

Inflation puzzles, the Phillips Curve and output expectations: New perspectives from the Euro Zone

SUPPLEMENTARY MATERIAL¹

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¹This document complements the analysis of the paper presenting a description of the dataset and the programs employed in the research.

Data sources and description

The data employed in the econometric analysis of this paper have been collected from Eurostat, AMECO, ECB Statistical Data Warehouse and OECD Main Economic Indicators. All the data are quarterly one-year percentage changes referred to the EZ (changing composition up to January 1, 2015) from 1999-Q3 to 2019-Q4. In details:

- GDP: gross domestic product at market prices (reference year 2015), chain linked volumes (million euro); source: Eurostat;
- GDPGrowth: quarterly one-year percentage changes of GDP;
- Outputgap: gap between actual and potential GDP as percentage of potential GDP at constant prices (2015 reference levels); quarterly output gaps obtained by implementing a cubic spline interpolation on AMECO annual output gap data (source: AMECO);
- PGDP: potential GDP data expressed in chain linked volumes at constant market prices (2015); source: own manipulation on Outputgap and GDP data;
- ExpGDPgrowth1: GDP growth average point forecast, quarterly survey, 1 year forecast horizon (source: ECB Survey of Professional Forecasters);
- ExpGDPgrowth2: GDP growth average point forecast, quarterly survey, 2 year forecast horizon (source: ECB Survey of Professional Forecasters);
- ExpGDPgrowth5: GDP growth average point forecast, quarterly survey, 5 year forecast horizon (source: ECB Survey of Professional Forecasters);
- ExpGDP1: expected gross domestic product at market prices in million euro, (source: own manipulation on ExpGDPgrowth data);
- ExpGDP2 and ExpGDP5: see ExpGDP1;
- Expoutputgap1: gap between ExpGDP1 and PGDP as percentage of PGDP;
- Expoutputgap2 and Expoutputgap5: see Expoutputgap1;
- Inflgap: gap between actual inflation and target inflation (1.9%); actual inflation as Harmonized Index of Consumer Price (HICP), quarterly one-year growth rate; source: Eurostat database;;
- Expinflgap: gap between expected inflation and target inflation (1.9%); expected inflation as Harmonised ICP point forecast, quarterly survey, 1 year forecast horizon (source: ECB Survey of Professional Forecasters);
- Forecasterror1 (2 and 5): see the paper for explanations.

Econometric analysis is carried out with the use of two main software: STATA and R. Standard regressions with OLS and GMM are run in STATA. Quadratic Spectral (HAC consistence) standard errors are employed in both estimations. The weight matrix used in GMM estimation is the "Andrews weight matrix".

Time-varying coefficients regression with tvLM is run in R. Function tvLM fits

a time-varying coefficients linear model to the data using the tvOLS method in the estimation. "Gaussian" type kernel is employed in the coefficient estimation. Selection of Bandwidth chosen manually.

dataset																		
time	InfIgap	ExpInfIgap	GDP	GDPGrowth	Outputgap	ExpGDPgrowth1	ExpGDP1	ExpGDPgrowth2	ExpGDP2	ExpGDPgrowth3	ExpGDP3	PQDP	Expoutputgap1	Forecasterru1	Expoutputgap2	Forecasterru2	Expoutputgap5	Forecasterru5
1999Q3	-0.9		2073164.2	2.8793417320789	1.471719591141	2.06	2056653.1284	2.5	205519.935	NaN	NaN	2043095.56234328	0.63586681598433	0.80813029571567	1.0975846767457	0.37415112346425		
1999Q4	-0.6		2182063	4.1637517649235	1.8856265920488	2.23	2141554.01193	2.54	2148048.01314	NaN	NaN	2141678.85154093	-0.05583278886312754	1.891454528098	0.29739213102051	1.58823921816438	NaN	NaN
2000Q1	0	-0.44	2113397.8	8.8446369840702	2.203680	2.2	2084503.36608	2.67	2089562.72208	NaN	NaN	2087830.9063734	-0.159952269802031	2.36356046800231	0.085750624903198	2.196579691968	NaN	NaN
2000Q2	-0.2	-0.41	2166965.5	4.28421778672165	2.36826006447267	2.83	2136688.74318	2.74	2134818.63804	NaN	NaN	2161774.96387577	0.840759912795599	1.42750915167761	0.852413434217283	1.51584663025558	NaN	NaN
2000Q3	0.2	-0.38	2144593.1	3.44550485505201	2.39831937775537	3.06	2136603.02452	2.86	2132456.69612	NaN	NaN	2084363.69531638	2.01680965431574	0.38150327349635	1.8188348735607	0.57947926390301	NaN	NaN
2000Q4	-0.5	-0.26	2242715.3	2.7196519071172	3.2444447349813	3.25	2252680.0475	2.92	2245779.2396	NaN	NaN	2191768.84152426	2.76277653811205	-0.4683136461382	2.46423781866433	-0.13879500836205	NaN	NaN
2010Q1	0.1	-0.19	2125192.4	5.11948212671046	2.27186254	3.36	2184407.96608	2.97	2176165.71486	NaN	NaN	2174224.14934023	0.46836622911397	1.71023917388903	0.0892966234994062	2.68932847615059	NaN	NaN
2010Q2	0.8	-0.0899999999999999	2262515.8	4.1122870690681	1.99196746019784	3.07	2233429.70499	2.88	2229312.58416	NaN	NaN	2218327.43924951	0.680795155542754	1.31117230485449	0.49519433416503	1.49678602678114	NaN	NaN
2010Q3	0.6	-0.7999999999999999	2234098.5	4.1735376281869	1.75963113587571	2.7	2202497.1137	2.73	2203140.49163	NaN	NaN	2195466.38896292	0.3202328263111928	1.43936928576378	0.34954312386919	1.410088011977999	NaN	NaN
2010Q4	-0.3	-0.23	2324105.6	3.62909639043352	1.4743062323155	2.36	2295643.38108	2.77	2304838.51381	NaN	NaN	2290338.98953612	0.231598534894469	1.24270769742103	0.63307328479001	0.841232947525491	NaN	NaN
2011Q1	-0.7	-0.12	2219484.4	-0.0944367652680123	1.1323303	1.98	2265579.92562	2.58	2278465.16544	NaN	NaN	2194643.78346278	3.2223962775816	-0.0999032775816	3.8193616024993	-2.687031302493	NaN	NaN
2011Q2	0.5	-0.0999999999999999	2286126.4	1.04355514334972	0.748825997776304	1.24	2290570.99592	2.48	2318626.19184	NaN	NaN	2269134.5329618	0.944697753562574	-0.195871655786269	2.1810805524587	-1.43225495746957	NaN	NaN
2011Q3	0.1	-0.27	2266792.3	1.46340011418475	0.365353571277045	1.67	2271407.94495	2.63	2262855.29055	2.51	2290174.37235	2258540.40271	0.569717613525758	-0.20436404224813	1.51932840244073	-1.15397483116369	1.40062705382635	-1.03527348254931
2011Q4	0.4	-0.16	2347577.4	1.00992829241493	0.0492083084317536	2.39	2378954.49216	2.58	2384067.52448	2.63	2380581.36068	2346422.16108986	1.38643298945447	-1.33723098102272	1.6044683775145	-1.555138293197	1.45577350396714	-1.40656520093538
2012Q1	0.2	-0.01	2273550.3	0.813514104833962	-0.1269907	2.45	2273872.0128	2.53	2275647.60832	2.4	2273650.06336	2240395.39379335	1.4942281661262	-1.6212188661262	1.5734818386109	-1.70047253008109	1.48432145766686	-1.61131215766686
2012Q2	0.2	-0.12	2286866.9	0.0323910348964082	-0.12301772999609	1.7	2324990.5488	2.51	2343508.17264	2.39	2340764.82096	2289683.61680887	1.54200046381668	-1.66501819378577	2.35024206043115	-2.47375979400024	2.23092684956237	-2.35394622053146
2012Q3	0	-0.0899999999999999	2275947.8	0.403896731076773	-0.00211370483131439	1.54	2301700.90142	2.36	2320288.59688	2.4	2321195.312	2275995.90783546	1.12639542184774	-1.13150612667905	1.9460799005588	-1.8481932338872	1.9869177818789	-1.9880314883193
2013Q1	-0.14	-0.34	2372129.8	1.04586150307354	1.0135044606222	1.3	2378095.9082	2.38	2374575.4689	2.4	2403919.2576	238654.99652808	0.40329528006279	-0.25188079499058	1.44394437296607	-1.29239938189385	1.49350175185834	-1.3421513057961
2013Q2	-0.0999999999999999	-0.33	2282629.9	2.1339676699116	0.2468389	1.2	2284400.9036	2.14	2285433.87642	2.32	2289461.46966	2279671.78543105	-0.66987185431035	0.91671075431035	0.25275970758321	-0.00502607075832057	0.429439131728905	-0.182599011728905
2013Q3	0.2	-0.24	2349883	2.162069754328	0.224722607200557	1.6	233456.704	2.22	2337635.34516	2.24	2340379.58548	234736.13399846	-0.864412257066755	1.06813486426581	0.258405980030136	0.484173600480194	0.142367116418382	0.36708432361439
2013Q4	0.4	-0.28	2324668.9	2.14060709125227	0.14166886577754	1.97	2307883.97168	2.28	2327839.4089	2.46	2328067.00462	2321378.22798881	-0.02559366754702	0.167286232732456	0.27833319181262	-0.136864890025038	0.288130887424355	-0.146468221446801
2014Q1	-0.21	-0.14	2418200.8	1.94217871214299	0.0809983416054465	1.97	2452028.29454	2.24	2452028.29454	2.24	2425265.55514	2041624.68628708	0.108311800237327	-0.0226476192005	0.373382241932653	-0.0226476192005	0.373382241932653	-0.292386039029216
2014Q2	0	0.2	2307674.5	0.97911043496328	0.1297711	2.07	2323276.05734	2.27	2337175.18503	2.26	2308946.65514	2304683.68662834	1.02156825969181	-0.01778615969181	1.40982804129612	-1.28003184129612	1.39988705169592	-1.27011595169592
2014Q3	-0.12	-0.23	2393614.4	0.0003077927767	0.342627960525377	1.96	2395053.0668	2.18	2400719.8294	2.2	2400660.626	238541.21142775	0.401680633601187	-0.0590267307581	0.618318234026768	-0.0590267307581	0.618318234026768	-0.29538400812608
2014Q4	-0.0499999999999999	-0.18	2356378.6	1.751214332667	0.68577131732209	1.87	2368138.17103	2.17	2375112.17173	2.09	2373252.43821	2349268.09427744	0.80331797230554	-0.117541858571345	1.10017666869974	-0.414400554867526	1.02021043495874	-0.335238235655203
2015Q1	0.5	-0.18	2459821.8	1.7211556625043	0.1093315639798	1.87	2463421.15496	2.05	2467773.9164	2.1	2468883.0168	2430161.42837984	1.24696718789532	-0.147934011497343	1.4258662651846	-0.326833138720483	1.47556049712488	-0.376527340726905
2015Q2	0.5	-0.13	2389884.7	3.5634694038958	1.513741	1.64	2345520.3618		2353827.99	2.08	2355674.1296	2354247.4881757	-0.370697066455336	1.8844316645534	-0.017818779795786	1.53155987979578	0.0060586173296437	1.45314248276036
2015Q3	0.5	-0.16	2457174.5	2.65540264129427	1.86924497496191	1.69	2434066.48336	2.01	2441726.04844	2.08	2443401.57952	2455406.6974159	0.91123559655204	0.958000875396706	1.2287846913804	0.640400050283688	1.298248893721	0.570996081229814
2015Q4	0.5	-0.11	2433887.6	2.8864011146133	2.1731092328118	1.91	2410555.49688	1.88	2409845.88384	2.07	2414340.49099	2472750.457801	1.19364184820882	0.979467384072559	1.1638527285926	1.00925604248282	1.3525175677219	0.820592075508983
2016Q1	-0.3	-0.01	2545345.9	3.47864128988531	0.43040824045017	1.99	2513691.89742	2.16	2513691.89742	2.16	2509510.20306	248495.435533646	1.15658042525473	1.27382781519544	0.770524388794716	0.65988385165546	0.98829588489073	1.4421086516011
2016Q2	-0.0999999999999999	0.23	2477151.5	3.06657019060375	2.644536	2	2437682.394	2.91	2435531.49777	2.05	2438877.33635	2413680.84122861	0.94936291399341	1.6501378006006	0.90528368878926	1.73925241120174	0.104390343406249	1.60063265159508
2017Q1	0	0.17	2541886	3.44751664971291	2.7958601218679	2.02	2506809.4249	1.97	2506809.4249	1.97	2509020.88195	2472750.457801	1.13777145374386	1.1625465844294	1.32768645088179	1.46882076020501	1.46882076020501	1.32768645088179
2017Q2	-0.0999999999999999	0.16	2516110.3	3.782455689481	2.77909114712685	2.06	2484025.68456	2.14	2485872.79464	2.12	2487676.51596	2440778.030369	1.4684857873823	1.31060534734456	1.54802210730202	1.1003600733483	1.6176146490049	1.16147470982636
2017Q3	0.4	0.14	2613508.3	2.677928709151	2.4480749702164	2.18	2600384.44062	2.36	2602870.71734	2.15	2600700.83665	2551013.3826979	1.95299084113985	0.498818656881789	2.0328131083687	0.416994388634862	1.93205749092225	0.526705800699385
2017Q4	0.3	0.0700000000000001	2562768.3	1.98986352240702	1.6660608	2.38	2564876.2737	2.21	2532064.50415	2.08	2592043.7392	2458380.35222075	0.25585923432591	-0.38978434325914	1.88639748376685	-0.220336663766852	1.75680590085039	-0.09074850998345
2018Q1	1.4	0.0600000000000001	2584043.1	1.93368034663766	0.779097700276163	2.17	2565515.9746	2.17	2565515.9746	2.17	2559772.3862	2578458.345455364	0.6016918600354	0.770524388794716	0.65988385165546	0.98829588489073	1.4421086516011	
2018Q2	2.3	0.0800000000000001	2536837	0.82379594323039	-1.15290575138777	1.72	2569387.39716	2.09	2568867.00527	2.06	2567942.17218	2569768.1702852	-0.25403448953855	-0.878749202413915	0.10876657799355	-0.21466869013712	0.079482996299629	-1.2124601492641
2018Q3	1.3	0.0900000000000001	2562888.2	-1.36868394644316	-0.23905405487382	1.36	2649052.01288	1.87	260380.80521	2.04	2613438.95274	2603916.45700737	0.716887496749164	-0.31794590242306	-3.7871703886805	1.39257346178259	0.9516311475641	0.9516311475641
2018Q4	-0.8	0.23	2400868.1	-5.01345755421219	-3.520975	0.88	2549024.03704	1.68	2569238.34344	1.95	2576006.67185	2487675.5701459	2.46805748727775	-5.86702797827775	0.27865323226885	-6.7996753226885	3.528772424087	-0.7738525424087
2019Q1	-1.3	0.5	2452892.2	1.25734495996882	0.73629707473859	0.12	2591508.48408	1.25	2580758.425	1.93	2603839.58682	2551013.3826979	1.95299081752512	0.498818656881789	2.0328131083687	0.4		