Online Appendix for: *Monetary Policy Setting in Australia, Canada and the Euro area: Insights From the Shadows*

Data and code are available from http://www.pierrelsiklos.com/research.html.

Table A.1: Model 1 Euro Area with Shadow Rate as Dependent Variable

Coefficient	EUR MPC	EUR SMPC
δ	1.45***	1.62***
	(0.16)	(0.16)
β_0	1.49***	1.24***
	(0.22)	(0.24)
β_1	0.19*	0.29***
	(0.10)	(0.10)
Constant	-2.10***	-2.49***
	(0.19)	(0.21)
N	122	121
F-stat	81.37	80.53

Note: Model 1 estimated using OLS. A constant is included in this model to account for potential size effect of shadow monetary policy calculation. Newey west standard errors with 12-month lag are employed. * signifies statistically significant, at least at the 1% level (** 5%, + 10%). Wu and Xia's (2016)

Table A.2: Model 1 Estimates Using Alternative Real Interest Rate Measure

	AUS MPC	AUS SMPC	CAN MPC	CAN SMPC	EUR MPC	EUR SMPC
δ_{ALT}	0.19*	0.22**	0.29	0.32	0.54***	0.55***
	(0.10)	(0.10)	(0.23)	(0.23)	(0.13)	(0.13)
β_0	1.46***	1.41***	2.16***	2.15***	1.93***	1.96***
	(0.39)	(0.41)	(0.30)	(0.31)	(0.18)	(0.19)
β_1	1.04***	1.08***	-0.2	-0.18	0.02	0.06
	(0.31)	(0.33)	(0.24)	(0.24)	(0.10)	(0.10)
N	60	60	107	107	123	123
F	14.59	11.02	27.92	25.91	37.6	37.57

Note: Model 1 estimated using OLS. δ_{ALT} is 10-year bond yield less current inflation rate. Newey west standard errors with 12-month lag are employed. * signifies statistically significant, at least at the 1% level (** 5%, + 10%)

Table A.3: Model 1 Estimates Using Alternative Model-Based Real Interest Rate Measure

	EUR MPC	EUR SMPC	CAN MPC	CAN SMPC
δ_{HLW}	0.52***	0.49***	0.16	0.19
	(0.17)	(0.18)	(0.20)	(0.20)
β_0	1.34***	1.36***	2.07***	2.08***
	(0.12)	(0.12)	(0.28)	(0.28)
β_1	-0.12*	-0.08	-0.33	-0.32
	(0.07)	(0.08)	(0.22)	(0.22)
N	121	121	105	105
F	94.32	85.05	34.4	32.63

Note: Model 1 estimated using OLS. δ_{HLW} is an alternative measure of the real interest rate using the model-based estimates by Holston et al. (2017). Newey west standard errors with 12-month lag are employed. * signifies statistically significant, at least at the 1% level (** 5%, + 10%)

Table A.4: Model 1 Estimates Using Alternative Inflation Gap Measure

	EUR MPC	EUR SMPC	CAN MPC	CAN SMPC	AUS MPC	AUS SMPC
δ	0.34*	0.32	0.3	0.34	0.31	0.34
	(0.20)	(0.21)	(0.22)	(0.22)	(0.22)	(0.23)
β_{0ALT}	0.82***	0.82***	0.71***	0.71***	0.21*	0.16
	(0.12)	(0.14)	(0.17)	(0.17)	(0.12)	(0.12)
β_1	0.01	0.05	-0.09	-0.08	1.62***	1.66***
	(0.12)	(0.13)	(0.25)	(0.24)	(0.35)	(0.37)
N	122	122	107	107	60	60
F	18.52	14.5	11.44	12.78	15.66	12.38

Note: Model 1 estimated using OLS. β_{0ALT} is an alternative measure of the inflation gap equal to current inflation rate less the inflation target (see the opening paragraph of section 3 for the inflation targets in the three economies). Newey west standard errors with 12-month lag are employed. * signifies statistically significant, at least at the 1% level (** 5%, + 10%).

Table A.5: Model 1 Estimates Using Model-Based Estimate of the Real Output Gap

	EUR MPC	EUR SMPC	CAN MPC	CAN SMPC
δ	0.58***	0.58***	0.47**	0.49**
	(0.07)	(0.07)	(0.20)	(0.20)
β_0	0.73***	0.66***	1.37***	1.39***
	(0.16)	(0.18)	(0.47)	(0.45)
β_{1HLW}	0.44***	0.50***	-0.18*	-0.18
	(0.06)	(0.07)	(0.11)	(0.11)
N	120	120	105	105
F	137.69	106.27	40.26	36.5

Note: Model 1 estimated using OLS. β_{1HLW} is an alternative measure of the output gap using the model-based estimates by Holston et al. (2017). Newey west standard errors with 12-month lag are employed. * signifies statistically significant, at least at the 1% level (** 5%, + 10%).

Table A.6: Model 1 Estimates Using Real Output Gap Using Hamilton's (2018) Extraction

	AUS MPC	AUS SMPC	CAN MPC	CAN SMPC	EUR MPC	EUR SMPC
δ	0.24	0.28	0.41**	0.44**	0.40*	0.37*
	(0.20)	(0.20)	(0.20)	(0.19)	(0.11)	(0.11)
β_0	1.38*	1.28*	1.36*	1.34*	1.35*	1.37*
	(0.23)	(0.24)	(0.50)	(0.50)	(0.12)	(0.12)
β_{1ALT}	0.85*	0.92*	0.06	0.07	0.12*	0.13*
	(0.23)	(0.24)	(0.15)	(0.14)	(0.04)	(0.04)
N	60	60	107	107	122	122
F	14.5	11.78	5.73	6.44	68.67	58.2

Note: Model 1 estimated using OLS. β_{1ALT} is an alternative measure of the output gap using Hamilton's (2018) proposed extraction of the cyclical compoent. Newey west standard errors with 12-month lag are employed. * signifies statistically significant, at least at the 1% level (** 5%, + 10%).

Table A7: Central Bank and Shadow Committee Estimates of Model 1 and 2: GMM

A. Australia

	MPC	**SMPC**
	(1)	**(1')**
δ	0.21* (0.11)	0.26* (0.09)
β_0	1.39* (0.08)	1.30* (0.10)
β_1	0.83* (0.13)	0.90* (0.12)
N	60	60
F-stat		
GMM C Stat χ^2 (p-value)	0.03 (1.00)	0.03 (1.00)
Hansen's J χ^2 (p-value)	5.67 (1.00)	5.66 (1.00)

B. Canada

	MPC	**MPC**	**SMPC**	**SMPC**
	(1')	**(2')**	**(1")**	**(2")**
δ	0.40* (0.10)	0.67* (0.11)	0.41* (0.09)	0.67* (0.11)
β_0	1.51* (0.27)	1.98* (0.42)	1.51* (0.28)	1.98* (0.42)
β_1	0.04 (0.07)	-0.32* (0.12)	0.04 (0.07)	-0.30* (0.11)
β_0^C		-2.83+ (1.48)		-2.65+ (1.43)
β_1^C		0.94+ (0.24)		0.90+ (0.23)
N	107	107	107	107
F-stat				
GMM C Stat χ^2 (p-value)	0.21 (0.98)	0.65 (0.99)	0.31 (0.96)	0.61 (0.99)
Hansen's J χ^2 (p-value)	10.85 (0.86)	10.63 (0.78)	10.69 (0.87)	10.67 (0.78)

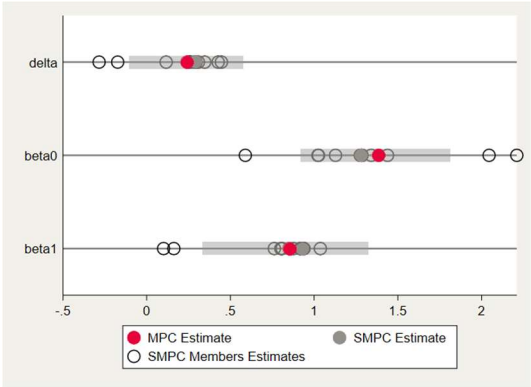
C. Euro area

	MPC (1')	**MPC (2')**	**SMPC (1")**	**SMPC (2")**
δ	0.39* (0.05)	-0.05 (0.11)	0.38* (0.04)	-0.12 (0.12)
β_0	1.42* (0.06)	1.84* (0.14)	1.43* (0.07)	1.88* (0.16)
β_1	0.11* (0.02)	0.34* (0.04)	0.12* (0.02)	0.38* (0.05)
β_0^C		0.18 (0.75)		0.87 (0.90)
β_1^C		0.03 (0.23)		-0.15 (0.27)
N	122	122	122	122
F-stat				
GMM C Stat χ^2 (p-value)	0.32 (0.96)	0.49 (0.99)	0.46 (0.93)	0.69 (0.98)
Hansen's J χ^2 (p-value)	10.23 (0.89)	10.11 (0.81)	10.23 (0.89)	10.07 (0.82)

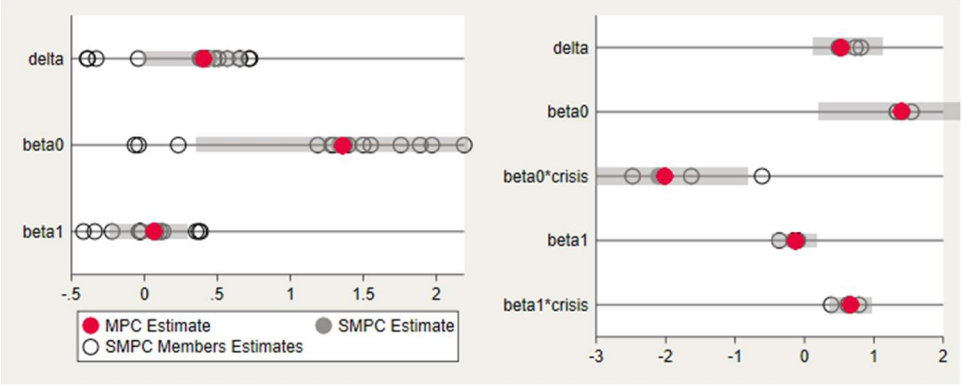
Note: (1') and (1') are regression estimates for model 1 using GMM; and (1") and (2") are regression estimates for model 2 using GMM. The GMM instruments include one to four period lagged values of the independent variable, two to four period lagged values of the dependent variables, 2-year sovereign bond yield, M3 growth, and consumer price inflation, and their four-period lagged values. Newey west standard errors with 12-month lag are employed. * signifies statistically significant, at least at the 1% level (** 5%, + 10%). The output gap uses Hamilton's (2018) filter.

Figure 2: Central Bank and Shadow Committee estimates of Model 1 and 2

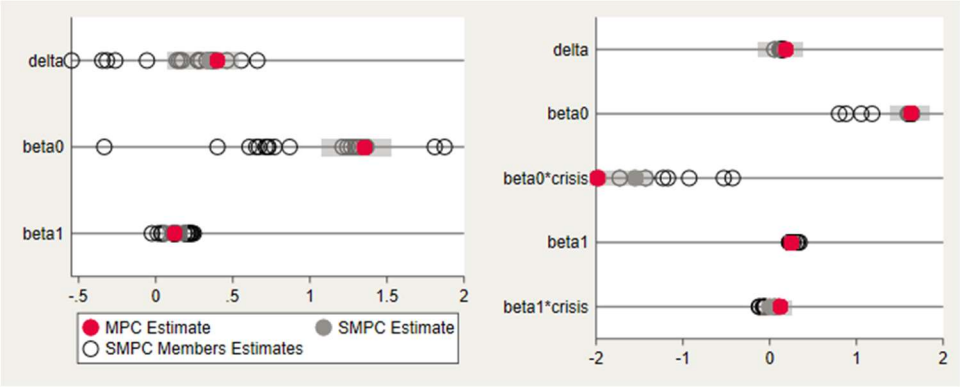
A. Australia



B. Canada

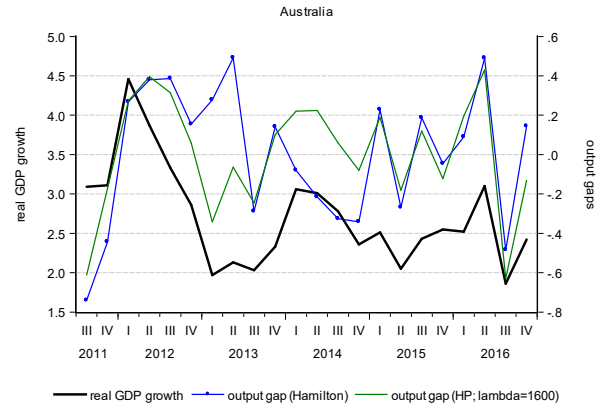


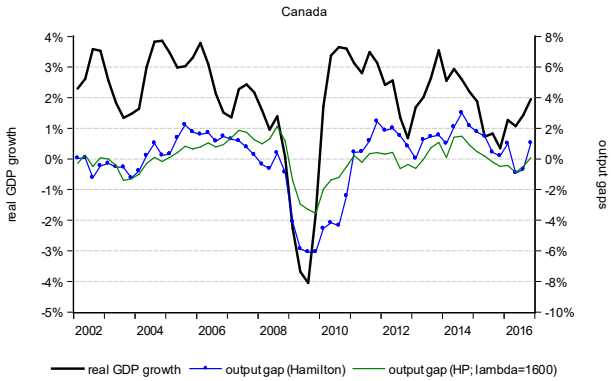
C. Euro area

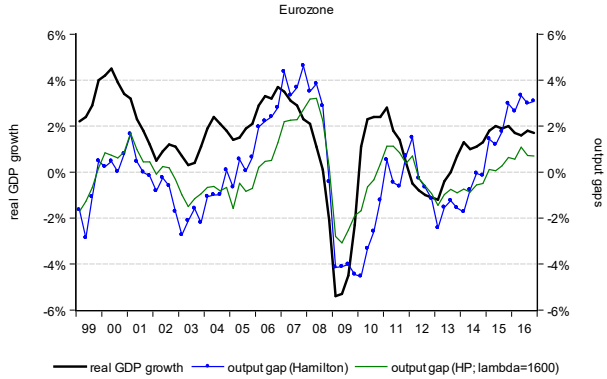


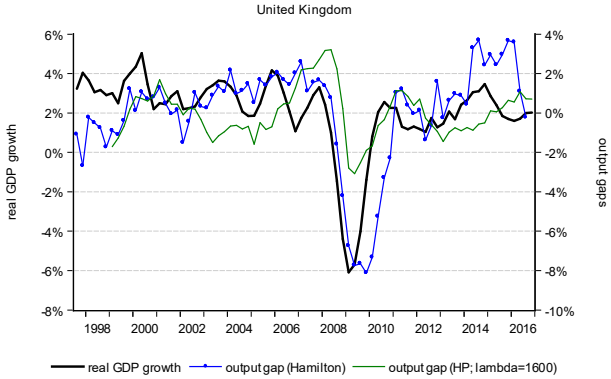
Notes: Plotted are the coefficient estimates using OLS for model 1 and 2 using the interest rate recommendations of the individual members of the shadow committee. Newey west standard errors with 12-month lag are employed. Hamilton's filter is used to generate the output gap.

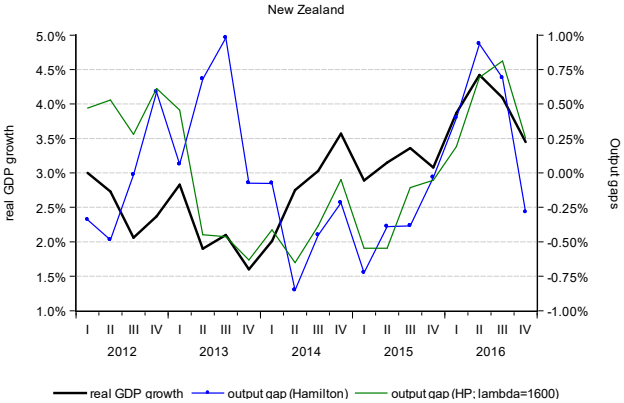
Alternative Output GAP indicators

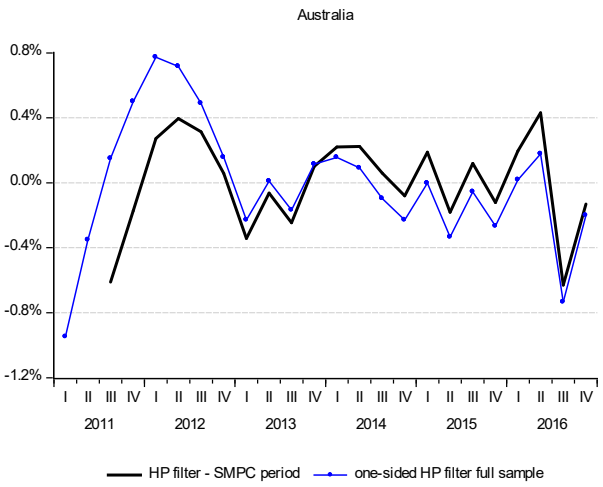


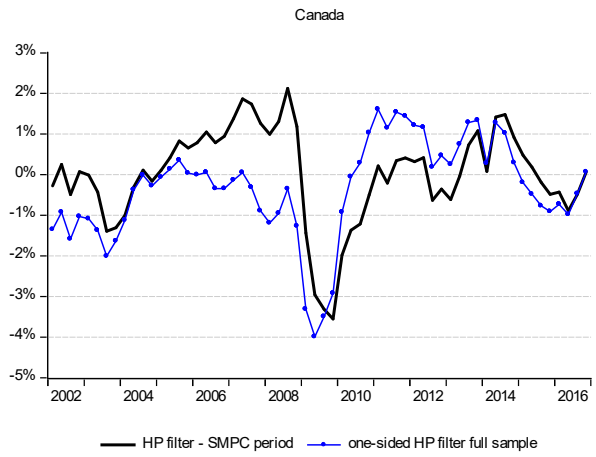


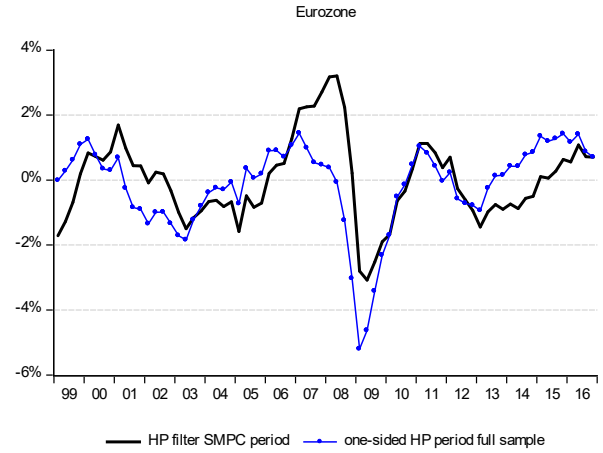


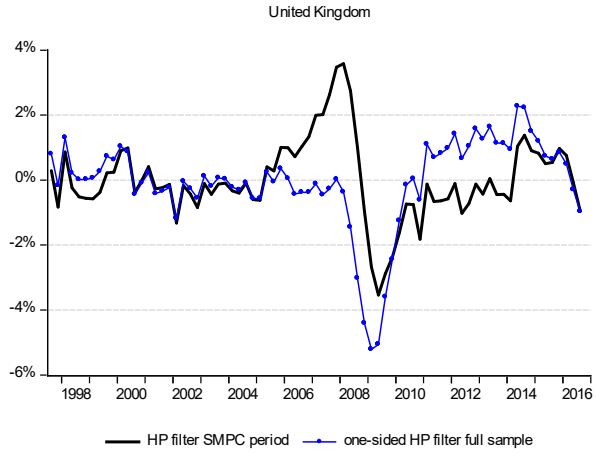





Australia
0.8%
0.4%
0.0%
-0.4%
-0.8%
-1.2%
I II III IV I II III IV I II III IV I II III IV I II III IV I II III IV
2011 2012 2013 2014 2015 2016
HP filter - SMPC period
one-sided HP filter full sample


Canada
3%
2%
1%
0%
-1%
-2%
-3%
-4%
-5%
2002 2004 2006 2008 2010 2012 2014 2016
HP filter - SMPC period
one-sided HP filter full sample


Eurozone
4%
2%
0%
-2%
-4%
-6%
99 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16
HP filter SMPC period
one-sided HP period full sample


United Kingdom
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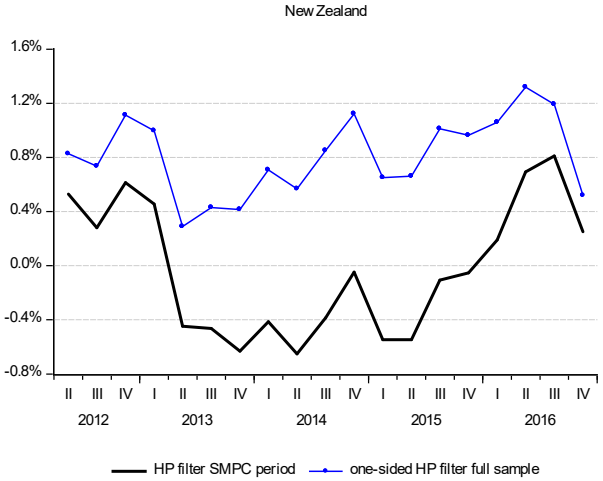
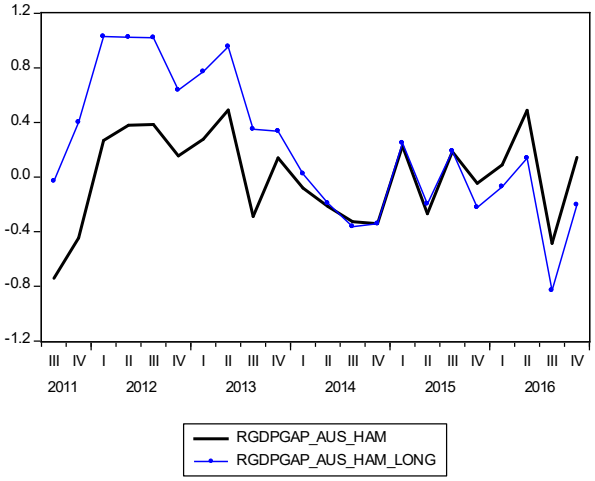
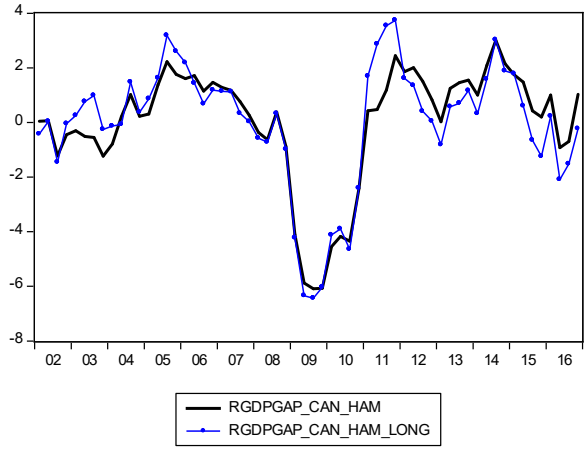
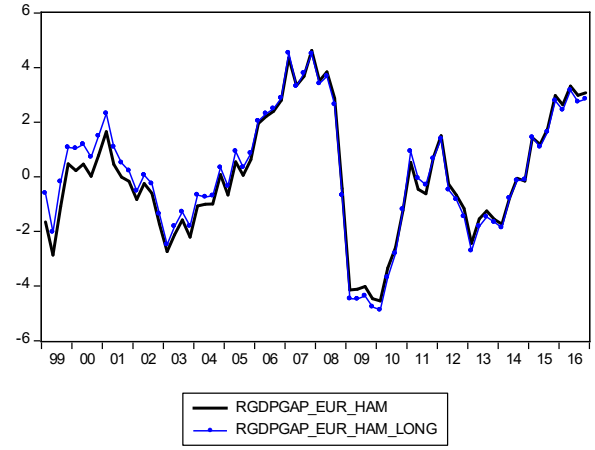
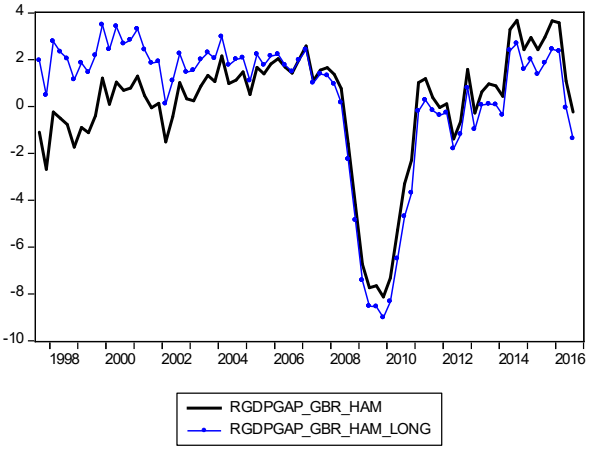
2%
0%
-2%
-4%
-6%
1998 2000 2002 2004 2006 2008 2010 2012 2014 2016
HP filter SMPC period
one-sided HP filter full sample

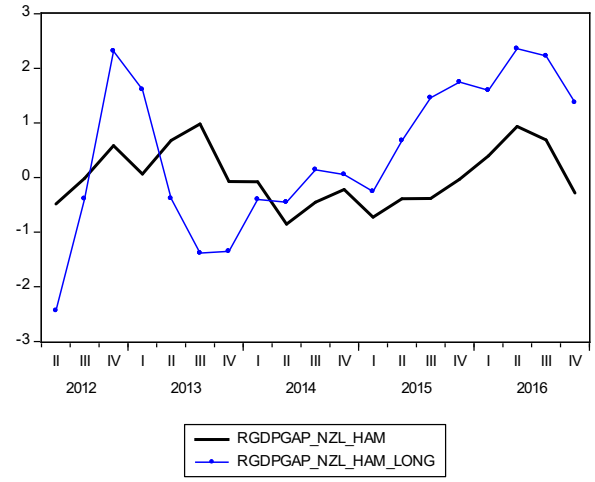

New Zealand
1.6%
1.2%
0.8%
0.4%
0.0%
-0.4%
-0.8%
II III IV I II III IV I II III IV I II III IV I II III IV
2012 2013 2014 2015 2016
HP filter SMPC period
one-sided HP filter full sample





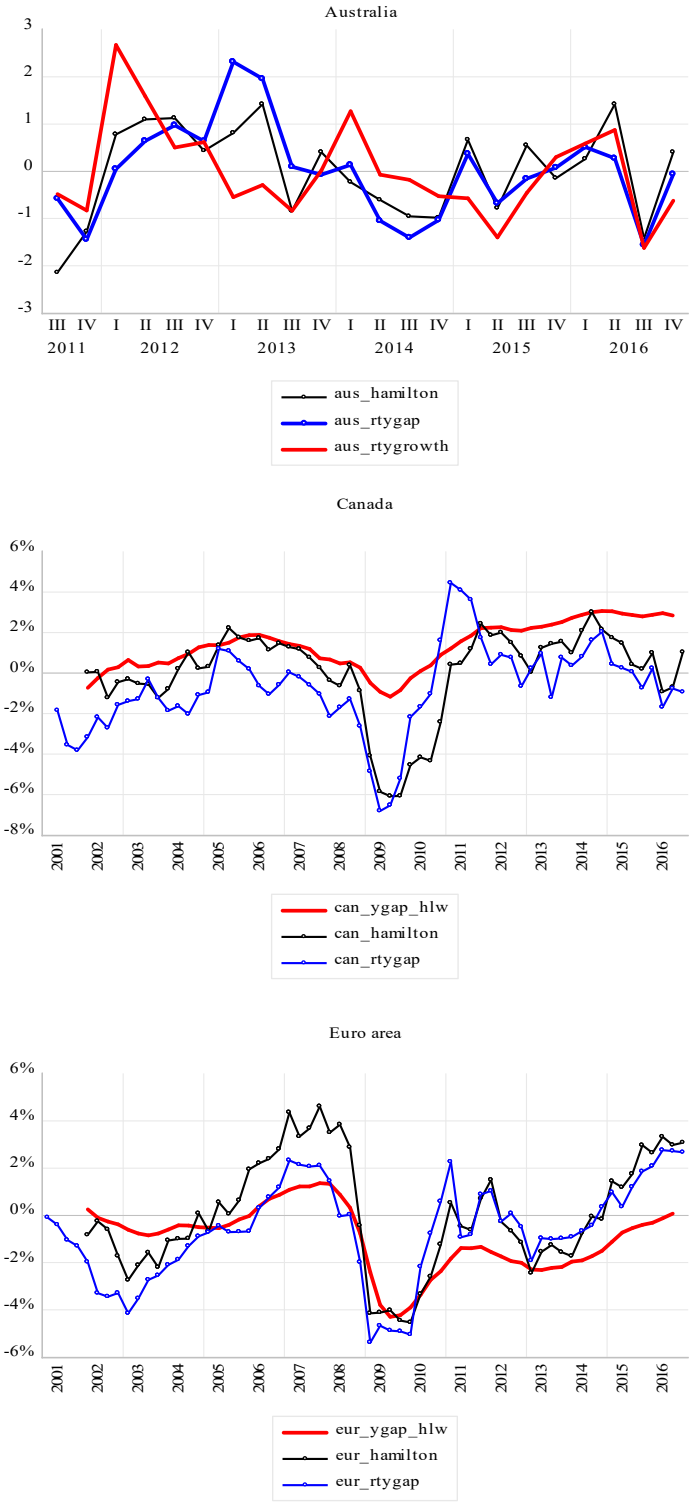






Note: Originally, we intended to add the UK and NZL to the data set but for reasons explained in the paper these 2 cases were omitted in the final draft.

More Output Gap Comparisons



Note: HLW is the Holston et. al. estimate (none for Australia). Hamilton is Hamilton's (2019) filter. rtygap is an estimate of the real time output gap based on the H-P filter (one-sided) using the OECD's data base.