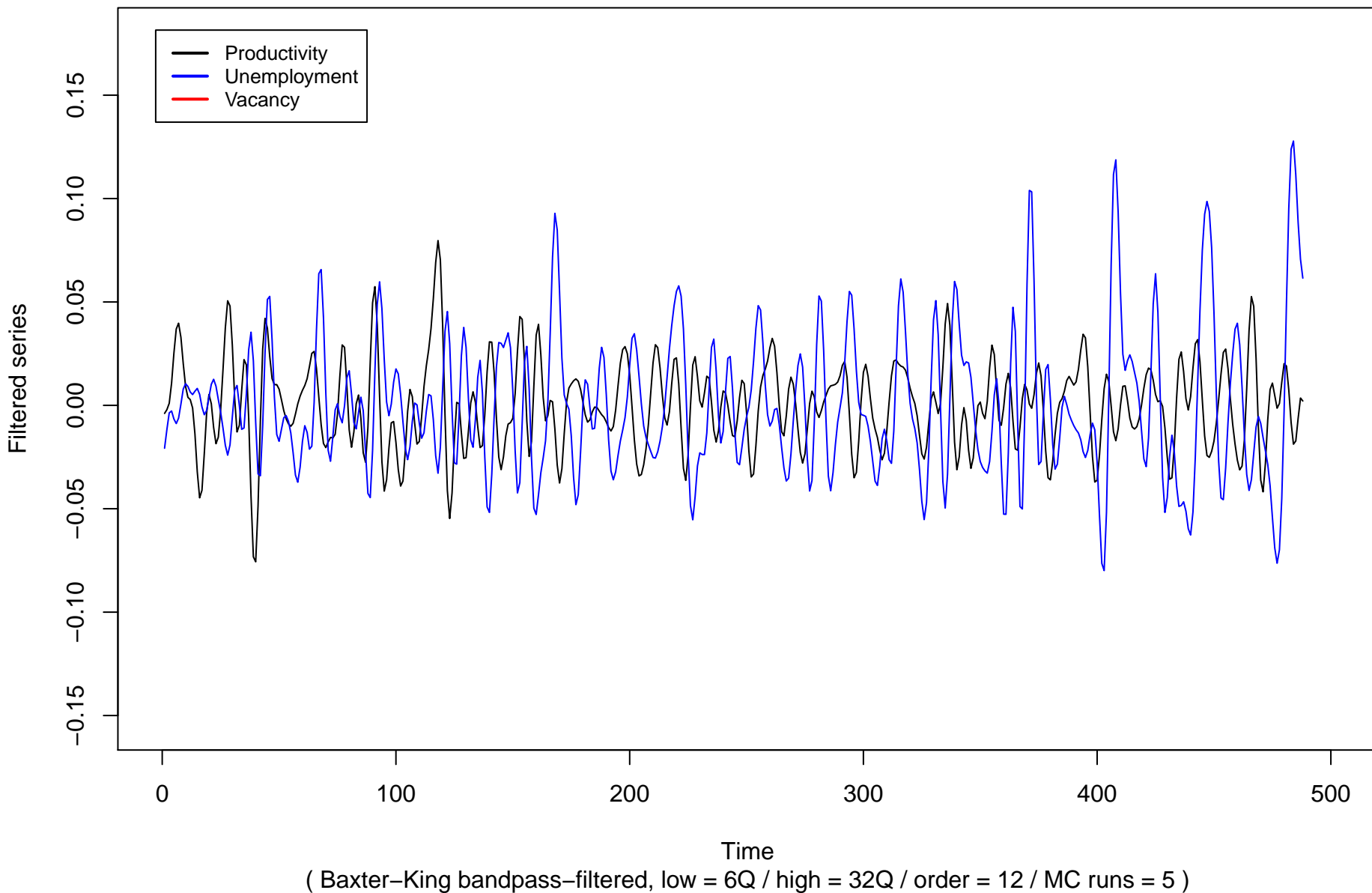
Net entry dynamics and business cycle (Free entry)

Time

(Baxter–King bandpass–filtered, low = 6Q / high = 32Q / order = 12 / MC runs = 5)

Key statistics and unit roots tests for cycles (Free entry)

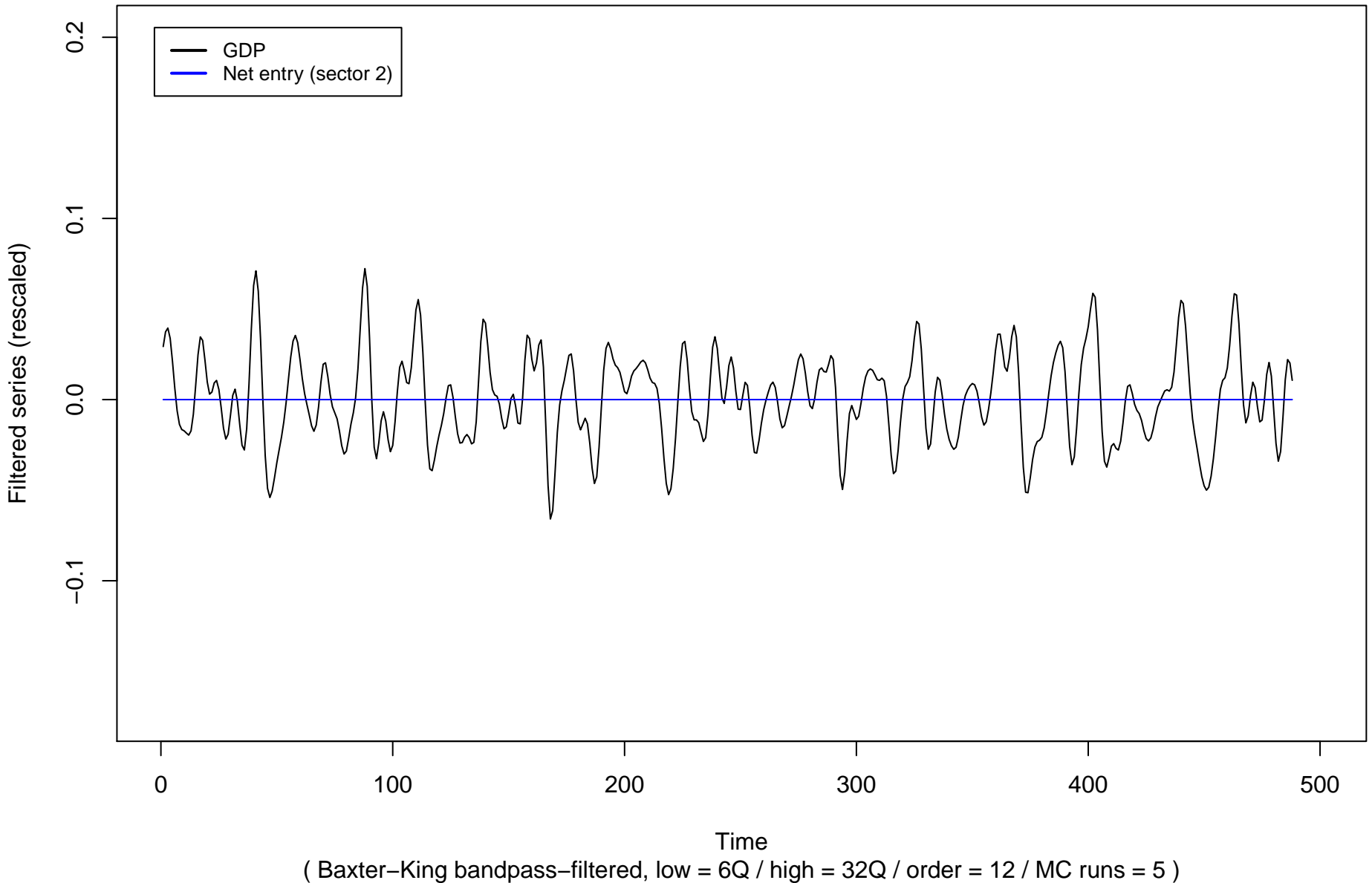|	GDP (output)	Consumption	Investment	Product.	Real wage
avg. growth rate	0.01354	0.01349	0.02504	0.01354	0.01349
(s.e.)	0.0007569	0.0007945	0.01305	0.0007993	0.0007587
ADF test (logs)	−3.002	−2.795	−6.926	−2.696	−3.048
(s.e.)	0.1402	0.2476	0.1101	0.2955	0.1371
(p−val.)	0.1693	0.2643	0.01	0.3117	0.1578
(s.e.)	0.05006	0.09092	0	0.1032	0.0373
ADF test (bpf)	−5.725	−5.711	−6.564	−5.884	−6.139
(s.e.)	0.2093	0.3257	0.1463	0.1999	0.1299
(p−val.)	0.01	0.01	0.01	0.01	0.01
(s.e.)	0	0	0	0	0
s.d. (bpf)	0.09687	0.07927	1.616	0.06896	0.06864
(s.e.)	0.006217	0.006778	0.1399	0.003002	0.00491
relative s.d. (GDP)	1	0.8183	16.68	0.7119	0.7086

(bpf: Baxter−King bandpass−filtered series, low = 6Q / high = 32Q / order = 12 / MC runs = 5 / period = 301 − 600)
(ADF test H0: there are unit roots / non−stationary at 5% level)

Correlation structure for GDP (Free entry)

	−4	−3	−2	−1	0	1	2	3	4
GDP (output)	−0.006553	0.2617	0.5987	0.8854	1	0.8854	0.5987	0.2617	−0.006553
(s.e.)	0.02372	0.02127	0.01308	0.003968	0	0.003968	0.01308	0.02127	0.02372
(p−val.)	0.9886	0.0005156	1.209e−06	1.768e−09	NA	1.768e−09	1.209e−06	0.0005156	0.9886
Consumption	0.1035	0.3411	0.622	0.8546	0.9455	0.8493	0.6054	0.3053	0.0436
(s.e.)	0.04645	0.03461	0.02179	0.01477	0.01221	0.009384	0.01389	0.01974	0.02108
(p−val.)	0.3094	0.0008264	7.757e−06	3.955e−07	1.186e−07	6.636e−08	1.459e−06	0.0001682	0.9204
Investment	−0.3129	−0.4423	−0.4787	−0.3519	−0.07512	0.2452	0.4737	0.5284	0.4235
(s.e.)	0.04179	0.02768	0.01805	0.03472	0.05441	0.06487	0.06292	0.0527	0.04554
(p−val.)	0.002539	9.844e−05	1.245e−05	0.0007174	0.1462	0.03179	0.001664	0.0005233	0.0008274
Net investment	−0.2747	−0.4029	−0.4465	−0.335	−0.07754	0.2262	0.4446	0.4955	0.3907
(s.e.)	0.03766	0.02571	0.01915	0.03649	0.05861	0.07277	0.07383	0.065	0.05625
(p−val.)	0.003327	0.0001156	2.197e−05	0.001103	0.157	0.053	0.003915	0.001537	0.002623
Change in inventories	−0.2863	−0.2088	0.00304	0.2554	0.4176	0.4071	0.2457	0.04258	−0.08739
(s.e.)	0.03509	0.02043	0.02304	0.02804	0.01624	0.02368	0.04776	0.05209	0.0321
(p−val.)	0.002091	0.001618	0.9941	0.001667	1.583e−05	7.957e−05	0.01279	0.2311	0.3613
Unemployment rate	0.2697	0.2994	0.2309	0.06252	−0.1465	−0.299	−0.3327	−0.2488	−0.109
(s.e.)	0.04285	0.03045	0.01615	0.02785	0.04725	0.05799	0.06731	0.07397	0.06857
(p−val.)	0.005724	0.0009839	0.0003658	0.66	0.1161	0.009748	0.00994	0.04234	0.07061
Productivity	0.09191	0.2907	0.5408	0.7578	0.8494	0.7695	0.5528	0.2853	0.05531
(s.e.)	0.08365	0.07415	0.04469	0.01402	0.02625	0.04939	0.07454	0.09168	0.0879
(p−val.)	0.01922	0.02341	0.0002496	5.479e−07	4.034e−06	7.633e−05	0.001582	0.03492	0.05549
Mark−up (sector 2)	0.207	0.1142	−0.00579	−0.1207	−0.1985	−0.225	−0.2099	−0.1789	−0.1538
(s.e.)	0.07839	0.05563	0.03515	0.03878	0.05762	0.07066	0.07408	0.06959	0.06166
(p−val.)	0.09022	0.2515	0.8298	0.1768	0.05445	0.05469	0.07725	0.06325	0.03194
Total firm debt	0.09736	0.007296	−0.08751	−0.1617	−0.1983	−0.1967	−0.1704	−0.1358	−0.1025
(s.e.)	0.06724	0.09109	0.1074	0.109	0.09243	0.06063	0.02874	0.03564	0.0601
(p−val.)	0.07039	0.03185	0.09622	0.1177	0.1101	0.06331	0.01736	0.09641	0.0594
Liquidity−to−sales ratio	0.1858	−0.05842	−0.3441	−0.5898	−0.7195	−0.6995	−0.56	−0.3667	−0.1847
(s.e.)	0.04621	0.03172	0.02912	0.03141	0.02323	0.01514	0.02889	0.04419	0.0551
(p−val.)	0.04199	0.6601	0.0004095	4.219e−05	5.174e−06	1.067e−06	3.842e−05	0.001454	0.06514
Bankruptcy rate	0.3596	0.3822	0.2804	0.0858	−0.1155	−0.2366	−0.2424	−0.173	−0.09933
(s.e.)	0.07528	0.1222	0.1558	0.1539	0.115	0.0577	0.02185	0.04254	0.05001
(p−val.)	0.0103	0.01528	0.01577	0.02656	0.03028	0.02668	0.0008755	0.04708	0.2962

(non−rate/ratio series are Baxter−King bandpass−filtered, low = 6Q / high = 32Q / order = 12 / MC runs = 5 / period = 301 − 600)
(test H0: lag coefficient is not significant at 5% level)

Correlation structure for GDP (Free entry)

	−4	−3	−2	−1	0	1	2	3	4
GDP (output)	−0.006553	0.2617	0.5987	0.8854	1	0.8854	0.5987	0.2617	−0.006553
(s.e.)	0.02372	0.02127	0.01308	0.003968	0	0.003968	0.01308	0.02127	0.02372
(p−val.)	0.9886	0.0005156	1.209e−06	1.768e−09	NA	1.768e−09	1.209e−06	0.0005156	0.9886
Consumption	0.1035	0.3411	0.622	0.8546	0.9455	0.8493	0.6054	0.3053	0.0436
(s.e.)	0.04645	0.03461	0.02179	0.01477	0.01221	0.009384	0.01389	0.01974	0.02108
(p−val.)	0.3094	0.0008264	7.757e−06	3.955e−07	1.186e−07	6.636e−08	1.459e−06	0.0001682	0.9204
Investment	−0.3129	−0.4423	−0.4787	−0.3519	−0.07512	0.2452	0.4737	0.5284	0.4235
(s.e.)	0.04179	0.02768	0.01805	0.03472	0.05441	0.06487	0.06292	0.0527	0.04554
(p−val.)	0.002539	9.844e−05	1.245e−05	0.0007174	0.1462	0.03179	0.001664	0.0005233	0.0008274
Productivity	0.09191	0.2907	0.5408	0.7578	0.8494	0.7695	0.5528	0.2853	0.05531
(s.e.)	0.08365	0.07415	0.04469	0.01402	0.02625	0.04939	0.07454	0.09168	0.0879
(p−val.)	0.01922	0.02341	0.0002496	5.479e−07	4.034e−06	7.633e−05	0.001582	0.03492	0.05549
Net entry	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
(s.e.)	NA	NA	NA	NA	NA	NA	NA	NA	NA
(p−val.)	1	1	1	1	1	1	1	1	1
Entry	−0.1389	0.05722	0.3039	0.5251	0.6405	0.6057	0.4522	0.2537	0.08676
(s.e.)	0.03623	0.04062	0.04753	0.04885	0.04325	0.03524	0.0268	0.02081	0.02524
(p−val.)	0.08977	0.4821	0.00462	0.0004024	0.0001023	5.883e−05	7.795e−05	0.0005638	0.4012
Wage	0.4182	0.5948	0.7263	0.7632	0.6863	0.5193	0.3175	0.1343	−0.001839
(s.e.)	0.05741	0.03683	0.008156	0.02843	0.05662	0.07179	0.07107	0.05729	0.03705
(p−val.)	0.002077	7.598e−05	7.602e−08	8.89e−06	0.0002155	0.001806	0.0144	0.1986	0.7693
Unemployment rate	0.2697	0.2994	0.2309	0.06252	−0.1465	−0.299	−0.3327	−0.2488	−0.109
(s.e.)	0.04285	0.03045	0.01615	0.02785	0.04725	0.05799	0.06731	0.07397	0.06857
(p−val.)	0.005724	0.0009839	0.0003658	0.66	0.1161	0.009748	0.00994	0.04234	0.07061
Vacancy rate	0.1983	−0.02271	−0.2965	−0.5166	−0.5941	−0.5104	−0.3298	−0.1509	−0.04588
(s.e.)	0.07022	0.06417	0.05668	0.06768	0.08793	0.09213	0.07412	0.04587	0.04048
(p−val.)	0.03134	0.1757	0.009396	0.001486	0.002134	0.004754	0.01403	0.09851	0.5119

(non−rate/ratio series are Baxter−King bandpass−filtered, low = 6Q / high = 32Q / order = 12 / MC runs = 5 / period = 301 − 600)
(test H0: lag coefficient is not significant at 5% level)

# Stationarity, i.i.d. and ergodicity tests (Free entry)

	avg.ADF	rej.ADF	avg.PP	rej.PP	avg.KPSS	rej.KPSS	avg.BDS	rej.BDS	avg.KS	rej.KS	AD	
dGDP	0.01	1.00	0.01	1.00	0.10	0.00	0.16	0.40	0.32	0.20	0.00	
dA	0.01	1.00	0.01	1.00	0.10	0.00	0.00	1.00	0.14	0.30	0.00	
dw	0.01	1.00	0.01	1.00	0.10	0.00	0.01	1.00	0.12	0.30	0.00	
V	0.01	1.00	0.01	1.00	0.10	0.00	0.05	0.80	0.09	0.90	0.00	
U	0.01	1.00	0.01	1.00	0.05	0.60	0.00	1.00	0.12	0.80	0.00	
mu2avg	0.05	0.80	0.01	1.00	0.04	0.60	0.00	1.00	0.05	0.90	0.00	
HH1	0.01	1.00	0.01	1.00	0.10	0.00	0.00	1.00	0.12	0.80	0.00	
HH2	0.02	0.80	0.01	1.00	0.06	0.40	0.01	1.00	0.14	0.70	0.00	

(average p−values for testing H0 and rate of rejection of H0 / MC runs = 5 / period = 301 − 600)
(ADF/PP H0: non−stationary, KPSS H0: stationary, BDS H0: i.i.d., KS/AD/WW H0: ergodic)
(significance = 0.05)

GDP growth

Average GDP growth rate
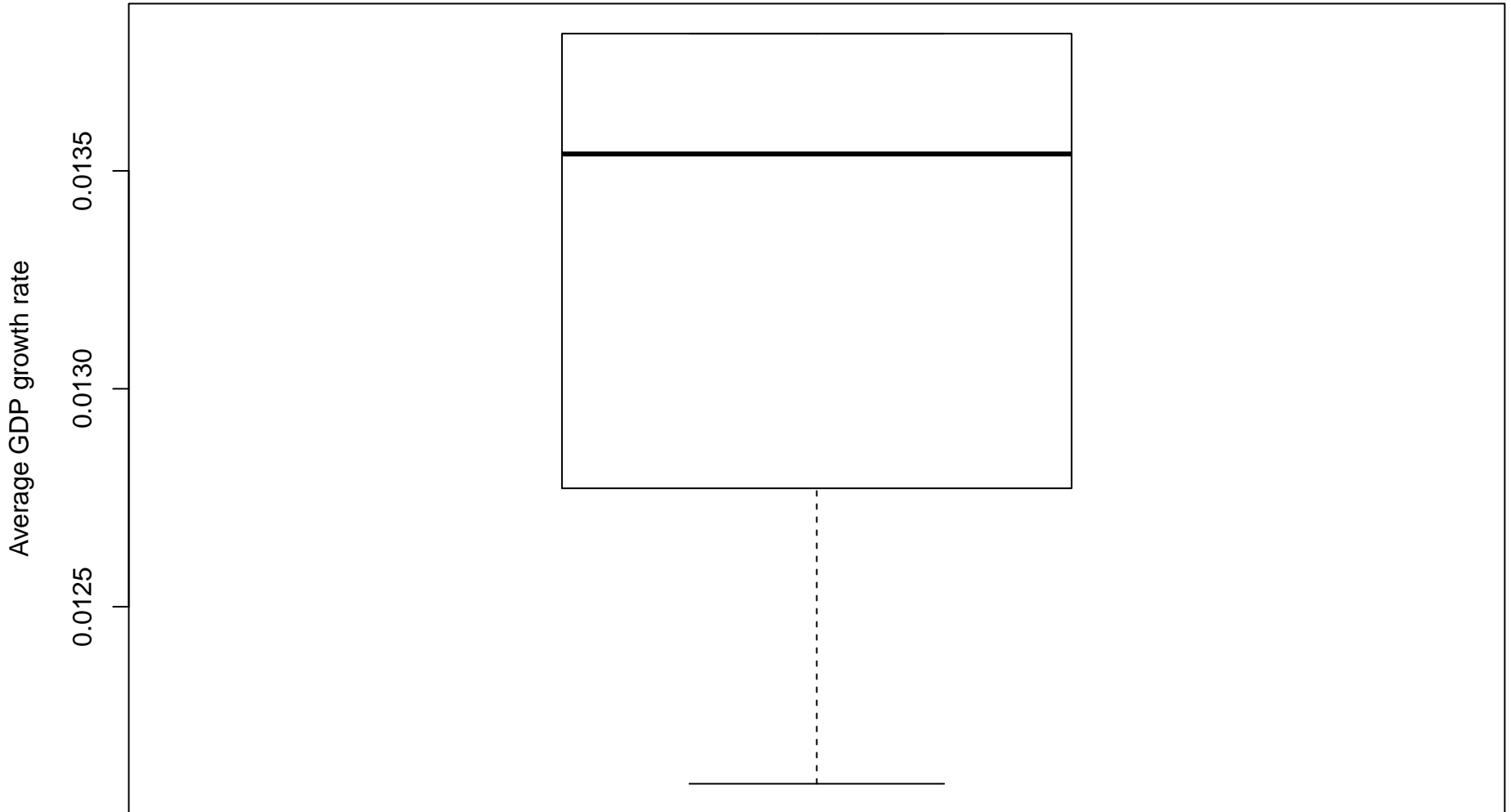
(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 301 – 600)
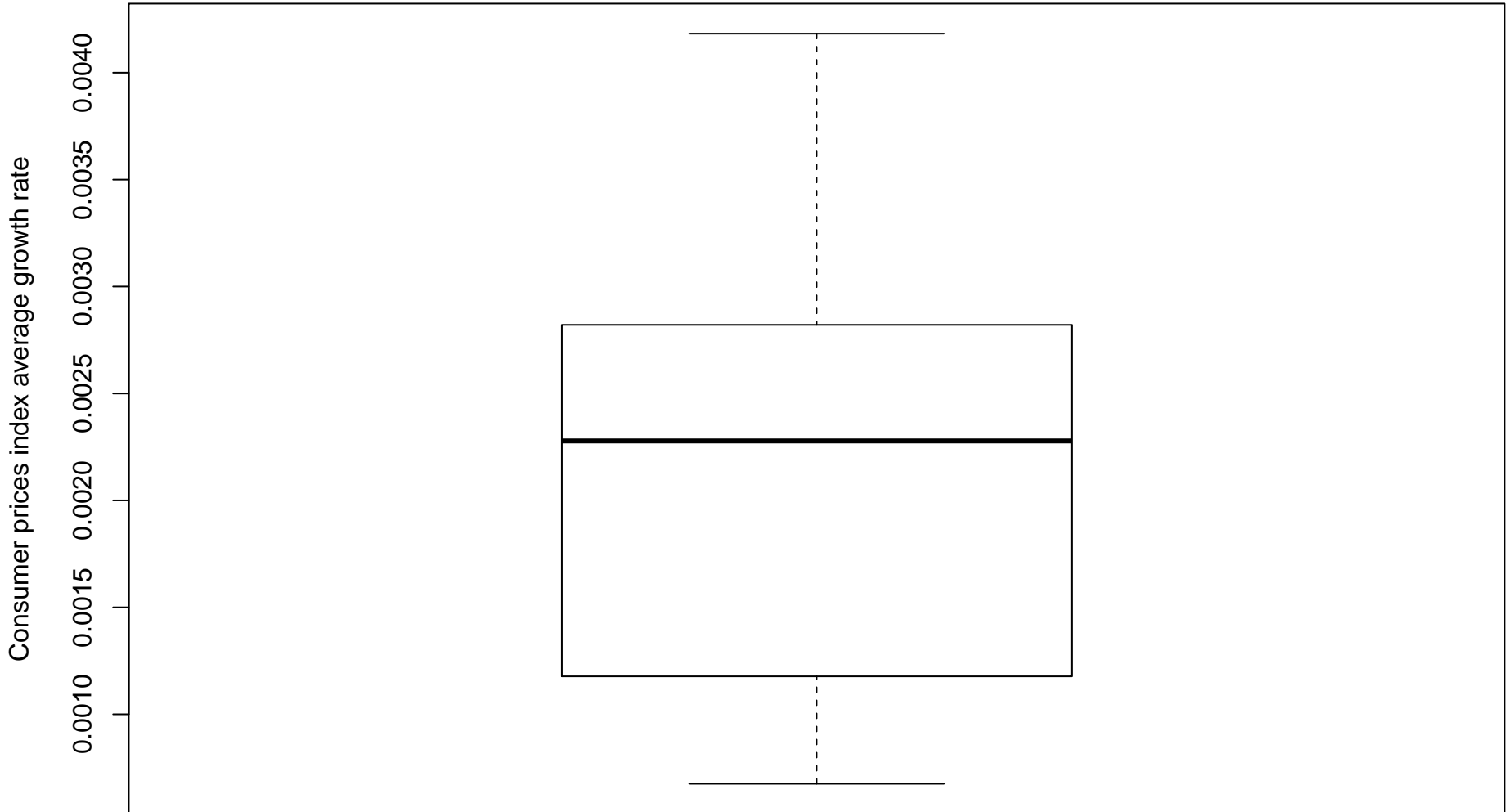
Volatility of GDP growth
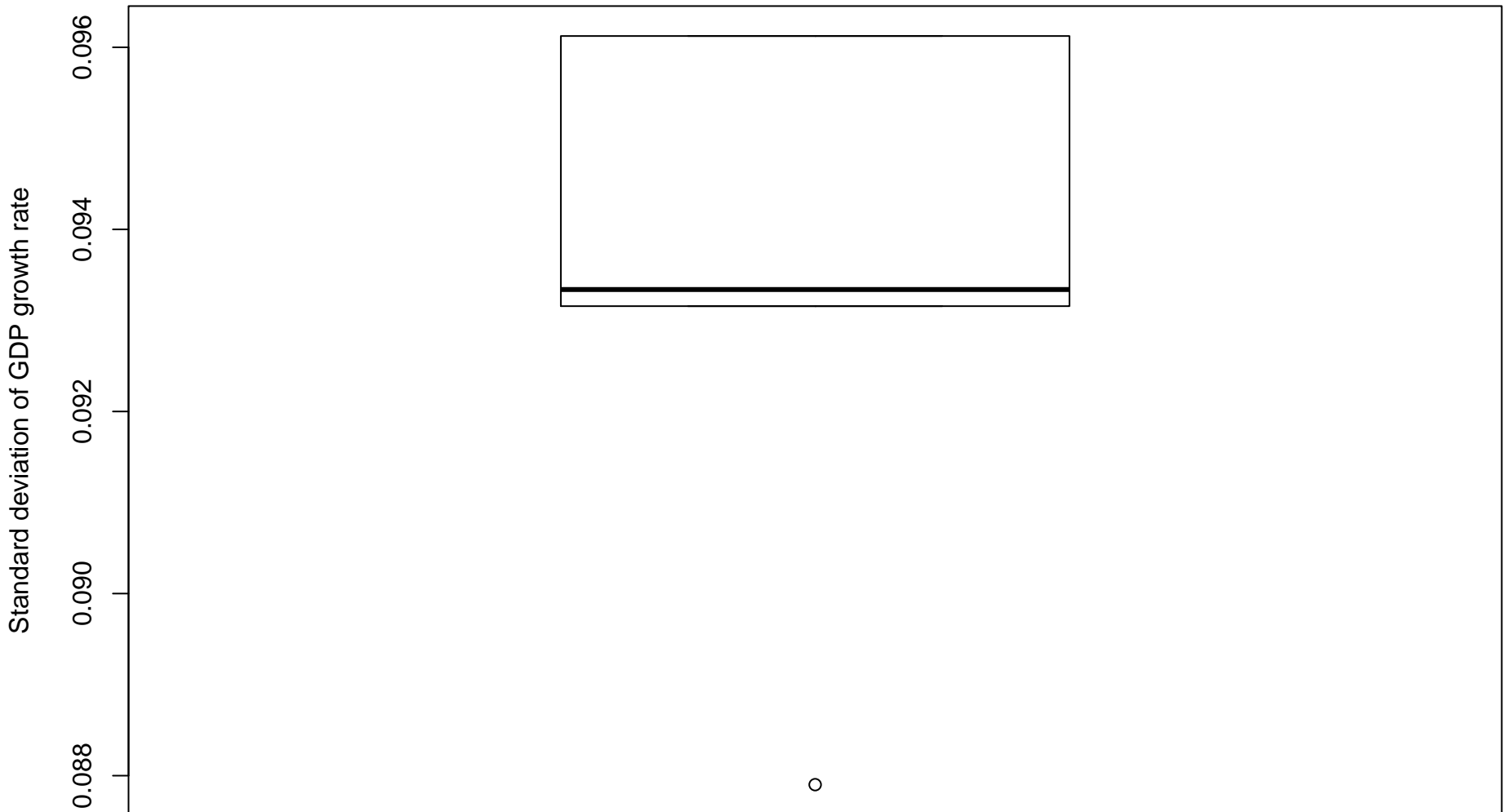
(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 301 – 600)
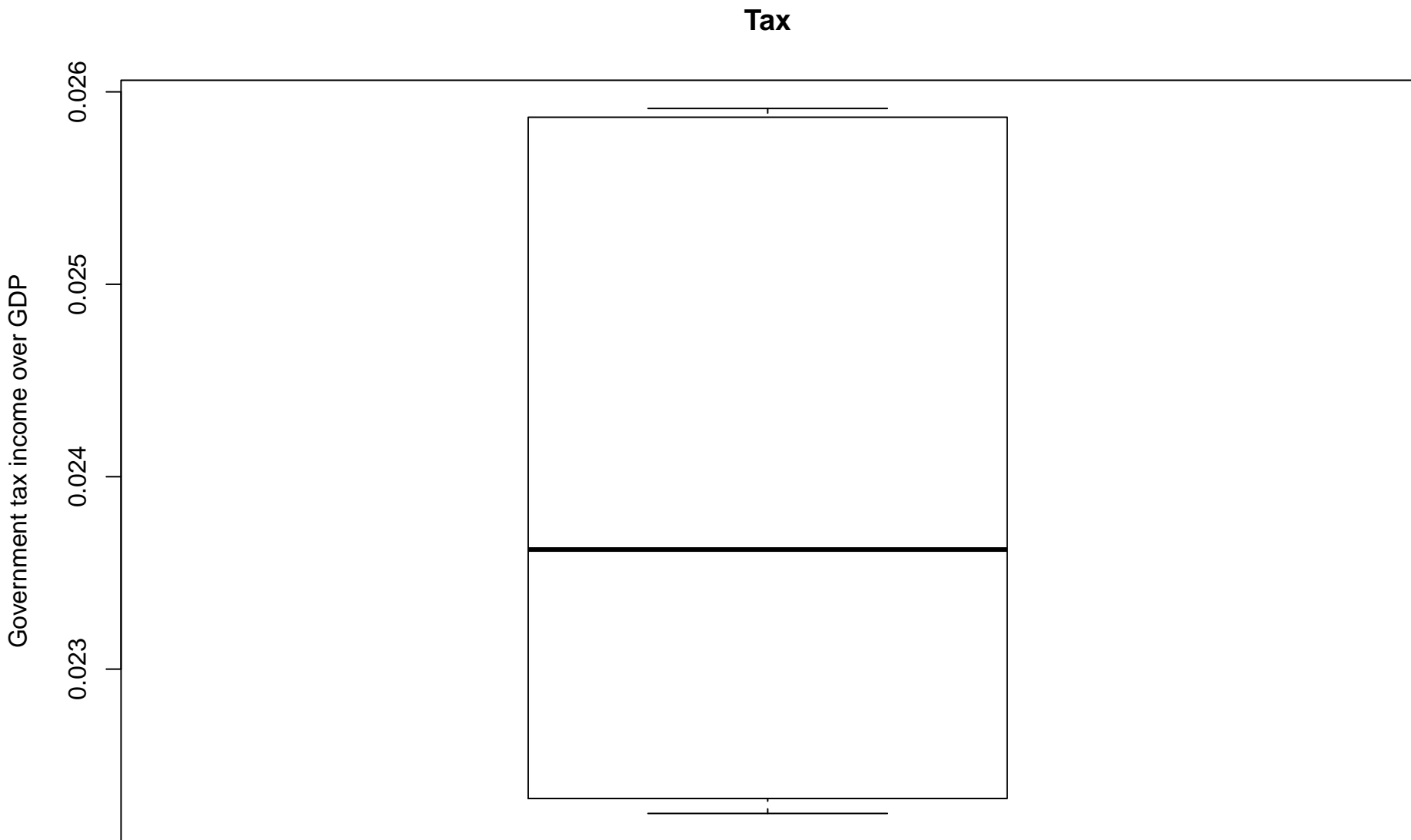
Likelihood of GDP crises
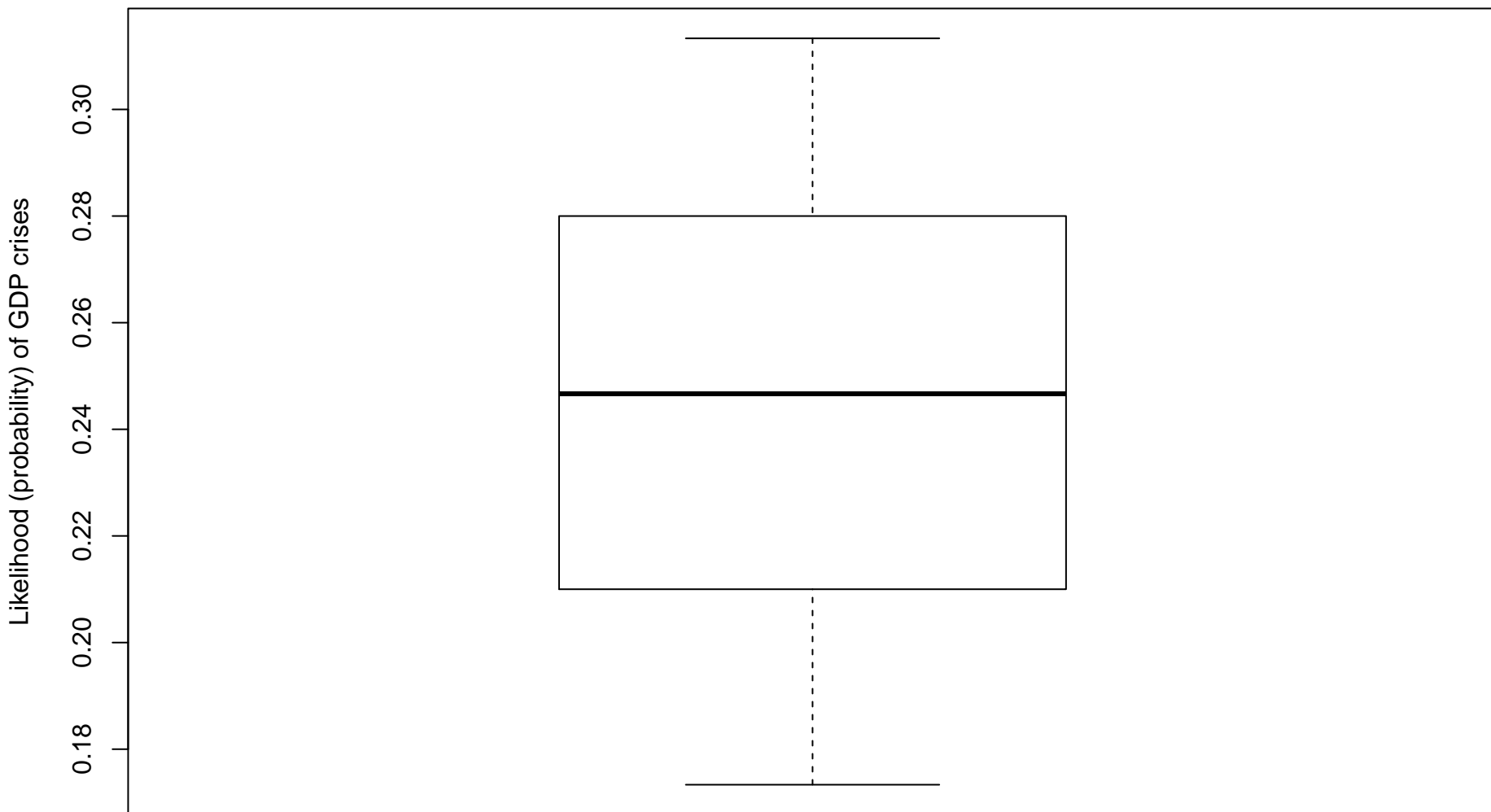
(bar: median / box: 2nd−3rd quartile / whiskers: max−min / points: outliers / MC runs = 5 / period = 301 − 600)
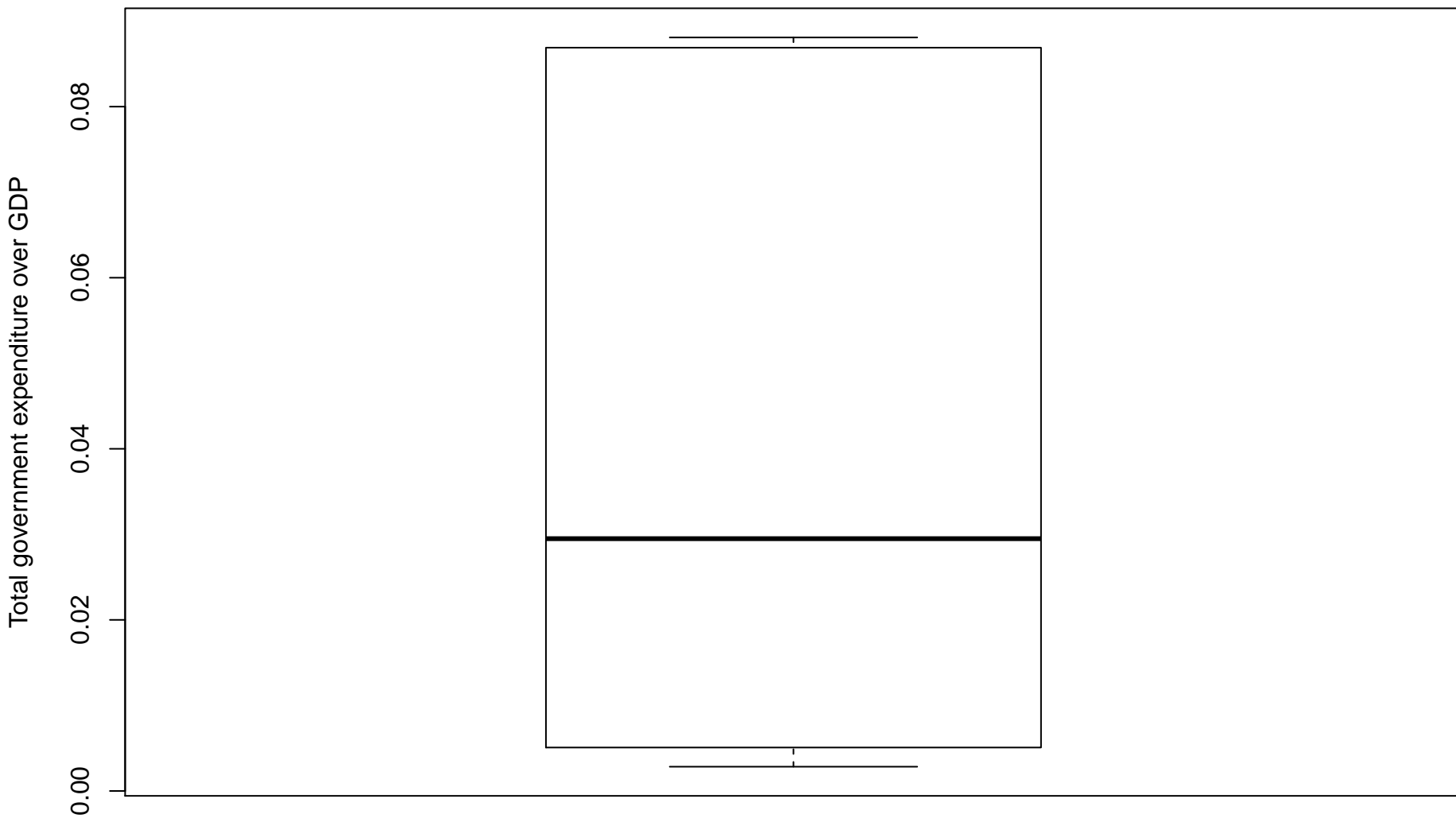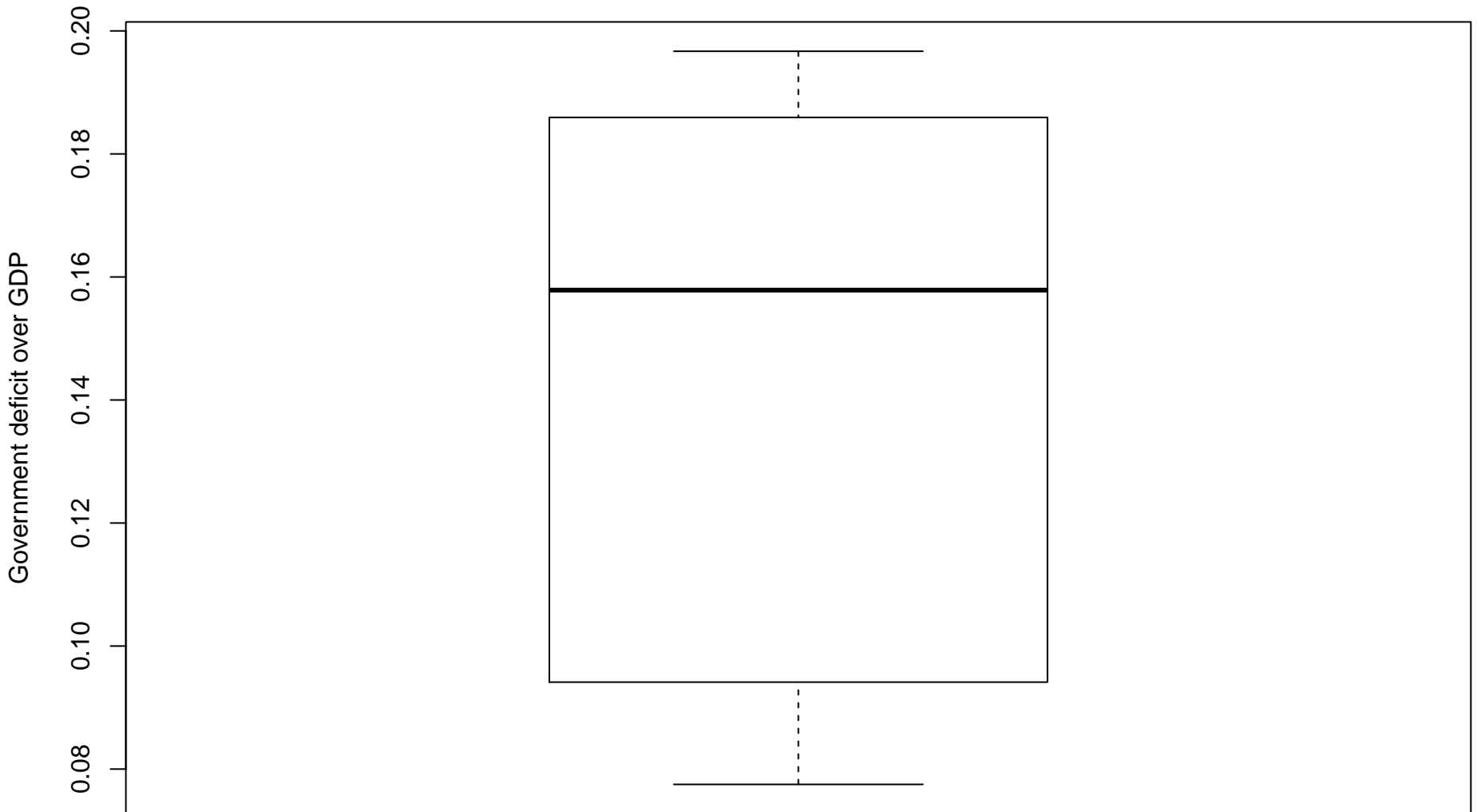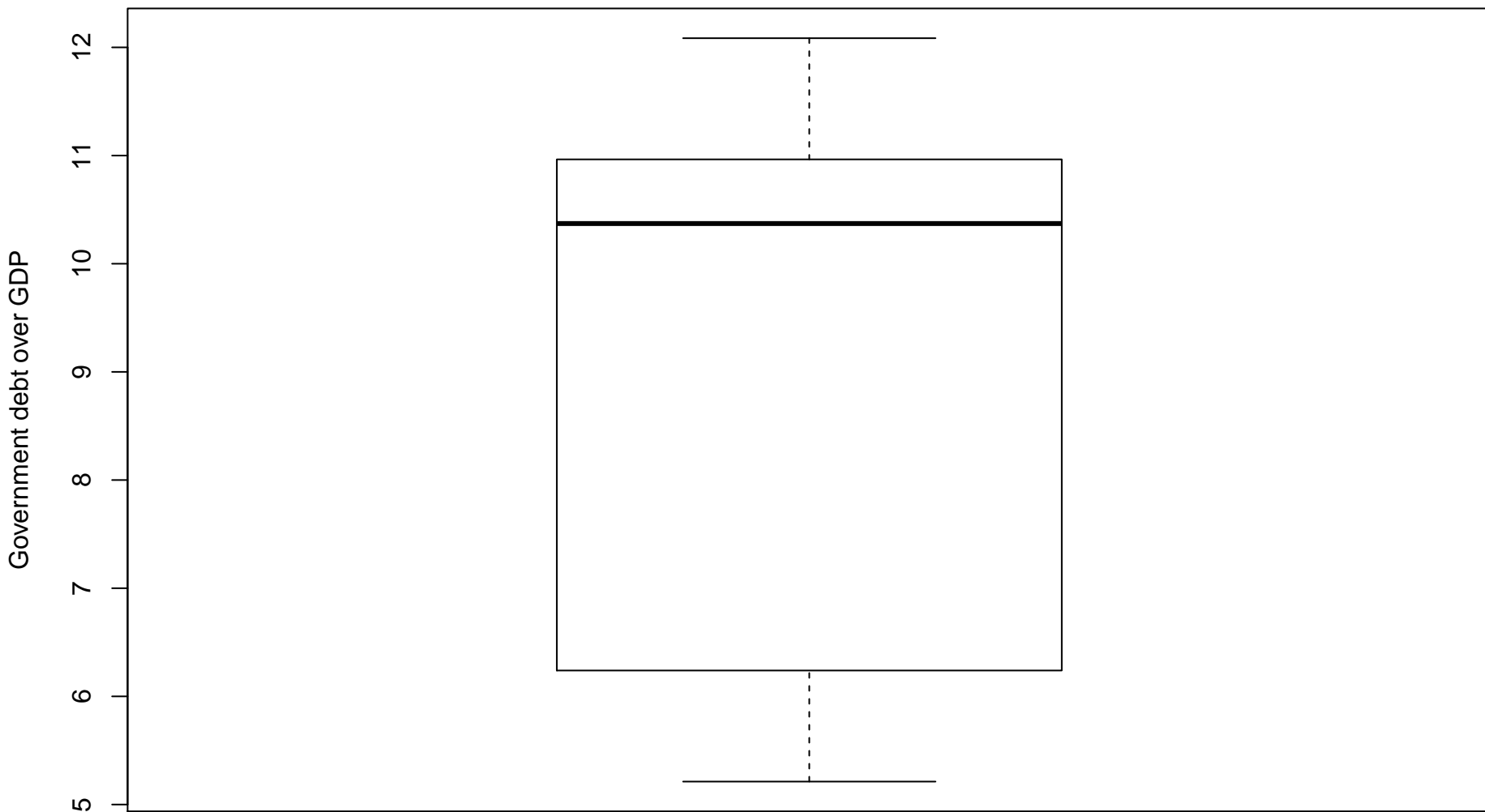
Inflation

(bar: median / box: 2nd−3rd quartile / whiskers: max−min / points: outliers / MC runs = 5 / period = 301 − 600)

Tax

(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 301 – 600)

Government total expenditure

Total government expenditure over GDP

(bar: median / box: 2nd−3rd quartile / whiskers: max−min / points: outliers / MC runs = 5 / period = 301 − 600)

Government deficit

Government deficit over GDP

(bar: median / box: 2nd−3rd quartile / whiskers: max−min / points: outliers / MC runs = 5 / period = 301 − 600)

Government debt

(bar: median / box: 2nd−3rd quartile / whiskers: max−min / points: outliers / MC runs = 5 / period = 301 − 600)
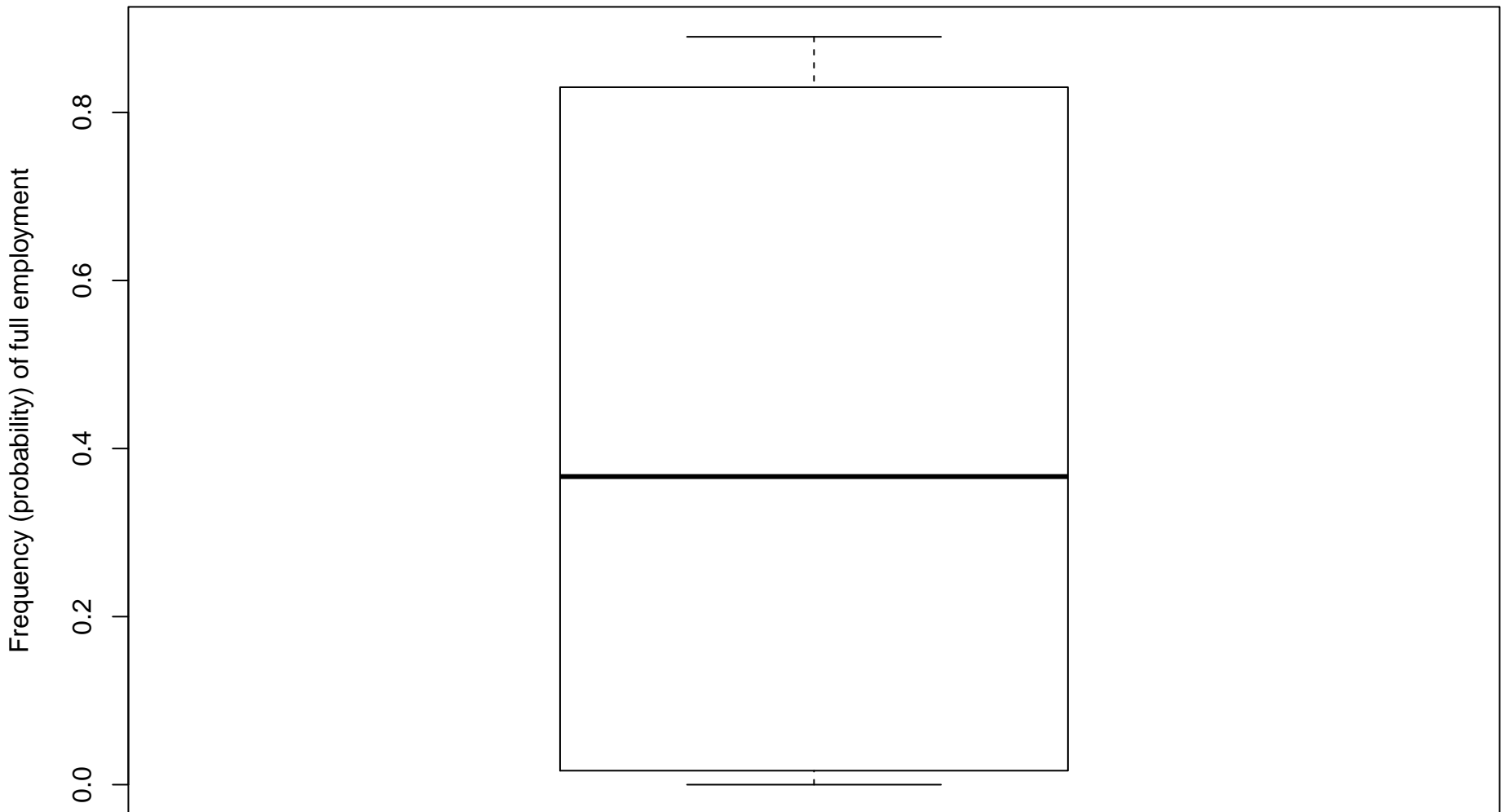
Credit supply

Total banks credit supply over GDP
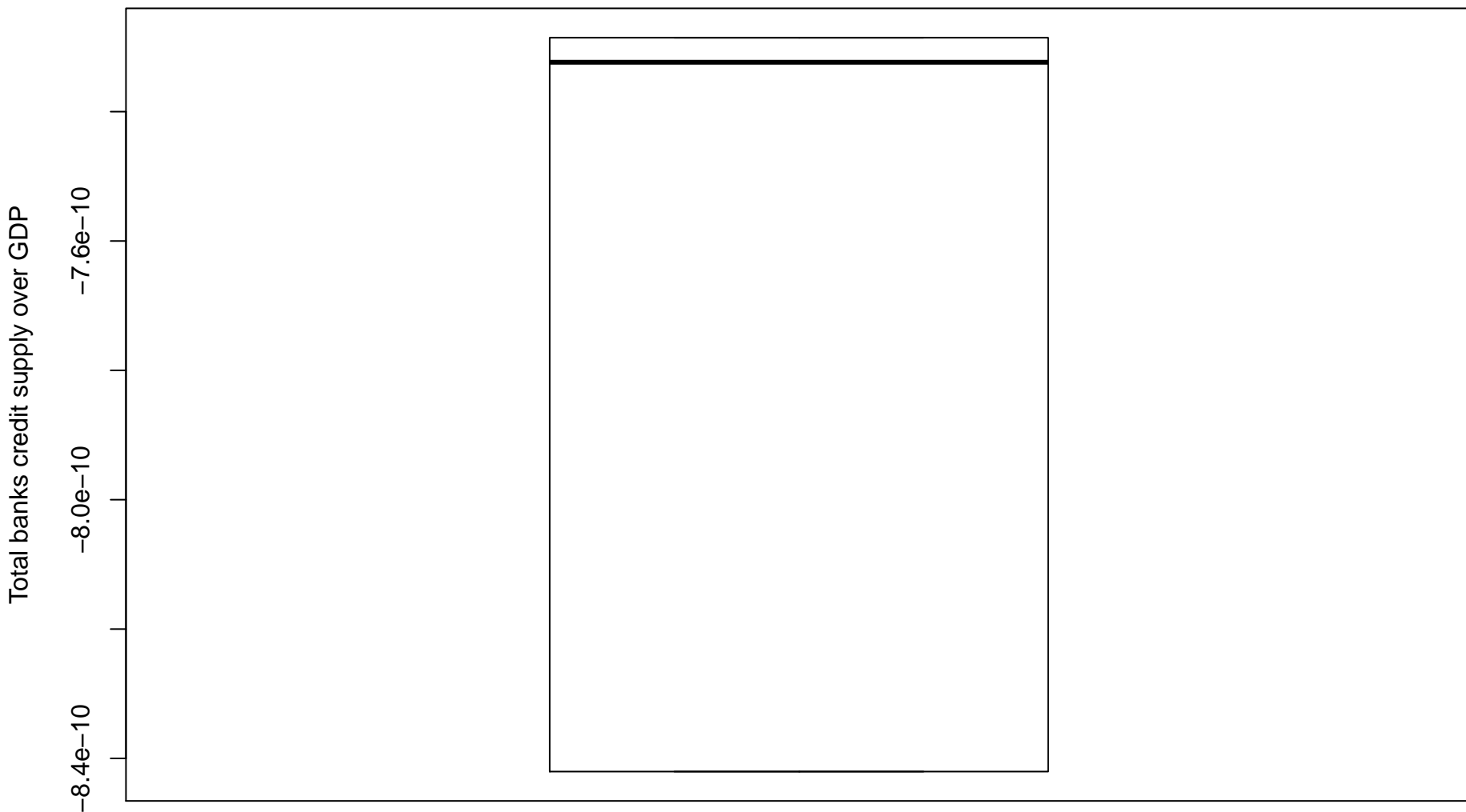
(bar: median / box: 2nd−3rd quartile / whiskers: max−min / points: outliers / MC runs = 5 / period = 301 − 600)

Loans
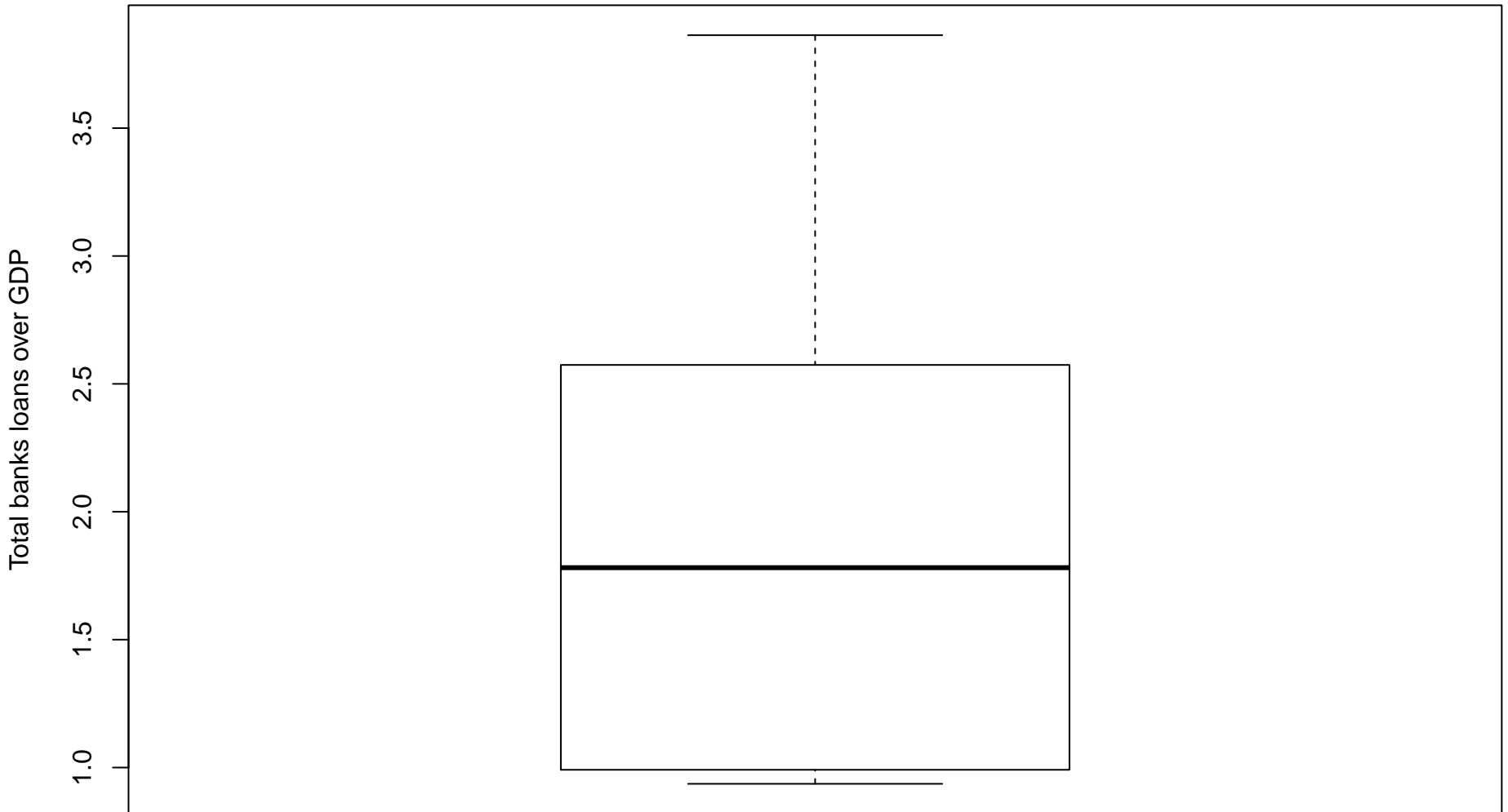
(bar: median / box: 2nd−3rd quartile / whiskers: max−min / points: outliers / MC runs = 5 / period = 301 − 600)
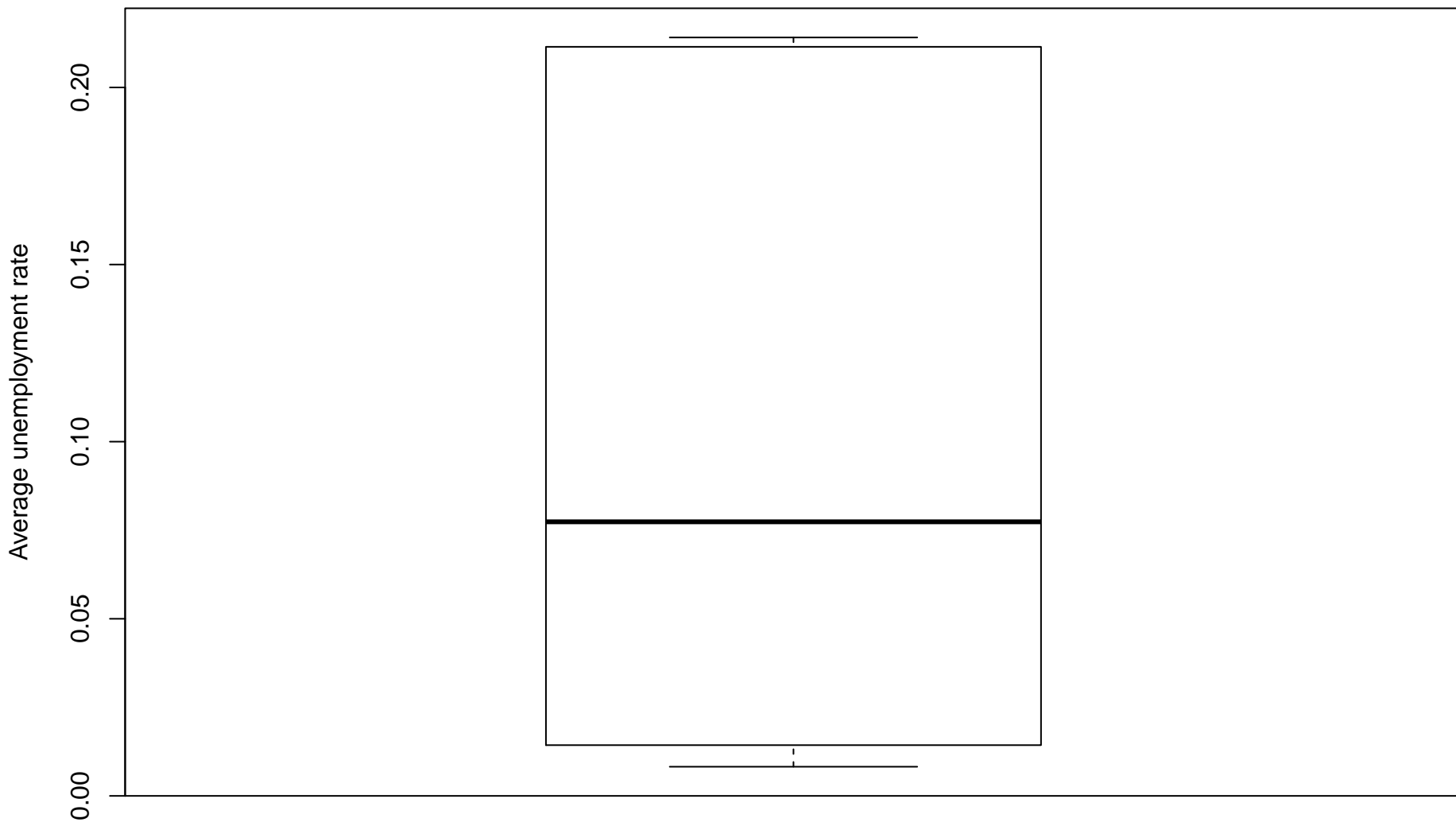
Capacity utilization

Average capacity utilization rate in sector 2
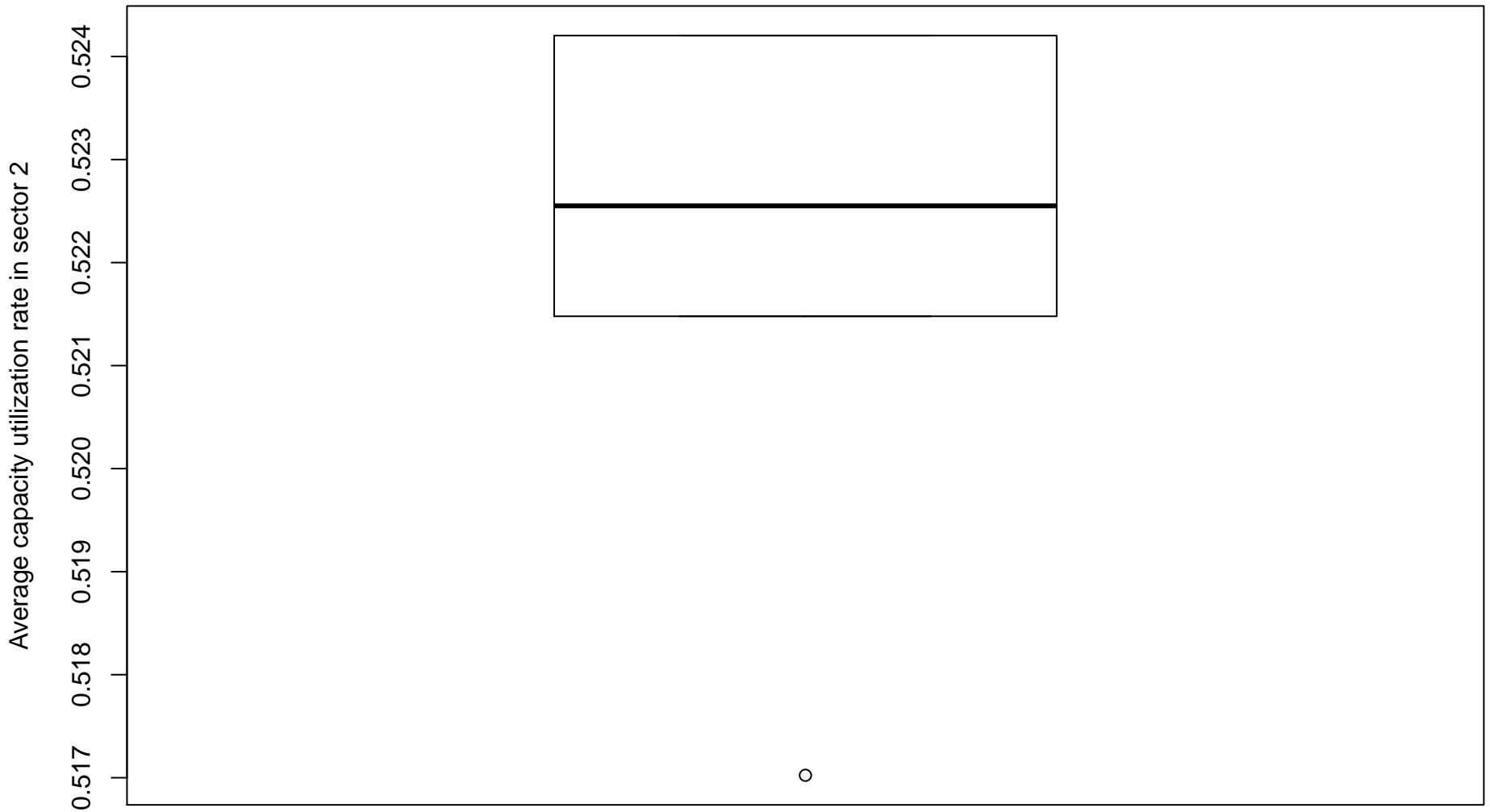
(bar: median / box: 2nd–3rd quartile / whiskers: max−min / points: outliers / MC runs = 5 / period = 301 − 600)
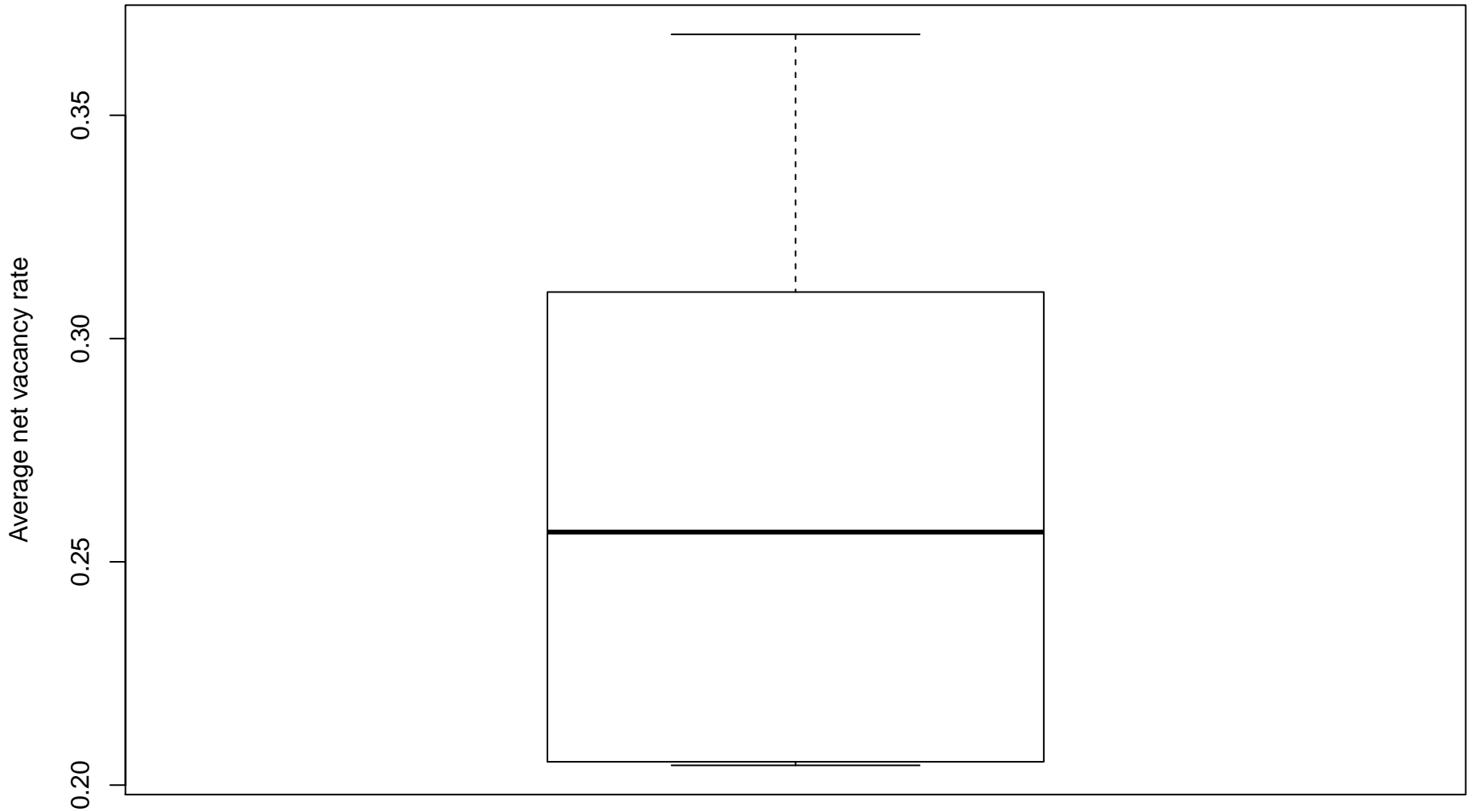
Full employment frequency

Frequency (probability) of full employment

(bar: median / box: 2nd−3rd quartile / whiskers: max−min / points: outliers / MC runs = 5 / period = 301 − 600)

Unemployment
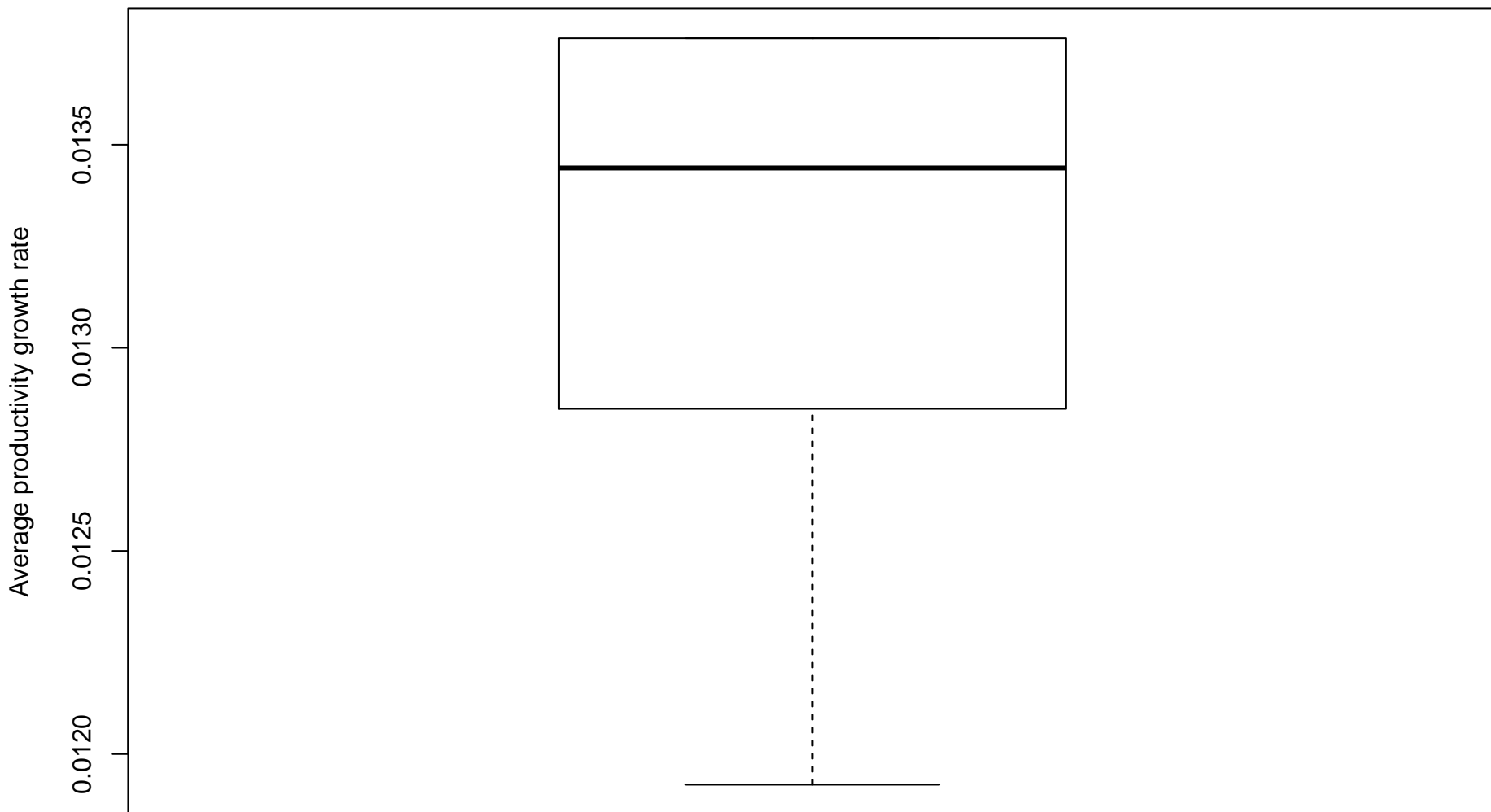

Average unemployment rate

(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 301 – 600)

Vacancy

(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 301 – 600)

Productivity growth

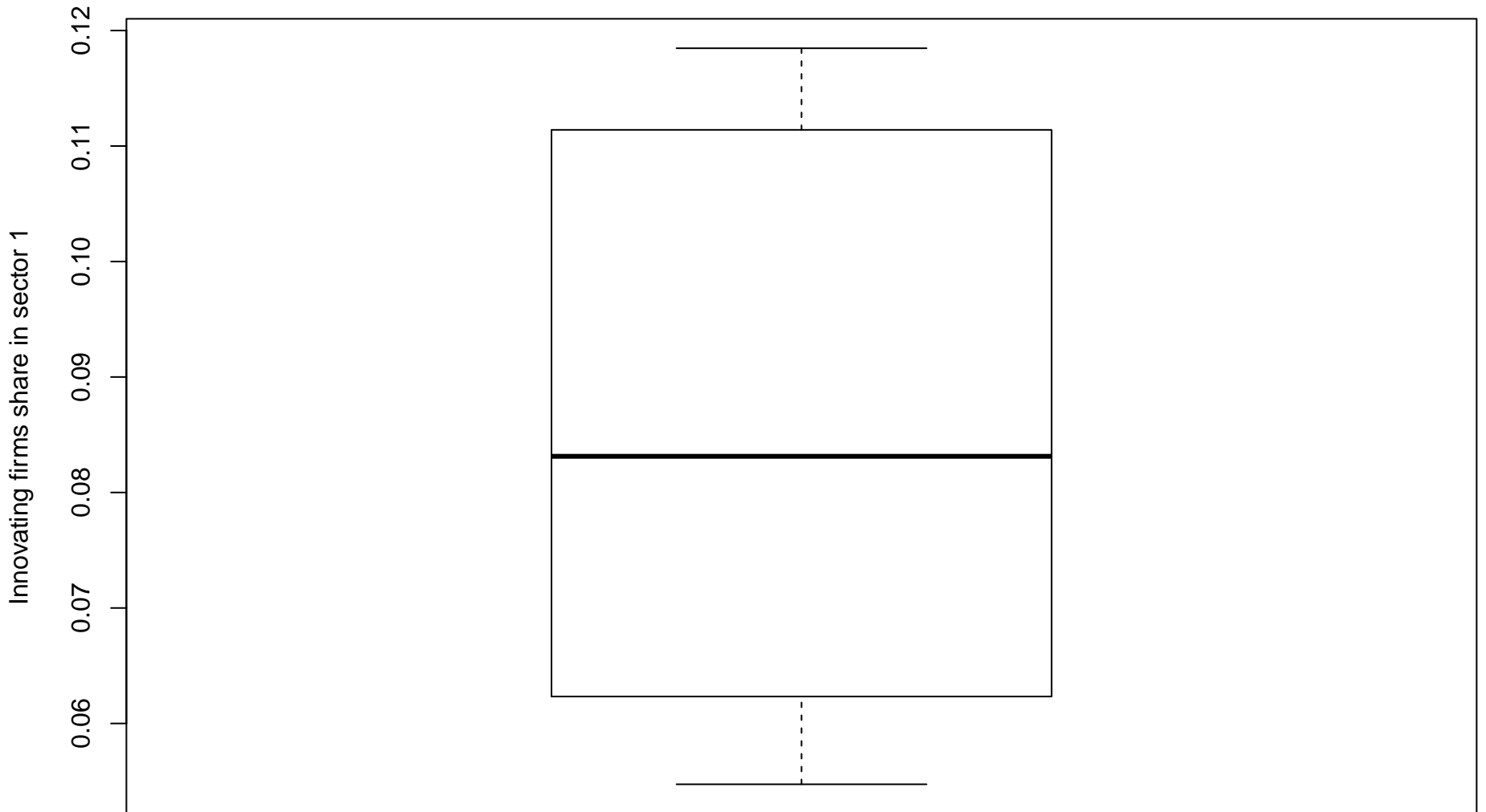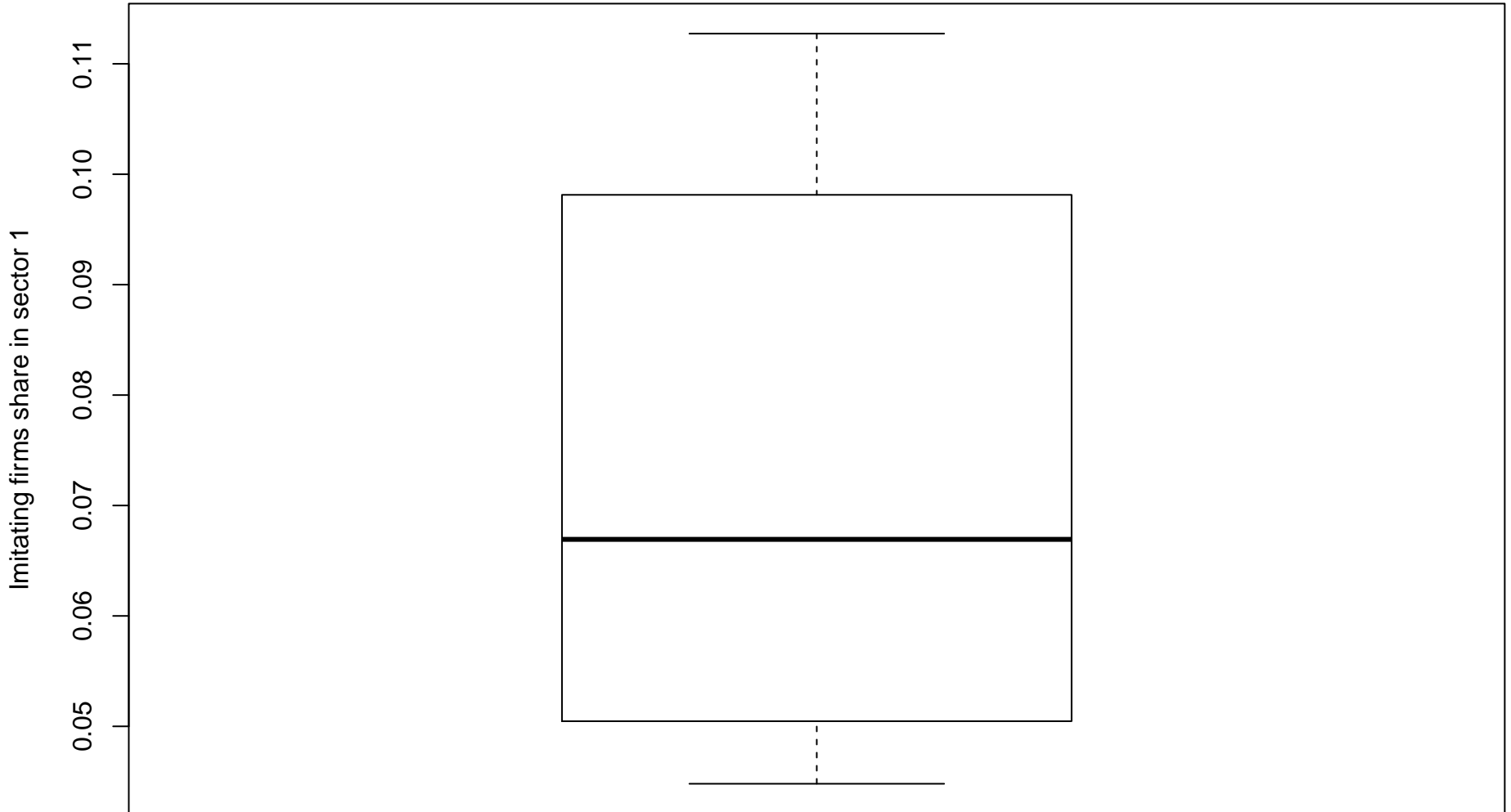Average productivity growth rate
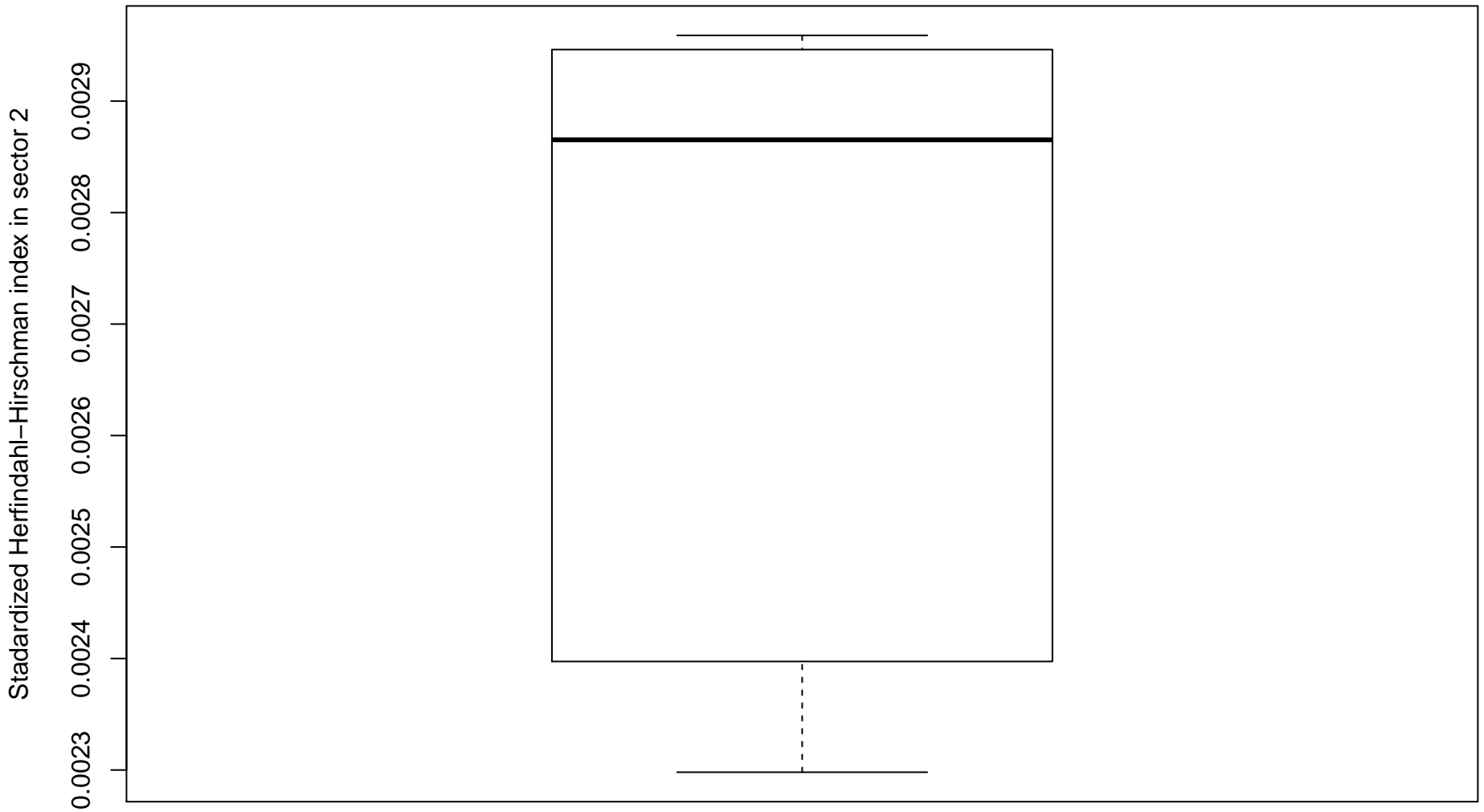
0.0135

0.0130

0.0125

0.0120

(bar: median / box: 2nd−3rd quartile / whiskers: max−min / points: outliers / MC runs = 5 / period = 301 − 600)

Innovation

(bar: median / box: 2nd−3rd quartile / whiskers: max−min / points: outliers / MC runs = 5 / period = 301 − 600)

Imitation

Imitating firms share in sector 1
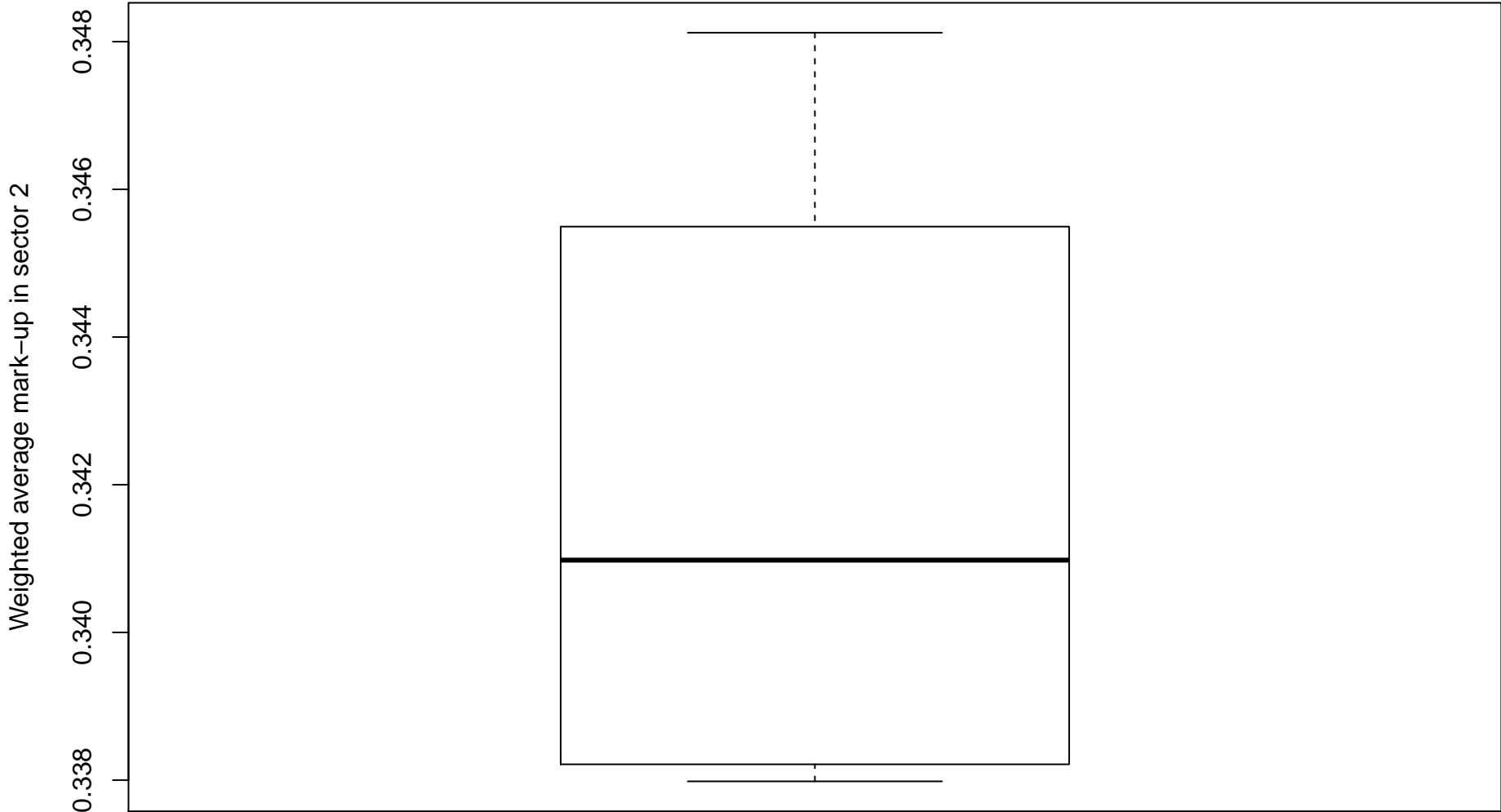
(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 301 – 600)

Market concentration

Stadardized Herfindahl–Hirschman index in sector 2

(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 301 – 600)

Mark-ups

Weighted average mark-up in sector 2

(bar: median / box: 2nd-3rd quartile / whiskers: max-min / points: outliers / MC runs = 5 / period = 301 - 600)

Net entry of firms

Net entries in both markets

(bar: median / box: 2nd–3rd quartile / whiskers: max–min / points: outliers / MC runs = 5 / period = 301 – 600)

Monte Carlo descriptive statistics (all experiments)
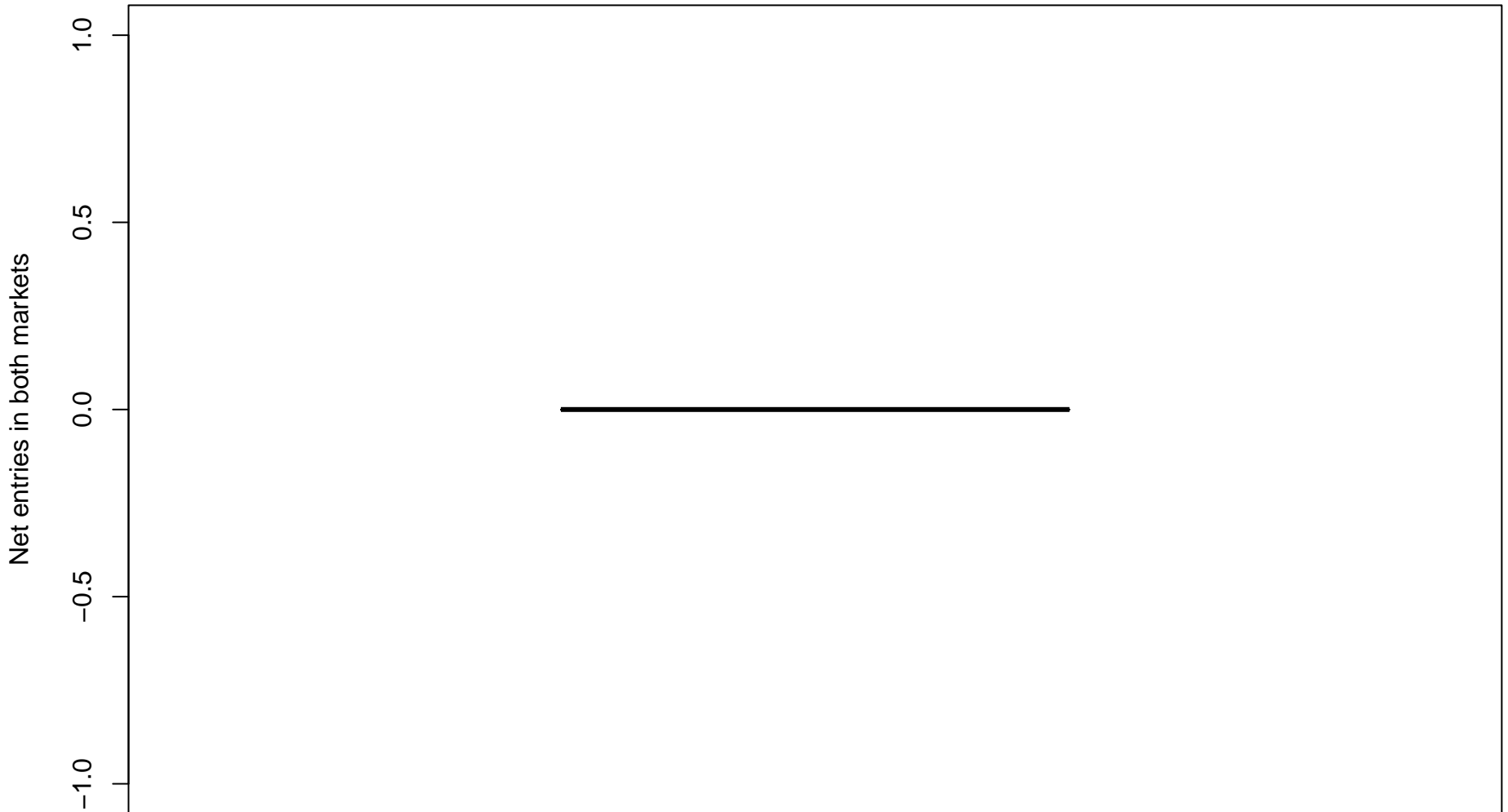
	Avg[1]	SD[1]	Min[1]	Max[1]
GDP growth	0.0136	0.001389	0.01209	0.01577
Volatility of GDP growth	0.09513	0.006322	0.0879	0.1051
Likelihood of GDP crises	0.2447	0.05536	0.1733	0.3133
Inflation	0.002227	0.001386	0.0006752	0.004183
Tax	0.024	0.001813	0.02225	0.02591
Government total expenditure	0.04248	0.0424	0.002837	0.08809
Government deficit	0.1424	0.05391	0.07751	0.1967
Government debt	8.974	3.051	5.212	12.08
Credit supply	−8.033e−10	3.212e−10	−1.301e−09	−4.125e−10
Loans	2.029	1.224	0.9363	3.863
Capacity utilization	0.5228	0.004297	0.517	0.5289
Full employment frequency	0.4207	0.4275	0	0.89
Unemployment	0.1051	0.102	0.008232	0.2141
Vacancy	0.269	0.07059	0.2044	0.3681
Productivity growth	0.01368	0.00168	0.01192	0.01641
Innovation	0.08601	0.02848	0.05473	0.1185
Imitation	0.07461	0.02974	0.0448	0.1127
Market concentration	0.002693	0.0003193	0.002298	0.002959
Mark−ups	0.3422	0.004502	0.338	0.3481
Net entry of firms	0	0	0	0

Experiments: [1] Free entry
(numbers in brackets indicate the experiment number / MC runs = 5 / period = 301 − 600)