Update to "A Comprehensive Look at the Empirical Performance of Equity Premium Prediction"

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Abstract

This file contains updates, one correction, and links to data for our published paper "A Comprehensive Look at the Empirical Performance of Equity Premium Prediction." Even after including the rate of return for the extraordinary years of 2007–2013, most of our original results still hold.

Correction: The printed journal had the author order mixed up. It should have been—and has always been—Goyal and Welch, not Welch and Goyal.

Data: The published version of our paper had data only up to 2005. We now have updated this data to 2013. The data sources have remained the same as in the original paper, except that in some cases, we had to update the data ourselves instead of relying on the original authors. Both the original and the more up-to-date versions of our data are available at the RFS website, `http://www.rfs.org/`.

Analysis of Data up to 2013: We are presenting the results using the updated data below. Our empirical procedure has remained the same, except that we rely on asymptotics instead of bootstrapped standard errors in this note.

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Table 1: Forecasts at Annual Frequency

This table presents statistics on forecast errors in-sample (IS) and out-of-sample (OOS) for log equity premium forecasts at annual frequency (both in the forecasting equation and forecast). Variables are explained in Goyal and Welch (2008). Stock returns are price changes, including dividends, of the S&P500. All numbers are in percent per year, except $\overline{R}^2$, which is in simple percentages. A star next to IS-$\overline{R}^2$ denotes significance of the in-sample regression. The column 'IS for OOS' gives the IS-$\overline{R}^2$ for the OOS period. ΔRMSE is the RMSE (root mean square error) difference between the unconditional forecast and the conditional forecast for the same sample/forecast period. Positive numbers signify superior out-of-sample conditional forecast. A star next to OOS-$\overline{R}^2$ is based on significance of MSE-F statistic by McCracken (2004), which tests for equal MSE of the unconditional forecast and the conditional forecast. One-sided critical values of MSE statistics are obtained from McCracken (2004). Significance levels at 90%, 95%, and 99% are denoted by one, two, and three stars, respectively.

			Full Sample							1927–2013 Sample
				Forecasts begin after 20 years			Forecasts begin 1965			
			IS	IS for	OOS		IS for	OOS		IS
	Variable	Data	$\overline{R}^2$	OOS $\overline{R}^2$	$\overline{R}^2$	ΔRMSE	OOS $\overline{R}^2$	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$
Full Sample, Not Significant IS										
dfr	Default Return Spread	1926–2013	–0.91	–1.45	–5.79	-0.34	–2.22	–7.53	-0.44	–0.94
dfy	Default Yield Spread	1919–2013	–0.90	–1.03	–2.64	-0.10	–0.76	–2.93	-0.07	–0.99
infl	Inflation	1919–2013	–0.73	–1.17	–3.13	-0.14	–1.59	–2.38	-0.02	–1.08
d/e	Dividend Payout Ratio	1872–2013	–0.70	–0.70	–4.17	-0.31	–1.93	–4.44	-0.19	–1.15
lty	Long Term Yield	1919–2013	–0.43	–0.09	–6.20	-0.38	–3.26	–9.06	-0.56	–0.71
svar	Stock Variance	1885–2013	–0.22	–0.54	–23.61	-2.05	–0.19	–0.86	+0.10	–0.86
d/p	Dividend Price Ratio	1872–2013	0.37	1.15	–2.16	-0.12	0.13	–3.83	-0.14	1.55
e/p	Earning Price Ratio	1872–2013	0.45	0.51	–2.50	-0.15	–1.41	–3.78	-0.13	1.67
d/y	Dividend Yield	1872–2013	0.50	1.17	–2.36	-0.14	–0.29	–7.05	-0.39	1.97
tms	Term Spread	1920–2013	0.50	0.95	–1.22	+0.01	2.61	–1.22	+0.08	1.32
tbl	T-Bill Rate	1920–2013	0.66	1.75	–2.03	-0.05	–1.34	–2.60	-0.04	0.58
ltr	Long Term Return	1926–2013	0.77	–0.02	–9.63	-0.64	–0.00	–14.06	-0.96	0.72
Full Sample, Significant IS										
b/m	Book to Market	1921–2013	**2.92***	1.16	–1.67	-0.02	–5.58	–9.94	-0.63	**3.54****
eqis	Pct Equity Issuing	1927–2013	**5.74****	–1.17	–2.61	-0.09	–1.22	–6.43	-0.35	same
ntis	Net Equity Expansion	1927–2013	**5.90****	–6.75	–11.19	-0.76	–3.81	–14.96	-1.02	same
i/k	Invstmnt Capital Ratio	1947–2013	**8.65*****	4.13	**2.69****	+0.42	4.13	**2.69****	+0.42	same
all	Kitchen Sink	1927–2013	**9.84***	–4.35	–142.42	-6.71	–23.44	–157.28	-6.52	same
Full Sample, No IS Equivalent (caya) or Ex-Post Information (cayp)										
cayp	Cnsmptn, Wlth, Incme	1945–2013	**6.37****	6.31	**5.13****	+0.62		same		same
caya	Cnsmptn, Wlth, Incme	1945–2013	–	–	–4.17	-0.17		same		same
1927-2013 Sample, Significant IS										Full Sample
b/m	Book to Market	1927–2013	**3.54****				–6.28	–15.48	-1.06	**2.92***

Table 2: Forecasts at 5-year Frequency

This table is identical to Table 1, except that we predict overlapping 5-yearly equity premia, rather than annual equity premia.

			Full Sample							1927–2013 Sample
				Forecasts begin after 20 years			Forecasts begin 1965			
			IS	IS for	OOS		IS for	OOS		IS
	Variable	Data	$\overline{R}^2$	OOS $\overline{R}^2$	$\overline{R}^2$	ΔRMSE	OOS $\overline{R}^2$	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$
Full Sample, Not Significant IS										
ltr	Long Term Return	1926–2013	–1.07	–1.09	–7.22	-1.08	0.55	–16.34	-2.38	–1.05
infl	Inflation	1919–2013	–1.07	–1.67	–9.92	-1.50	–2.33	–6.10	-0.71	–1.13
lty	Long Term Yield	1919–2013	–0.25	2.23	–112.12	-16.16	–10.70	–65.60	-10.10	–0.41
dfr	Default Return Spread	1926–2013	–0.21	0.65	–3.86	-0.45	1.78	–1.14	+0.17	–0.13
tbl	T-Bill Rate	1920–2013	2.65	8.26	–19.57	-3.12	–10.48	–30.56	-4.85	3.56
e/p	Earning Price Ratio	1872–2013	3.44	3.59	–3.55	-0.52	–5.99	–11.39	-1.45	**8.15***
eqis	Pct Equity Issuing	1927–2013	3.88	–7.95	–10.86	-1.70	–4.87	–18.22	-2.73	same
Full Sample, Significant IS										
svar	Stock Variance	1885–2013	**2.17****	1.33	–88.77	-14.50	3.16	**2.26****	+0.72	**1.19***
d/e	Dividend Payout Ratio	1872–2013	**3.22****	6.10	–2.51	-0.32	10.34	**6.63*****	+1.44	**6.82*****
tms	Term Spread	1920–2013	**4.65***	5.30	–28.97	-4.64	13.93	**0.44***	+0.47	**8.20****
d/y	Dividend Yield	1872–2013	**4.89****	7.62	–5.07	-0.80	4.23	–16.94	-2.30	**12.41*****
dfy	Default Yield Spread	1919–2013	**6.22****	–0.87	–48.22	-7.57	10.00	**9.72*****	+2.21	**3.35***
ntis	Net Equity Expansion	1927–2013	**6.65****	–8.29	–6.27	-0.87	0.32	–18.49	-2.78	same
d/p	Dividend Price Ratio	1872–2013	**10.23*****	14.50	–0.87	-0.01	10.34	–21.13	-2.92	**21.53*****
b/m	Book to Market	1921–2013	**11.81****	5.13	–8.78	-1.31	–18.33	–33.98	-5.35	**14.43****
i/k	Invstmnt Capital Ratio	1947–2013	**30.80*****	21.80	**16.34*****	+3.94	21.80	**16.34*****	+3.94	same
all	Kitchen Sink	1927–2013	**43.65*****	46.06	–290.82	-29.87	29.56	–332.32	-28.84	same
Full Sample, No IS Equivalent (caya) or Ex-Post Information (cayp)										
cayp	Cnsmptn, Wlth, Incme	1945–2013	**35.47*****	38.42	**32.54*****	+7.77		same		same
caya	Cnsmptn, Wlth, Incme	1945–2013	–	–	**4.22****	+1.31		same		same
1927-2013 Sample, Significant IS										Full Sample
svar	Stock Variance	1927–2013	**1.19***				2.28	**0.25***	+0.42	**2.17****
dfy	Default Yield Spread	1927–2013	**3.35***				8.00	**4.65****	+1.22	**6.22****
d/e	Dividend Payout Ratio	1927–2013	**6.82*****				13.22	**7.66*****	+1.77	**3.22****
e/p	Earning Price Ratio	1927–2013	**8.15***				–12.24	–22.96	-3.50	3.44
tms	Term Spread	1927–2013	**8.20****				14.05	**0.58***	+0.48	**4.65***
d/y	Dividend Yield	1927–2013	**12.41*****				1.42	–11.60	-1.63	**4.89****
b/m	Book to Market	1927–2013	**14.43****				–19.68	–46.68	-7.15	**11.81****
d/p	Dividend Price Ratio	1927–2013	**21.53*****				7.51	–8.74	-1.15	**10.23*****

Table 3: Forecasts at Monthly Frequency using Campbell and Thompson (2008) procedure

Refer to Table 1 for basic explanations. This table presents statistics on forecast errors in-sample (IS) and out-of-sample (OOS) for equity premium forecasts at the monthly frequency (both in the forecasting equation and forecast). The data period is December 1927 to December 2009, except for csp (May 1937 to December 2002) and cay3 (March 1952 to December 2009). Critical values of all statistics are obtained from McCracken (2004). The resulting significance levels at 90%, 95%, and 99% are denoted by one, two, and three stars, respectively. They are two-sided for IS model significance, and one-sided for OOS superior model performance. The first data column is the IS-$\overline{R}^2$ when returns are logged, as they are in our other tables. The remaining columns are based on predicting simple returns for correspondence with Campbell and Thompson (2008). Certainty Equivalence (CEV) gains are based on the utility of an optimizer with a risk-aversion coefficient of $\gamma = 3$ who trades based on unconditional forecast and conditional forecast. Equity positions are winsorized at 150% ($w = w_{\max}$). "T" means "truncated" to avoid a negative equity premium prediction. "U" means unconditional, that is, to avoid a forecast that is based on a coefficient that is inverse to what the theory predicts. A superscript h denotes high trading turnover of about 10%/month more than the trading strategy based on unconditional forecasts.

		Log Returns	Simple Returns								
			IS		OOS	Campbell and Thompson (2008) OOS					
	Variable	IS $\overline{R}^2$	$\overline{R}^2$	$\overline{R}^2$ T	$\overline{R}^2$	Frcst= T	Frcst= U	$\overline{R}^2$ TU	ΔRMSE TU	$w = w_{\max}$	ΔCEV
d/e	Dividend Payout Ratio	–0.05	–0.10	–0.10	–0.74	0.3	15.3	–0.65	-0.0111	53.7	-0.01
svar	Stock Variance	0.06	–0.09	–0.09	–0.87	0.0	7.7	–0.87	-0.0156	33.5	-0.03
lty	Long Term Yield	0.00	0.05	0.05	–0.64	30.1	0.0	**0.28*****	+0.0085	20.6	0.07
dfr	Default Return Spread	0.15	0.06	–0.12	–0.24	0.8	18.3	–0.23	-0.0022	42.5	0.05
ltr	Long Term Return	0.07	0.10	0.08	–0.54	3.3	33.5	**0.05*****	+0.0037	48.5^{h}	0.07
infl	Inflation	–0.02	0.11	–0.06	–0.11***	1.8	0.0	–0.07***	+0.0012	41.4^{h}	0.04
tms	Term Spread	0.09	0.14	0.14	**0.07*****	3.4	0.0	**0.06*****	+0.0040	55.7	0.14
dfy	Default Yield Spread	–0.08	**0.19***	0.19	–0.67	3.7	0.0	–0.61	-0.0101	26.5	-0.06
tbl	T-Bill Rate	0.12	**0.21***	0.17	–0.05***	20.4	0.0	**0.23*****	+0.0076	17.4	0.12
d/p	Dividend Price Ratio	0.09	**0.28****	0.25	–0.36	28.9	0.0	**0.06*****	+0.0039	14.1	-0.09
e/p	Earning Price Ratio	**0.30****	**0.32****	0.49	–1.43	18.3	0.0	–0.64	-0.0107	29.9	0.05
d/y	Dividend Yield	**0.19***	**0.41****	0.37	–1.04	53.3	0.0	–0.10***	+0.0005	14.1	-0.10
ntis	Net Equity Expansion	**0.46****	**0.50****	0.38	–1.13	0.3	0.0	–1.12	-0.0209	55.2	0.06
eqis	Pct Equity Issuing	**0.59*****	**0.56*****	0.36	–0.34	6.2	0.0	–0.20	-0.0016	53.5	0.14
b/m	Book to Market	**0.38****	**0.70*****	0.72	–2.96	43.5	0.0	–2.01	-0.0394	27.4	-0.15
e^{10}/p	Earning(10Y) Price Ratio	**0.45****	**0.83*****	0.89	–1.87	49.4	0.0	–0.37	-0.0051	14.1	-0.11
csp	Cross-Sectional Prem	**0.92*****	**0.99*****	0.93	–0.95	44.9	0.0	**0.15*****	+0.0072	13.5	0.06
cay3	Cnsmptn, Wlth, Incme	**1.15*****	**1.16*****	1.11	–2.86	44.2	0.0	–1.61	-0.0225	20.6	0.08

Table 4: Significant Forecasts Using Various d/p, e/p, and d/e Ratios

Refer to Table 1 for basic explanations. The table reports only those combinations of **d/p e/p** and **d/e** that were found to predict equity premia significantly in-sample. This table presents statistics on forecast errors in-sample (IS) and out-of-sample (OOS) for excess stock return forecasts at various frequencies. All ΔRMSE numbers are in percent per frequency corresponding to the column entitled 'Freq'. The 'Freq' column also gives the first year of forecast. A star next to OOS-$\overline{R}^2$ is based on the MSE-F-statistic by McCracken (2004), which tests for equal MSE of the unconditional forecast and the conditional forecast. Significance levels at 90%, 95%, and 99% are denoted by one, two, and three stars, respectively.

	Variable	Data	Freq	IS $\overline{R}^2$	OOS $\overline{R}^2$	OOS ΔRMSE
e/p	Earning(1Y) Price Ratio	1927–2013	M 1965–	**0.33****	–1.63	-0.03
e^3/p	Earning(3Y) Price Ratio	1927–2013	M 1965–	**0.19***	–0.43	-0.01
e^5/p	Earning(5Y) Price Ratio	1927–2013	M 1965–	**0.28****	–0.57	-0.01
e^{10}/p	Earning(10Y) Price Ratio	1927–2013	M 1965–	**0.48****	–0.66	-0.01
d^3/p	Dividend(3Y) Price Ratio	1927–2013	M 1965–	**0.19***	–0.16***	+0.00
d^5/p	Dividend(5Y) Price Ratio	1927–2013	M 1965–	**0.28****	–0.22	-0.00
d^{10}/p	Dividend(10Y) Price Ratio	1927–2013	M 1965–	**0.23***	–0.17	-0.00
e^3/p	Earning(3Y) Price Ratio	1882–2013	A 1902–	**2.35****	–0.98	-0.01
e^5/p	Earning(5Y) Price Ratio	1882–2013	A 1902–	**2.60****	–0.60***	+0.03
e^{10}/p	Earning(10Y) Price Ratio	1882–2013	A 1902–	**4.82*****	**2.19*****	+0.30
d^3/p	Dividend(3Y) Price Ratio	1882–2013	A 1902–	**1.53***	–1.78	-0.08
d^5/p	Dividend(5Y) Price Ratio	1882–2013	A 1902–	**2.15***	–0.83***	+0.01
d^{10}/p	Dividend(10Y) Price Ratio	1882–2013	A 1902–	**1.84***	–1.28	-0.04
e^3/p	Earning(3Y) Price Ratio	1882–2013	A 1965–	**2.35****	–2.75	-0.05
e^5/p	Earning(5Y) Price Ratio	1882–2013	A 1965–	**2.60****	–4.35	-0.18
e^{10}/p	Earning(10Y) Price Ratio	1882–2013	A 1965–	**4.82*****	–8.16	-0.48
d^3/p	Dividend(3Y) Price Ratio	1882–2013	A 1965–	**1.53***	–6.43	-0.35
d^5/p	Dividend(5Y) Price Ratio	1882–2013	A 1965–	**2.15***	–8.02	-0.47
d^{10}/p	Dividend(10Y) Price Ratio	1882–2013	A 1965–	**1.84***	–7.62	-0.44
e/p	Earning(1Y) Price Ratio	1882–2013	5Y 1902–	**4.22***	–0.88***	+0.01
e^3/p	Earning(3Y) Price Ratio	1882–2013	5Y 1902–	**12.14*****	**4.81*****	+1.14
e^5/p	Earning(5Y) Price Ratio	1882–2013	5Y 1902–	**17.11*****	**6.28*****	+1.44
e^{10}/p	Earning(10Y) Price Ratio	1882–2013	5Y 1902–	**17.06*****	–1.46	-0.11
d/p	Dividend(1Y) Price Ratio	1882–2013	5Y 1902–	**12.21*****	–0.51***	+0.08
d^3/p	Dividend(3Y) Price Ratio	1882–2013	5Y 1902–	**13.04*****	–1.71	-0.16
d^5/p	Dividend(5Y) Price Ratio	1882–2013	5Y 1902–	**13.53*****	–3.52	-0.51
d^{10}/p	Dividend(10Y) Price Ratio	1882–2013	5Y 1902–	**9.62*****	–15.02	-2.67
d/e	Dividend(1Y) Earning(1Y) Ratio	1882–2013	5Y 1902–	**3.40****	–6.64	-1.11
e/p	Earning(1Y) Price Ratio	1882–2013	5Y 1965–	**4.22***	–12.06	-1.57
e^3/p	Earning(3Y) Price Ratio	1882–2013	5Y 1965–	**12.14*****	–5.37	-0.52
e^5/p	Earning(5Y) Price Ratio	1882–2013	5Y 1965–	**17.11*****	–11.71	-1.52
e^{10}/p	Earning(10Y) Price Ratio	1882–2013	5Y 1965–	**17.06*****	–17.85	-2.45
d/p	Dividend(1Y) Price Ratio	1882–2013	5Y 1965–	**12.21*****	–24.41	-3.43
d^3/p	Dividend(3Y) Price Ratio	1882–2013	5Y 1965–	**13.04*****	–23.19	-3.25
d^5/p	Dividend(5Y) Price Ratio	1882–2013	5Y 1965–	**13.53*****	–25.75	-3.62
d^{10}/p	Dividend(10Y) Price Ratio	1882–2013	5Y 1965–	**9.62*****	–17.55	-2.41
d/e	Dividend(1Y) Earning(1Y) Ratio	1882–2013	5Y 1965–	**3.40****	**6.85*****	+1.49

Table 5: Forecasts at Monthly Frequency with Alternative Procedures and Total Returns

Refer to Table 1 for basic explanations. Columns under the heading 'OLS' are unadjusted betas, columns under the heading 'Stambaugh' correct for betas following Stambaugh (1999), and columns under the heading 'Lewellen' correct for betas following Lewellen (2004). ρ under the column OLS gives the autoregressive coefficient of the variable over the entire sample period (the variables are sorted in descending order of ρ).

				OLS		Stambaugh		Lewellen	
				IS	OOS	IS	OOS	IS	OOS
	Variable	Data	ρ	$\overline{R}^2$					
lty	Long Term Yield	192701–201312	0.9961	0.02	–0.88	0.02	–1.33	0.02	–0.79
tbl	T-Bill Rate	192701–201312	0.9933	0.13	–0.11***	0.13	–0.24	0.13	–0.19
d/p	Dividend Price Ratio	192701–201312	0.9929	0.11	–0.22	0.02	–0.27	–0.19	–0.83
d/y	Dividend Yield	192701–201312	0.9929	**0.22***	–0.40	**0.22***	–0.36	**0.22***	–0.27
d/e	Dividend Payout Ratio	192701–201312	0.9919	–0.06	–2.03	–0.06	–2.14	–0.06	–1.88
e/p	Earning Price Ratio	192701–201312	0.9865	**0.33****	–1.63	**0.30****	–0.85	–0.07	–1.16
b/m	Book to Market	192701–201312	0.9856	**0.35****	–2.12	**0.31****	–1.39	–0.13	–0.26
csp	Cross-Sectional Prem	193705–200212	0.9788	**0.92*****	**0.70*****	**0.92*****	**0.70*****	**0.92*****	**0.71*****
dfy	Default Yield Spread	192701–201312	0.9751	–0.08	–0.21	–0.08	–0.34	–0.17	–0.59
ntis	Net Equity Expansion	192701–201312	0.9741	**0.34****	–1.22	**0.34****	–1.24	**0.33****	–1.34
tms	Term Spread	192701–201312	0.9613	0.05	–0.03***	0.05	–0.05***	0.05	–0.05***
svar	Stock Variance	192701–201312	0.6332	0.07	**0.02*****	0.07	**0.04*****	–1.58	**0.79*****
infl	Inflation	192701–201312	0.5668	–0.02	–0.14***	–0.02	–0.14***	–0.04	–0.18
ltr	Long Term Return	192701–201312	0.0446	0.07	–0.40	0.07	–0.40	–0.63	–5.88
dfr	Default Return Spread	192701–201312	-0.1262	0.15	–0.04***	0.15	–0.04***	–2.58	–2.99

Table 6: Encompassing Tests

This table presents statistics on encompassing tests for excess stock return forecasts at various frequencies. Variables are explained in Goyal and Welch (2008). All numbers are in percent per frequency corresponding to the panel. λ gives the ex-post weight on the conditional forecast for the optimal forecast that minimizes the MSE. ENC is the test statistic proposed by Clark and McCracken (2001) for a test of forecast encompassing. One-sided critical values of ENC statistic are obtained from Clark and McCracken (2001). **cayp** uses ex-post information. ΔRMSE* is the RMSE difference between the unconditional forecast and the optimal forecast for the same sample/forecast period. ΔRMSE^{*r} is the RMSE difference between the unconditional forecast and the optimal forecast for the same sample/forecast period using rolling estimates of λ. Significance levels at 90%, 95%, and 99% are denoted by one, two, and three stars, respectively.

Panel A: Annual Data

		Estimation:	All Data					All Data				After 1927				
		OOS Forecast:	After 20 years					After 1965				After 1965				
		Data	$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE^{*r}	λ	ENC	ΔRMSE*	ΔRMSE^{*r}	$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE^{*r}
d/p	Dividend Price Ratio	1872–2013	0.37	0.19	0.49	+0.0074	-0.2501	0.33	**0.77***	+0.0435	-0.4497	1.55	0.52	**2.16****	+0.1909	-0.3126
d/y	Dividend Yield	1872–2013	0.50	0.33	**1.78***	+0.0457	-0.5396	0.23	**0.94***	+0.0380	-0.4801	1.97	0.37	**2.90****	+0.1912	-0.2673
e/p	Earning Price Ratio	1872–2013	0.45	0.04	0.08	+0.0002	-0.2440	0.31	0.64	+0.0340	-0.6204	1.67	0.31	**1.68***	+0.0931	-0.5235
d/e	Dividend Payout Ratio	1872–2013	–0.70	-1.82	–1.53	+0.2219	+0.1114	-7.32	–0.51	+0.6565	+0.3015	–1.15	-4.92	–1.28	+1.1826	+0.8257
svar	Stock Variance	1885–2013	–0.22	-0.40	–4.42	+0.1903	-0.5420	4.16	0.35	+0.2457	-0.2064	–0.86	3.16	0.08	+0.0408	-0.4869
b/m	Book to Market	1921–2013	**2.92***	0.49	**4.02****	+0.2231	-0.0596	0.21	**1.31***	+0.0520	-0.6490	**3.54****	0.18	**1.60***	+0.0560	-0.4089
ntis	Net Equity Expansion	1927–2013	**5.90****	-0.00	–0.01	+0.0000	-0.6038	-0.04	–0.18	+0.0012	-1.0616	**5.90****	-0.04	–0.18	+0.0012	-1.0616
eqis	Pct Equity Issuing	1927–2013	**5.74****	0.44	**2.81****	+0.1555	-0.2512	0.31	**1.61***	+0.0890	-0.7538	**5.74****	0.31	**1.61***	+0.0890	-0.7538
tbl	T-Bill Rate	1920–2013	0.66	0.46	**2.39***	+0.1218	-0.9366	0.48	**2.34****	+0.1947	-1.0121	0.58	0.37	**2.96****	+0.1988	-0.3784
lty	Long Term Yield	1919–2013	–0.43	0.30	**2.62****	+0.0910	-0.5898	0.30	**2.32****	+0.1279	-0.7562	–0.71	0.26	**2.35****	+0.1165	-0.4436
ltr	Long Term Return	1926–2013	0.77	0.32	**4.36****	+0.1807	-0.1124	0.24	**2.32****	+0.1063	-6.9019	0.72	0.25	**2.30****	+0.1103	-7.1292
tms	Term Spread	1920–2013	0.50	0.53	1.26	+0.0735	-0.8513	0.60	**1.33***	+0.1369	-0.6187	1.32	0.60	**2.32****	+0.2346	-0.3038
dfy	Default Yield Spread	1919–2013	–0.90	-2.32	–0.38	+0.0978	-0.8644	-5.64	–0.18	+0.1715	+0.0457	–0.99	-5.16	–0.13	+0.1132	-0.0507
dfr	Default Return Spread	1926–2013	–0.91	-0.10	–0.22	+0.0027	-0.3970	-0.14	–0.28	+0.0072	-0.4908	–0.94	-0.17	–0.30	+0.0092	-0.4976
infl	Inflation	1919–2013	–0.73	-1.85	–0.51	+0.1039	-0.4683	-0.10	–0.01	+0.0002	-11.7385	–1.08	-3.69	–0.86	+0.5734	-0.1889
i/k	Invstmnt Capital Ratio	1947–2013	**8.65*****	0.68	**4.45*****	+0.5328	+0.1126	0.68	**4.45*****	+0.5328	+0.1126	**8.65*****	0.68	**4.45*****	+0.5328	+0.1126
caya	Cnsmptn, Wlth, Incme	1945–2013	–	0.43	**3.03****	+0.2333	-0.2588	0.43	**3.03****	+0.2333	-0.2588	–	0.43	**3.03****	+0.2333	-0.2588
cayp	Cnsmptn, Wlth, Incme	1945–2013	**6.37****	1.00	**3.74****	+0.6159	-0.0903	1.00	**3.74****	+0.6159	-0.0903	**6.37****	1.00	**3.74****	+0.6159	-0.0903
all	Kitchen Sink	1927–2013	**9.84***	0.08	3.31	+0.0671	-0.0585	-0.15	–2.67	+0.1297	-0.2818	**9.84***	-0.15	–2.67	+0.1297	-0.2818

Panel B: Monthly Data

		OOS Forecast:	After 194701					After 196501			
		Data	$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE^{*r}	λ	ENC	ΔRMSE*	ΔRMSE^{*r}
d/p	Dividend Price Ratio	192701–201312	0.11	0.49	**4.15****	+0.0053	-0.0121	0.48	**2.73****	+0.0049	-0.0097
d/y	Dividend Yield	192701–201312	**0.22***	0.42	**6.69*****	+0.0074	-0.0100	0.43	**4.13*****	+0.0067	-0.0071
e/p	Earning Price Ratio	192701–201312	**0.33****	0.30	**8.64*****	+0.0069	-0.0141	0.19	**2.64****	+0.0019	-0.0180
d/e	Dividend Payout Ratio	192701–201312	–0.06	-0.09	–0.94	+0.0002	-0.0131	-1.08	–3.65	+0.0151	+0.0007
svar	Stock Variance	192701–201312	0.07	1.91	0.63	+0.0032	-0.0420	2.47	0.72	+0.0066	-0.0487
csp	Cross-Sectional Prem	193705–200212	**0.92*****	0.37	**6.21*****	+0.0092	-0.0138	0.82	**5.51*****	+0.0219	-0.0007
b/m	Book to Market	192701–201312	**0.35****	0.18	**3.09****	+0.0014	-0.0361	0.07	0.99	+0.0003	-0.0218
ntis	Net Equity Expansion	192701–201312	**0.34****	0.18	1.44	+0.0007	-0.0199	0.06	0.38	+0.0001	-0.0215
tbl	T-Bill Rate	192701–201312	0.13	0.51	**5.59*****	+0.0075	-0.0185	0.52	**5.02*****	+0.0098	-0.0173
lty	Long Term Yield	192701–201312	0.02	0.36	**7.57*****	+0.0072	-0.0069	0.37	**5.56*****	+0.0077	-0.0129
ltr	Long Term Return	192701–201312	0.07	-0.08	–0.44	+0.0001	-0.0120	0.33	**1.30***	+0.0016	-0.0198
tms	Term Spread	192701–201312	0.05	0.59	**2.33***	+0.0036	-0.0292	0.62	**2.22****	+0.0052	-0.0480
dfy	Default Yield Spread	192701–201312	–0.08	-2.00	–0.53	+0.0028	-0.0045	-0.43	–0.04	+0.0001	-0.0183
dfr	Default Return Spread	192701–201312	0.15	0.26	0.53	+0.0004	-0.0237	0.76	**1.13***	+0.0032	-0.0366
infl	Inflation	192701–201312	–0.02	0.59	0.46	+0.0007	-0.0120	0.70	0.40	+0.0010	-0.0395
all	Kitchen Sink	192701–201312	**1.78*****	0.07	**7.01***	+0.0015	-0.0156	0.15	**7.97****	+0.0048	-0.0377

Explanation for Figures

These figures plot the IS and OOS performance of annual predictive regressions. Specifically, these are the cumulative squared prediction errors of the NULL minus the cumulative squared prediction error of the ALTERNATIVE. The ALTERNATIVE is a model that relies on predictive variables noted in each graph. The NULL is the prevailing equity premium mean for the OOS graph, and the full-period equity premium mean for the IS graph. The IS prediction relative performance is dotted (and usually above), the OOS prediction relative perfomance is solid. An increase in a line indicates better performance of the named model; a decrease in a line indicates better performance of the NULL. The blue band is the equivalent of 95% two-sided levels, based on MSE-T critical values from McCracken (2004). (MSE-T is the Diebold and Mariano (1995) t-statistic modified by Harvey, Leybourne, and Newbold (1998)). The right axis shifts the zero point to 1965. The Oil Shock is marked by a red vertical line.

Figure 1: dp

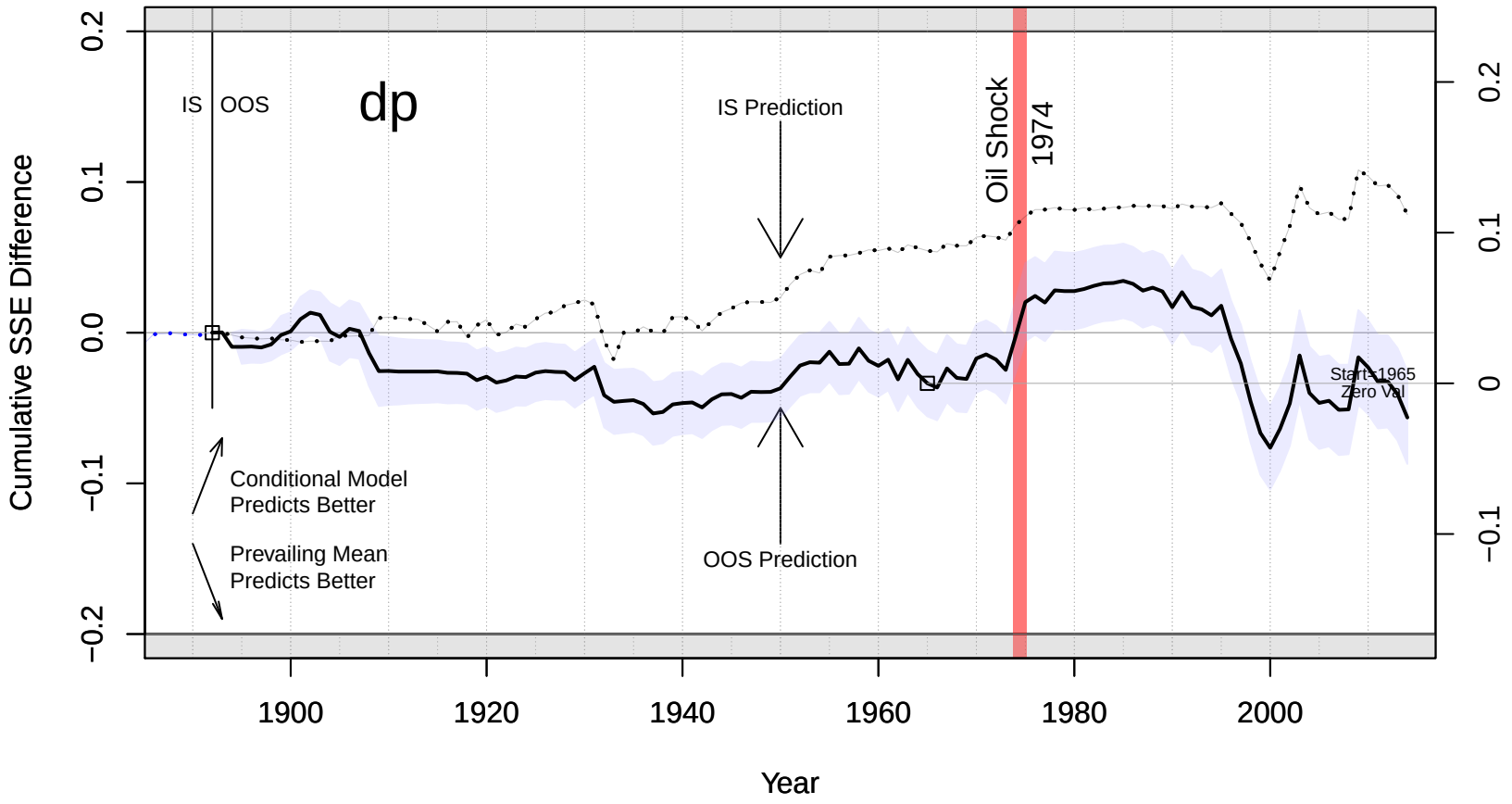

dp
IS
OOS
IS Prediction
Oil Shock
1974
Conditional Model
Predicts Better
Prevailing Mean
Predicts Better
OOS Prediction
Start=1965
Zero Val
Cumulative SSE Difference
Year
0.2
0.1
0.0
−0.1
−0.2
1900
1920
1940
1960
1980
2000

Figure 2: dy

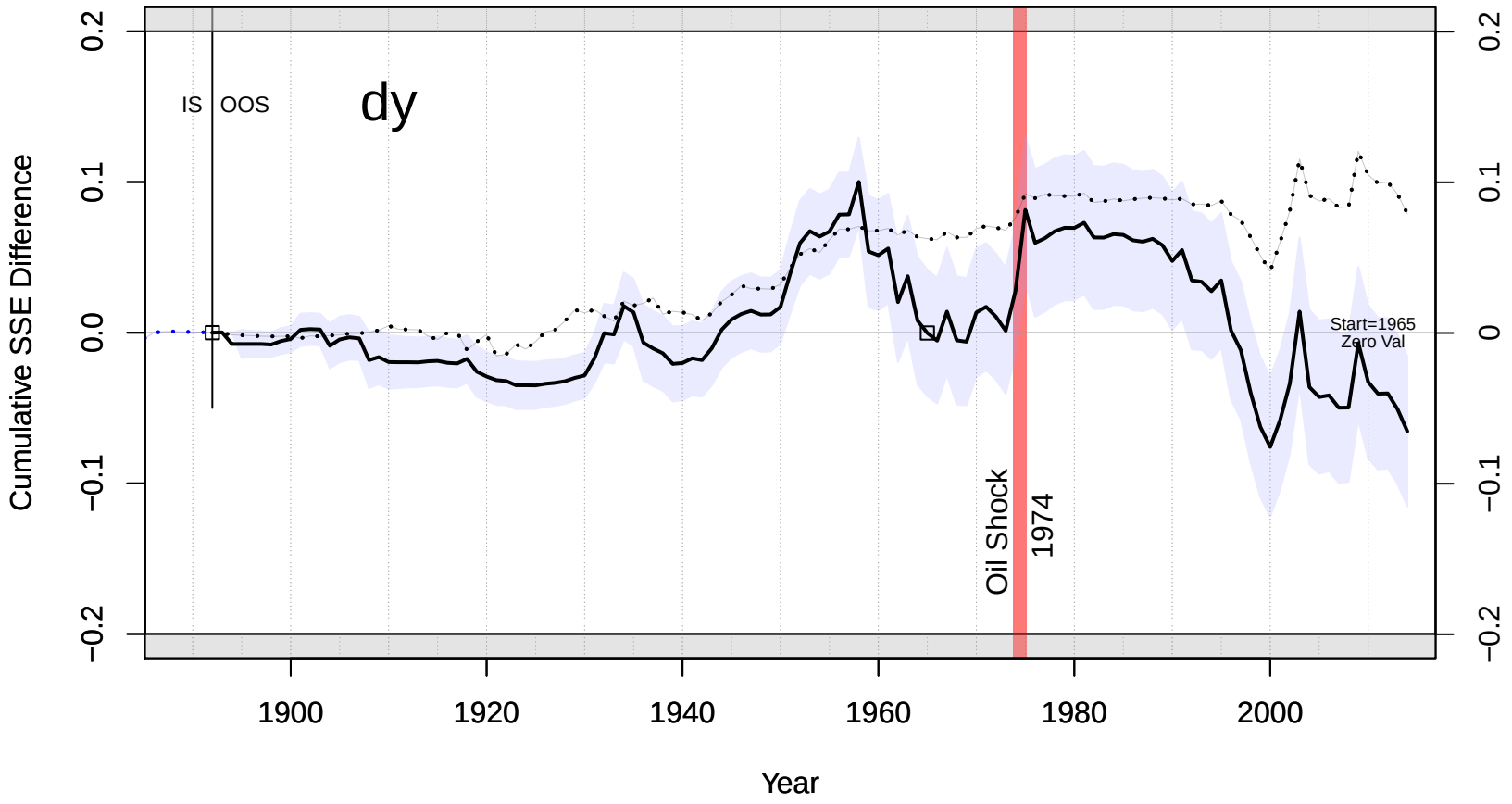

dy
IS
OOS
Cumulative SSE Difference
0.2
0.1
0.0
−0.1
−0.2
1900
1920
1940
1960
1980
2000
Year
Oil Shock
1974
Start=1965
Zero Val

Figure 3: ep

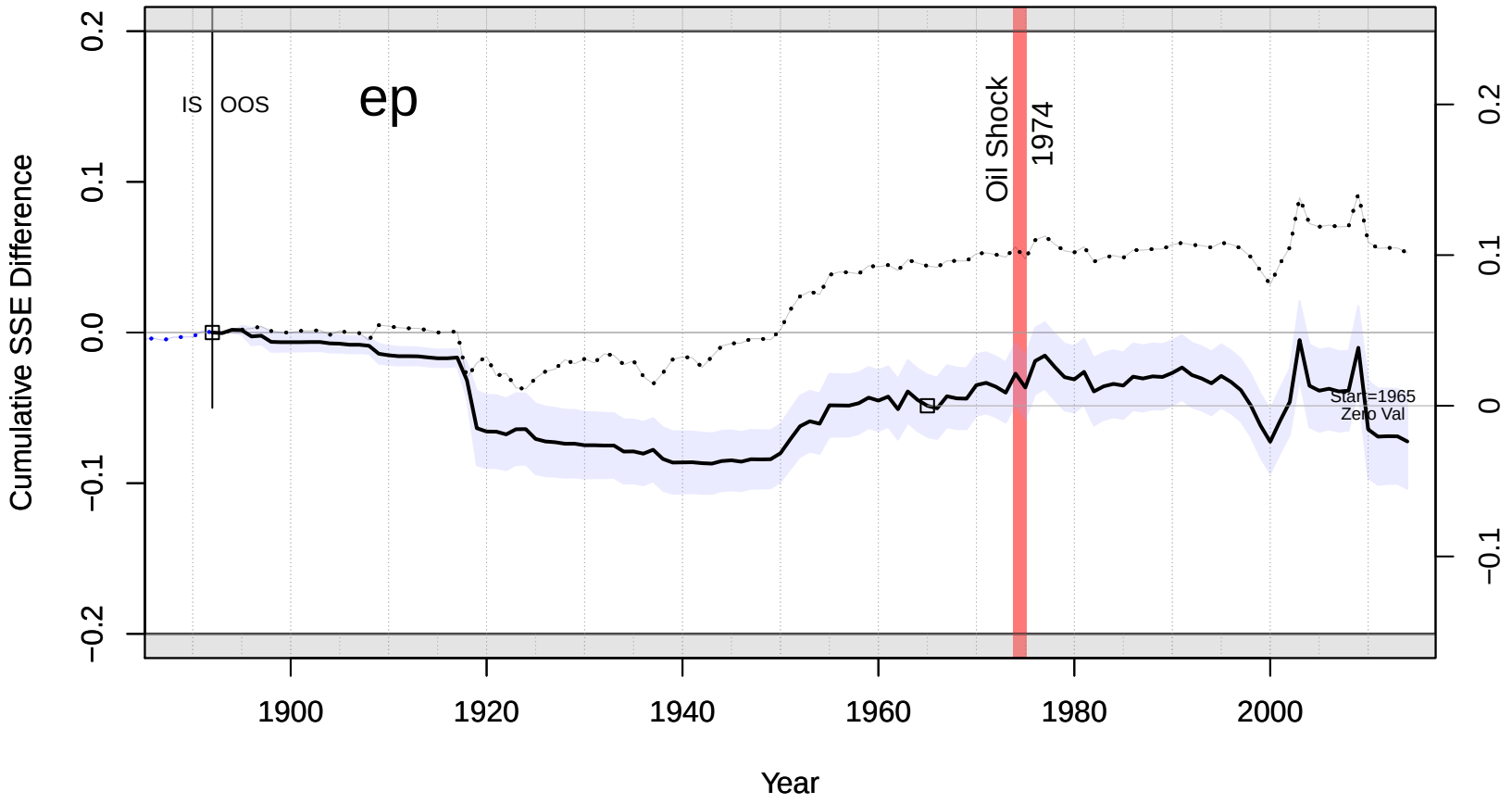
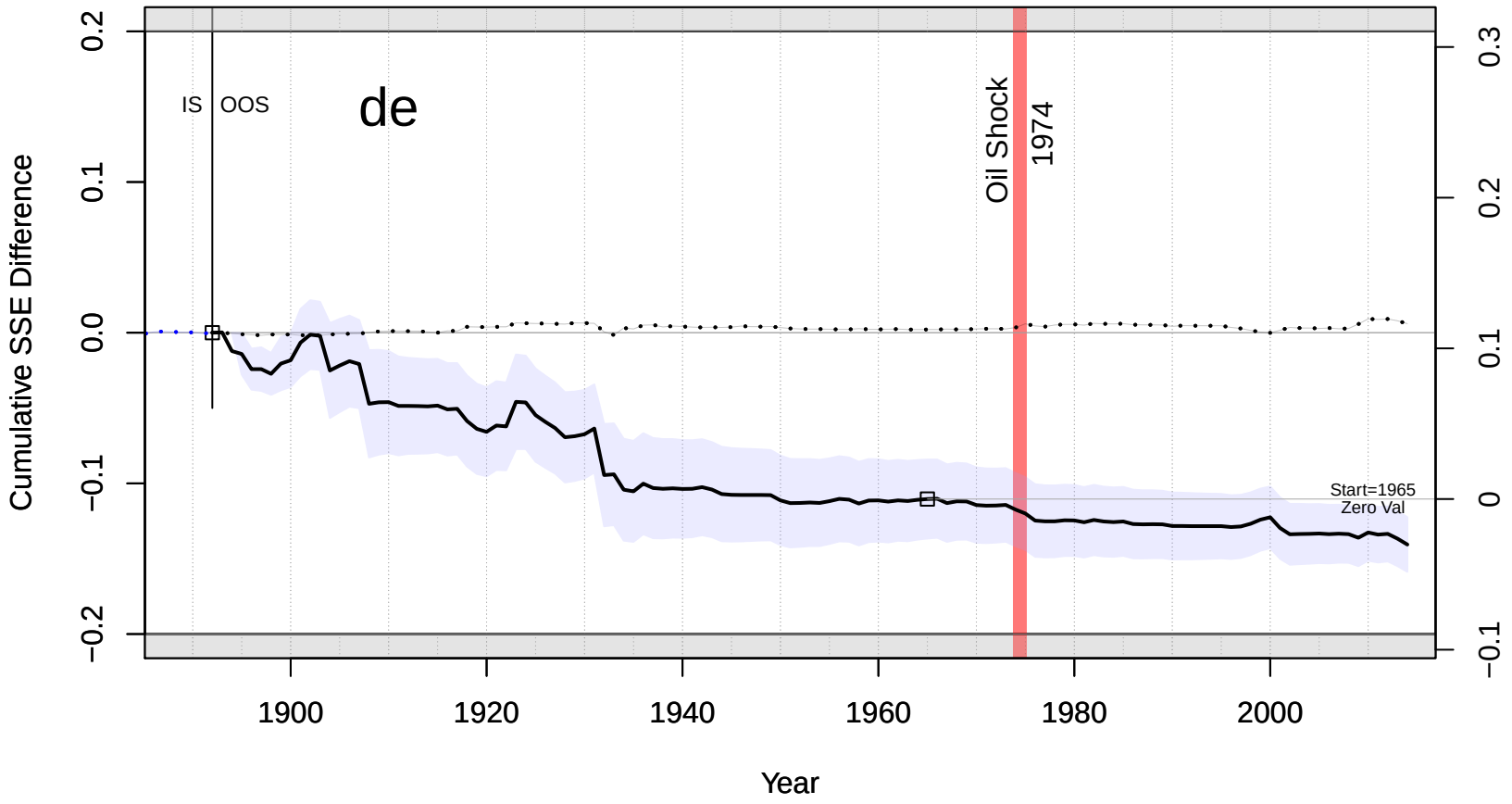

ep
IS
OOS
Oil Shock
1974
Start=1965
Zero Val
Cumulative SSE Difference
Year
0.2
0.1
0.0
−0.1
−0.2
1900
1920
1940
1960
1980
2000

Figure 4: de


de
IS
OOS
Oil Shock
1974
Start=1965
Zero Val
Cumulative SSE Difference
Year
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0.1
0.0
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−0.2
0.3
0.2
0.1
0
−0.1
1900
1920
1940
1960
1980
2000

Figure 5: svar

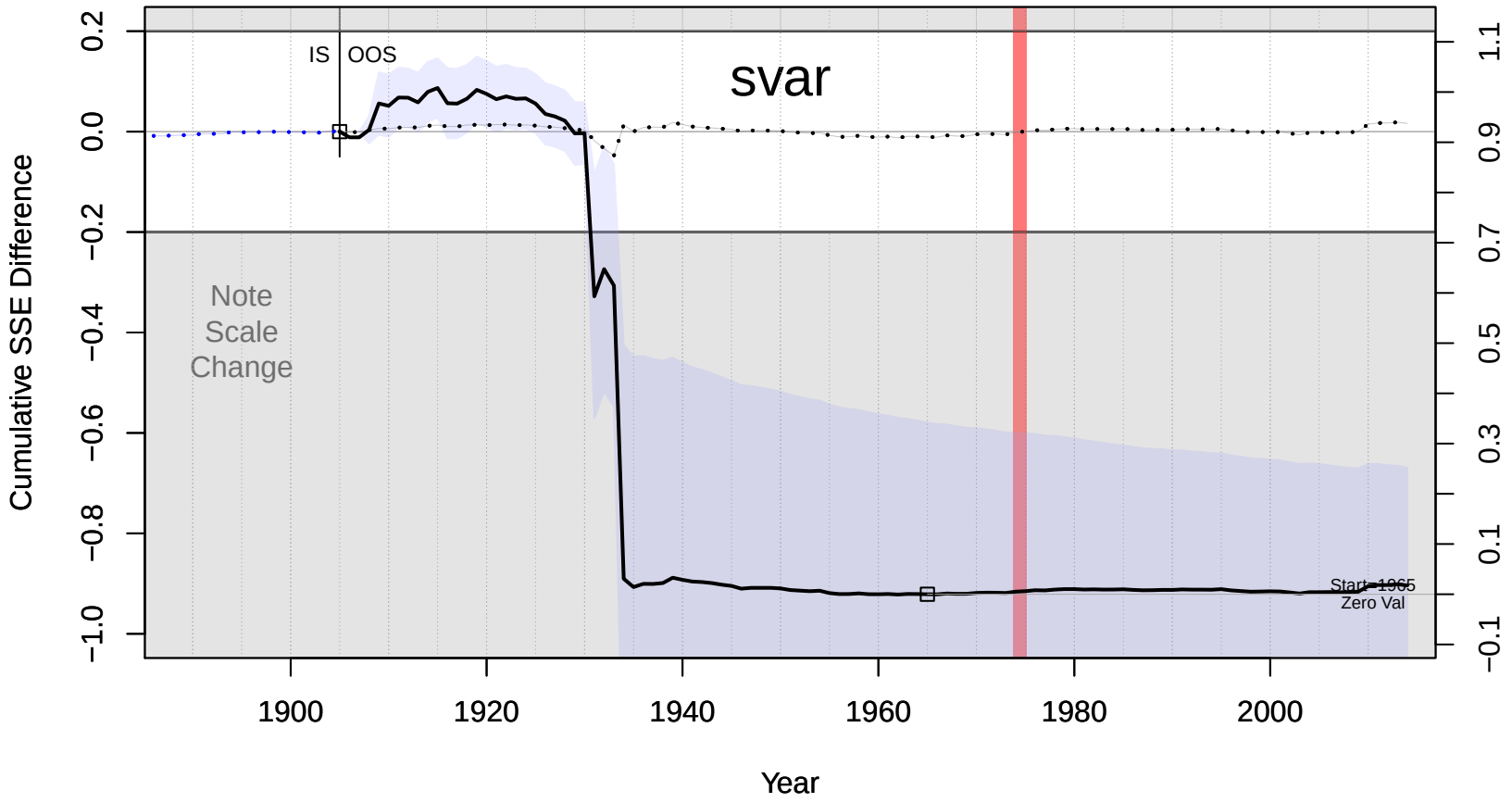

Figure 6: bm

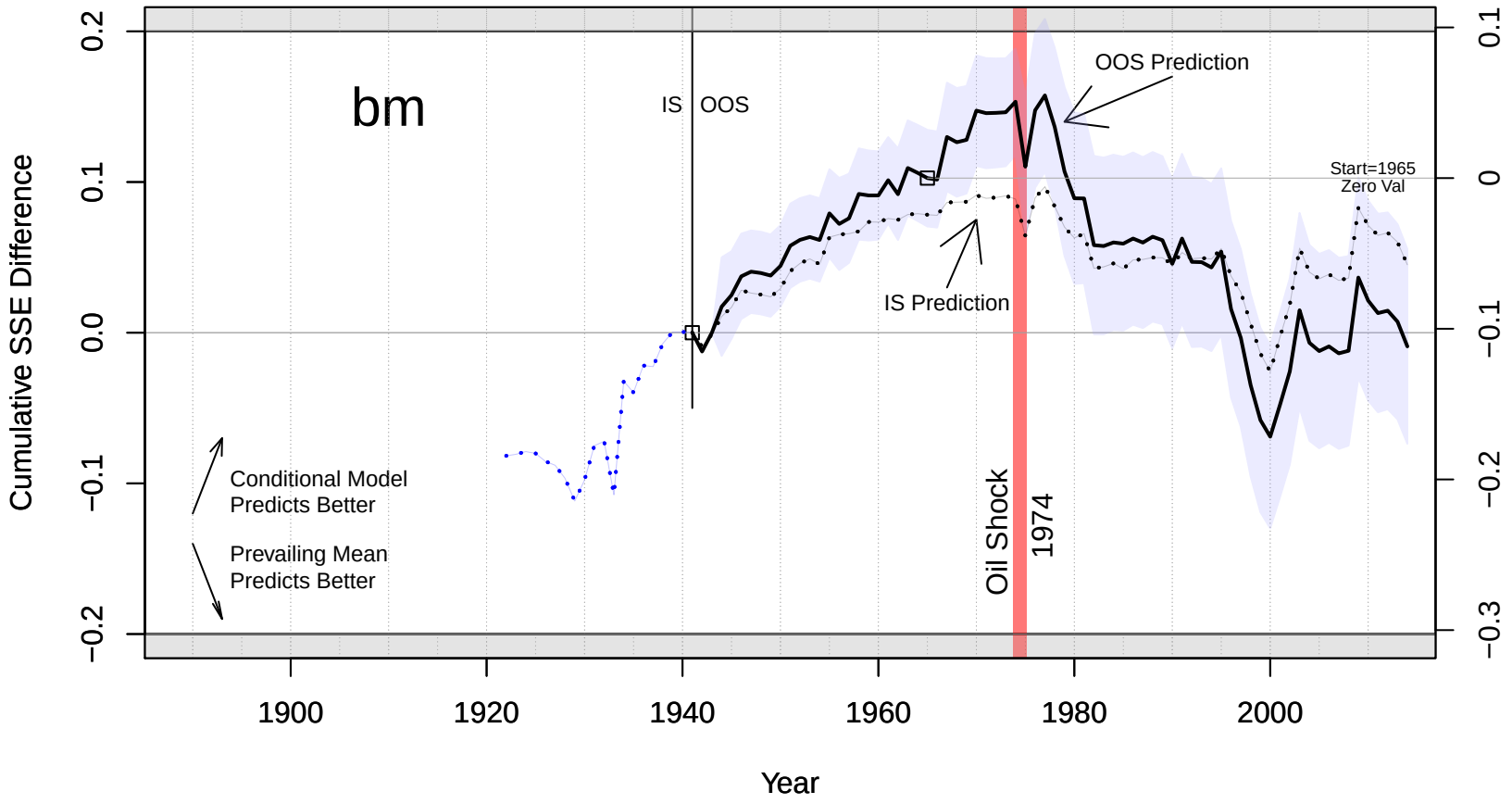
bm
IS
OOS
OOS Prediction
IS Prediction
Start=1965
Zero Val
Oil Shock
1974
Conditional Model
Predicts Better
Prevailing Mean
Predicts Better
Cumulative SSE Difference
Year
0.2
0.1
0.0
−0.1
−0.2
0.1
0
−0.1
−0.2
−0.3
1900
1920
1940
1960
1980
2000

Figure 7: ntis

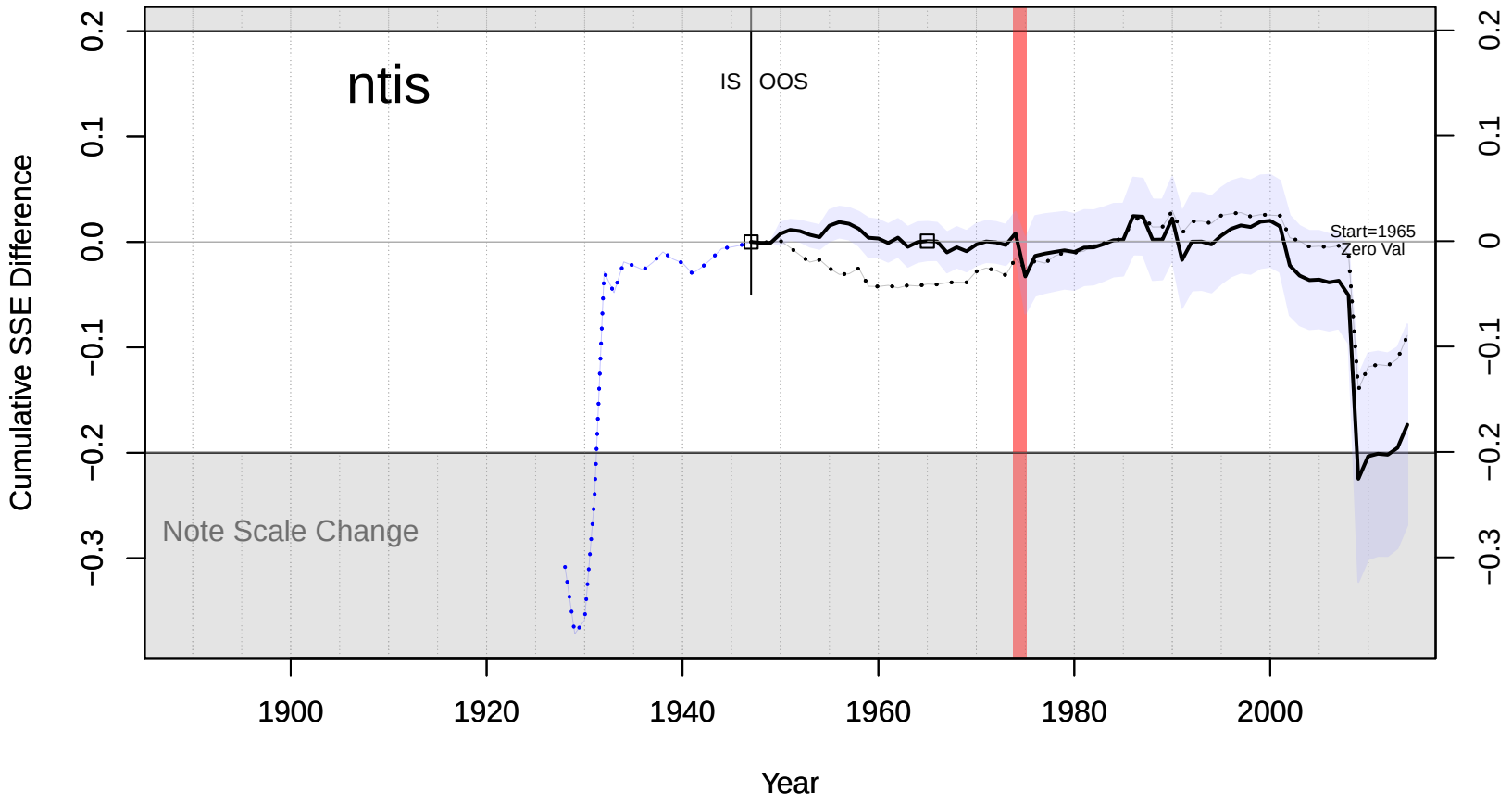

Figure 8: eqis

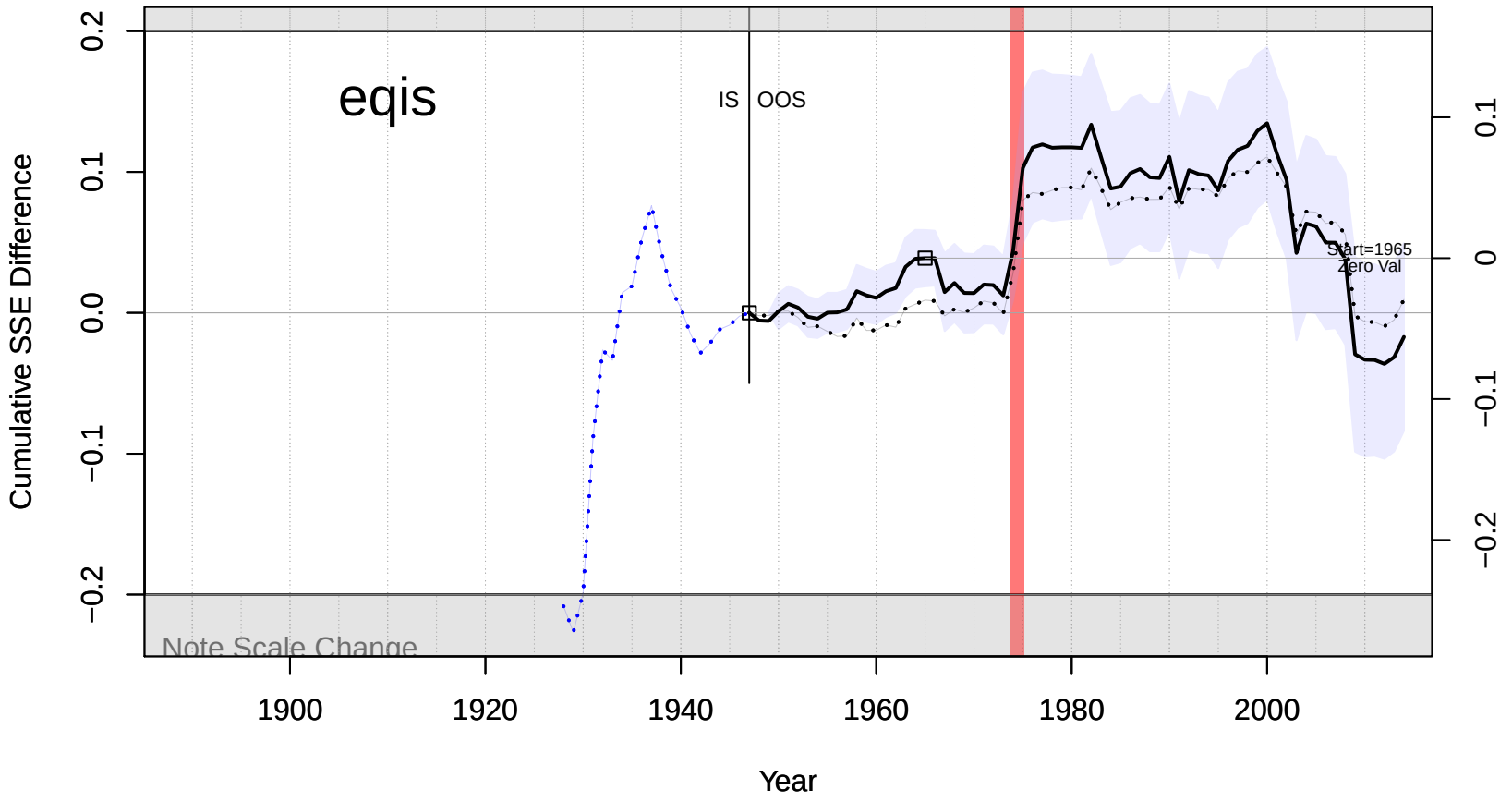

Figure 9: tb

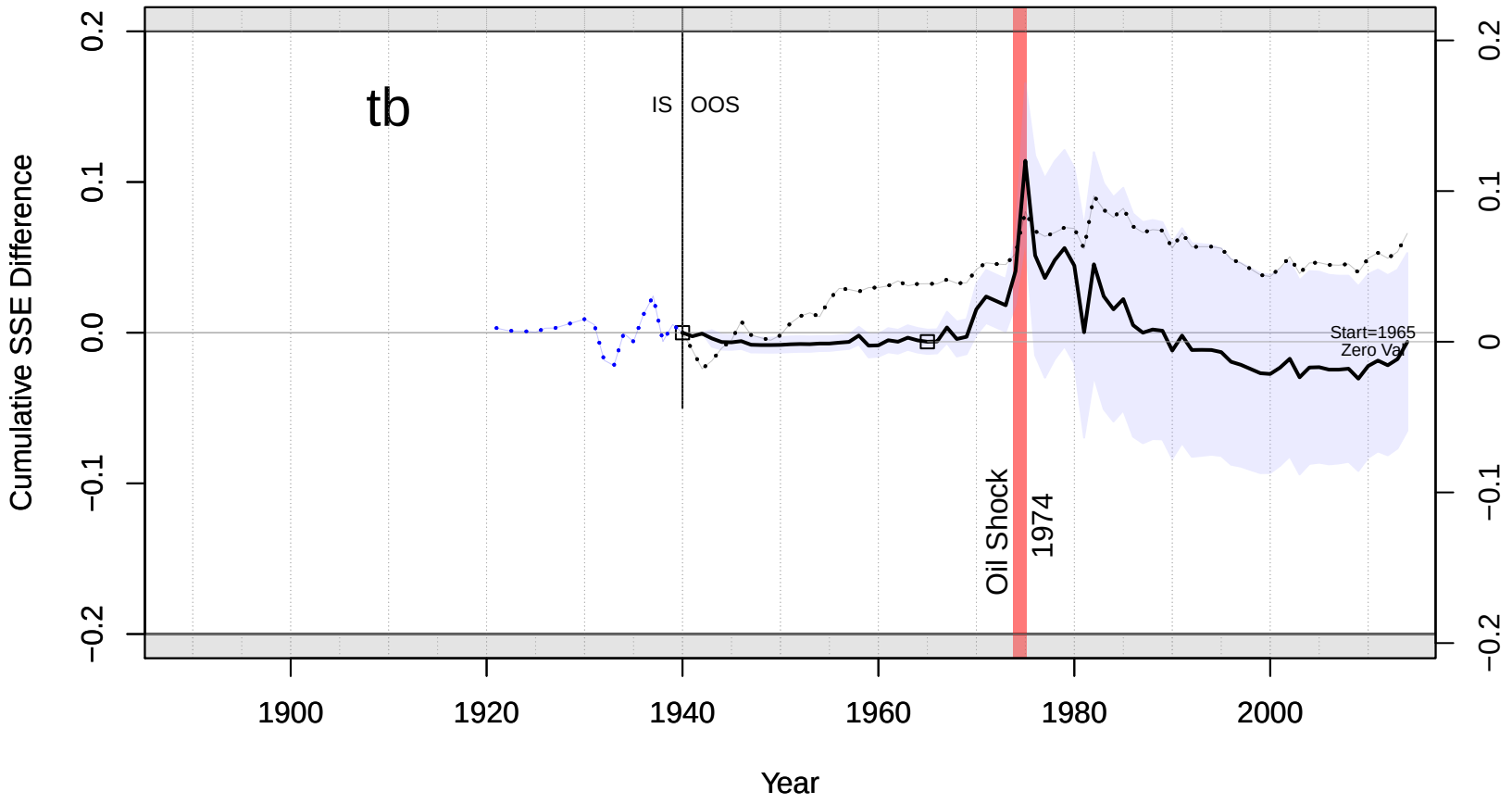
tb
IS
OOS
Oil Shock
1974
Start=1965
Zero Val
Cumulative SSE Difference
Year
0.2
0.1
0.0
−0.1
−0.2
1900
1920
1940
1960
1980
2000

Figure 10: lty

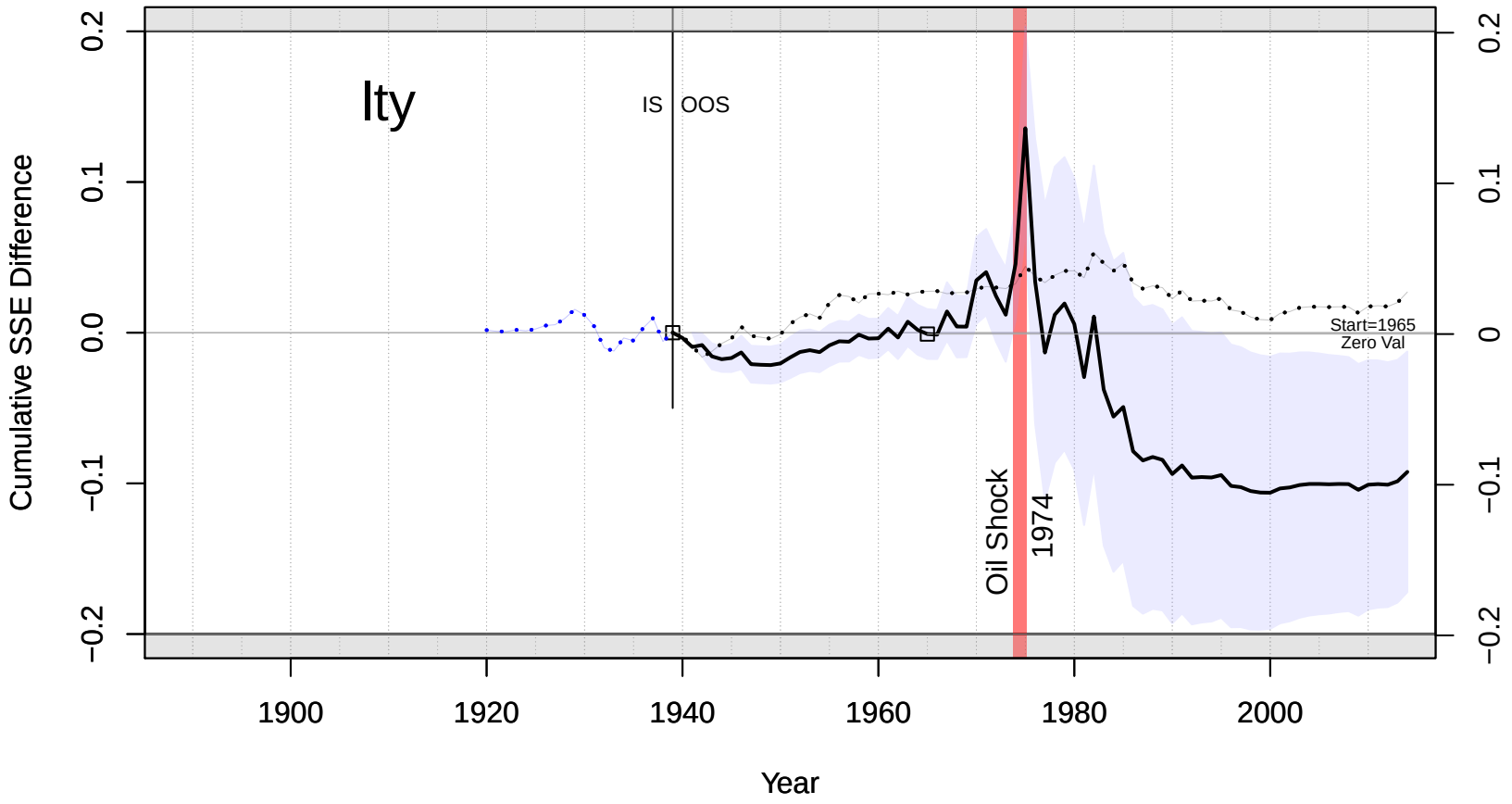

Figure 11: ltr

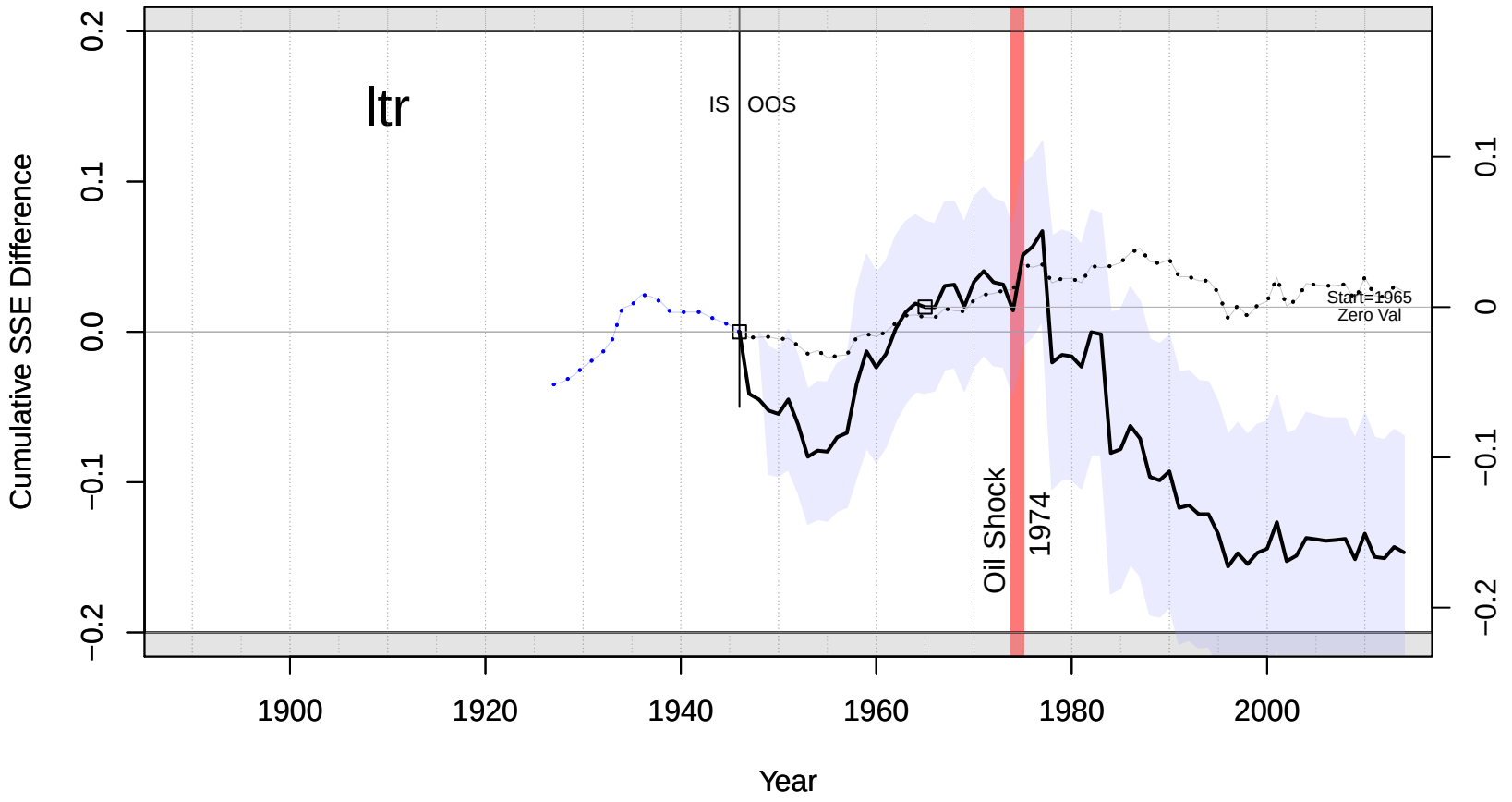

Figure 12: tms

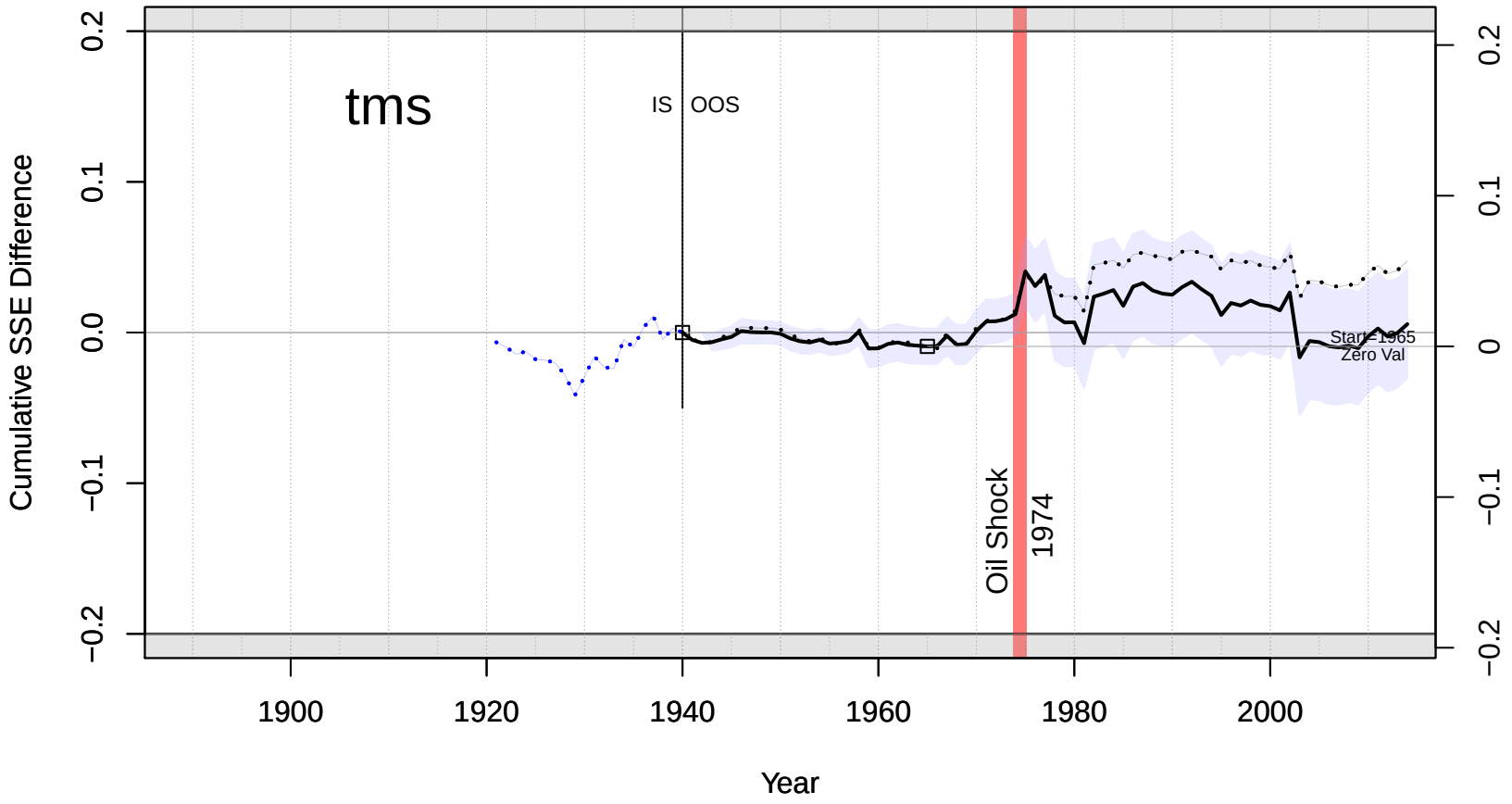

Figure 13: dfy

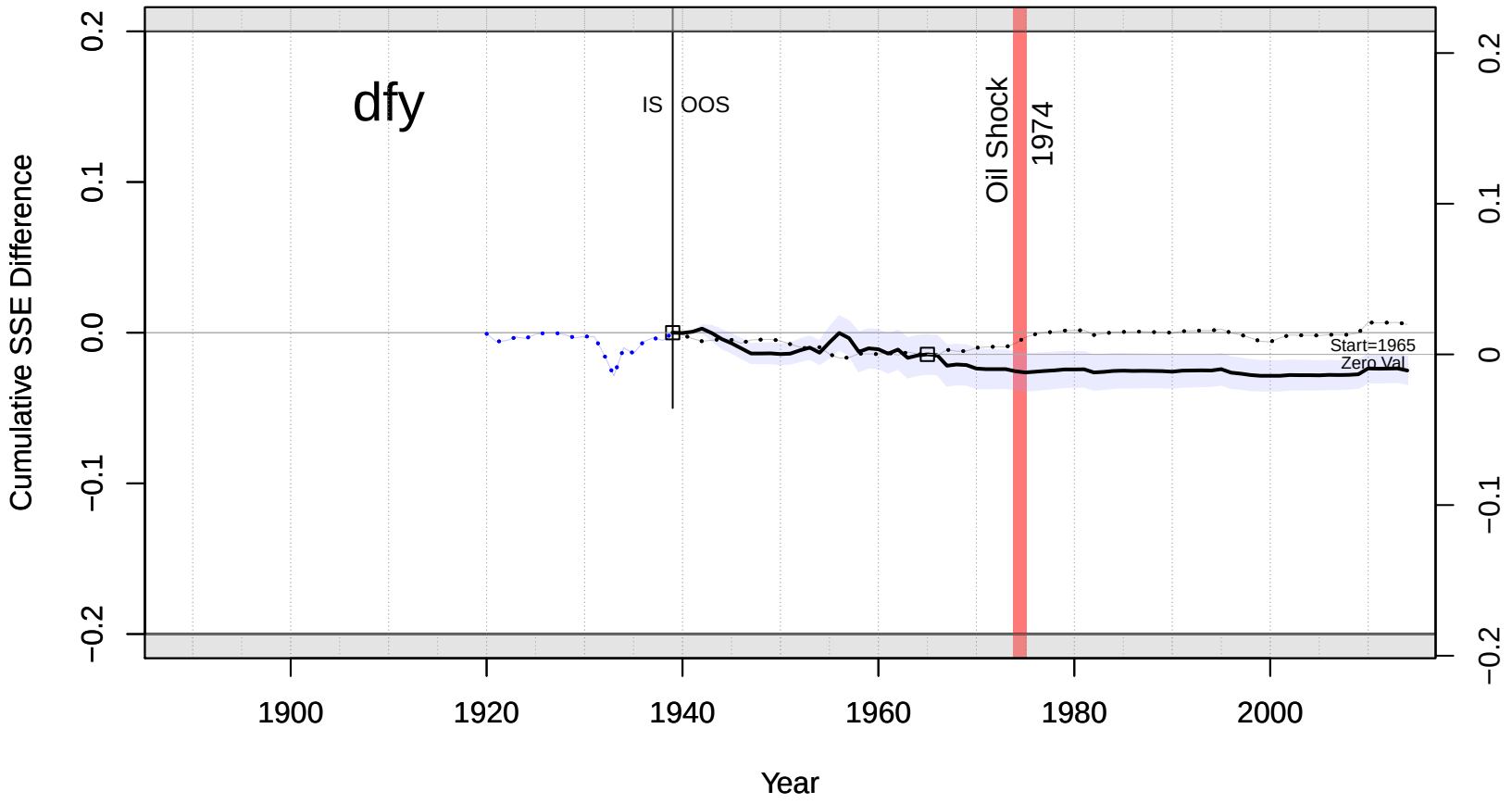

Figure 14: dfr

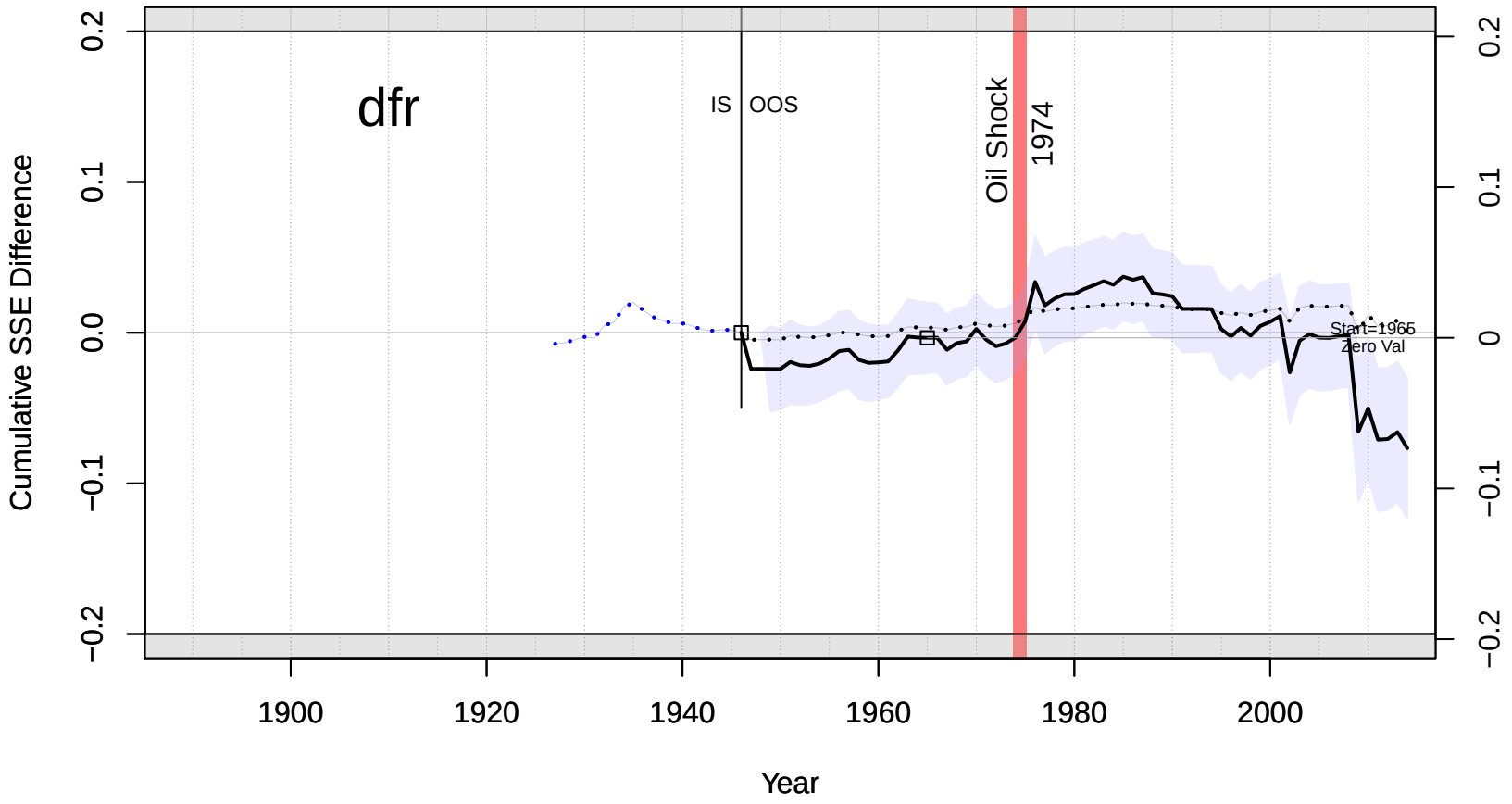

Figure 15: infl

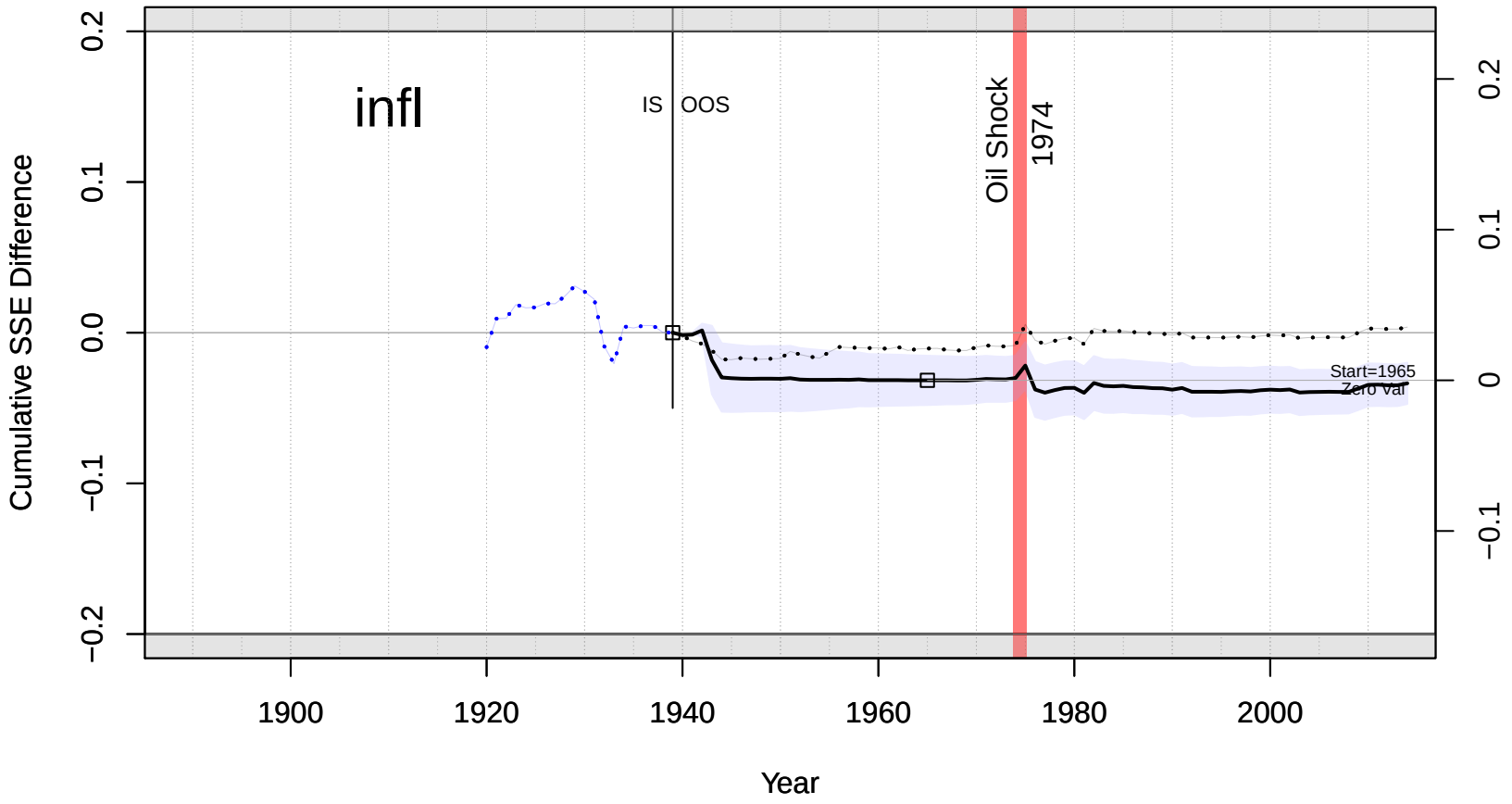

Figure 16: ik

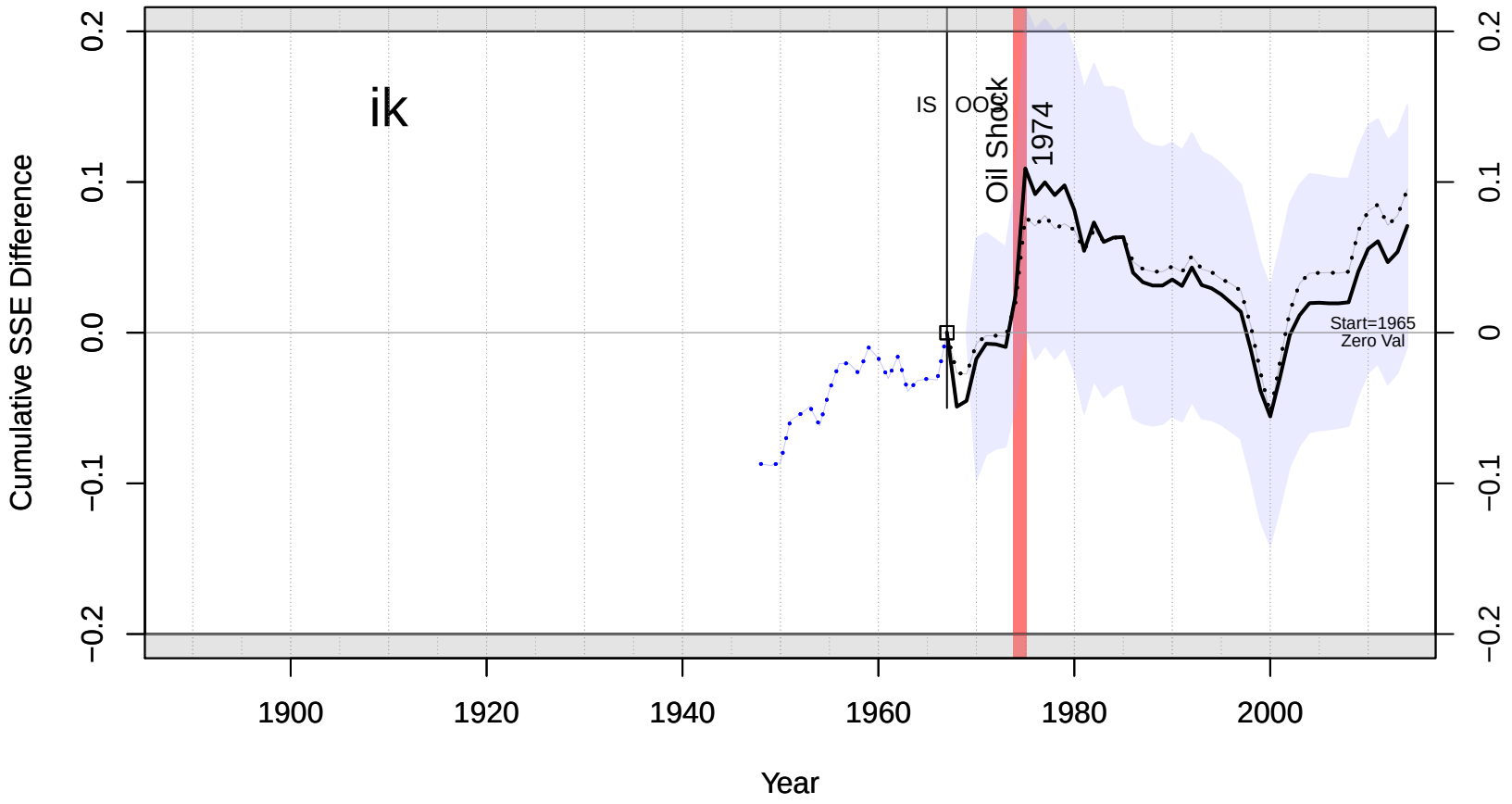
ik
IS
OOS
Oil Shock
1974
Start=1965
Zero Val
Cumulative SSE Difference
Year
0.2
0.1
0.0
−0.1
−0.2
1900
1920
1940
1960
1980
2000

Figure 17: cayp

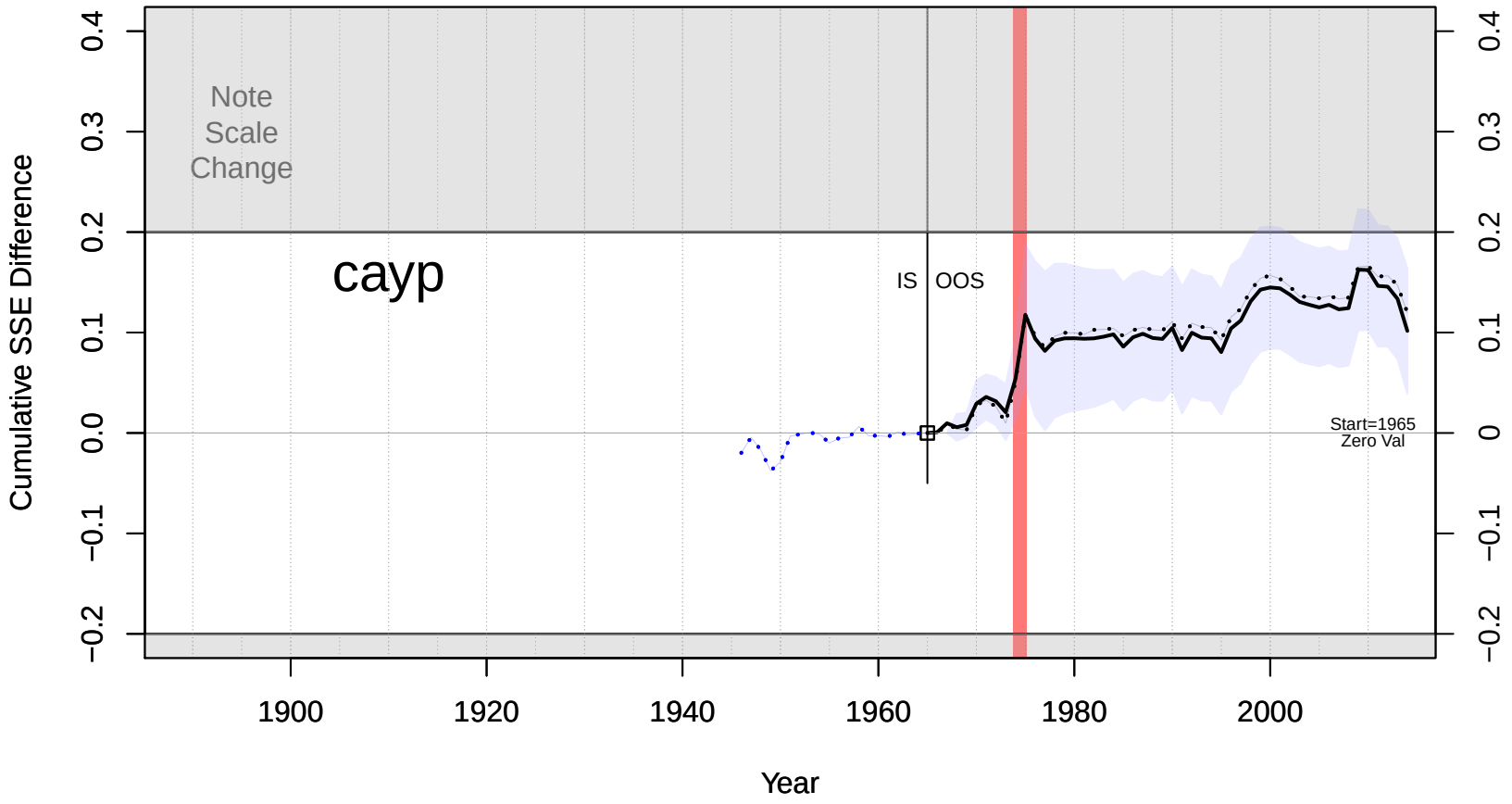

Figure 18: caya

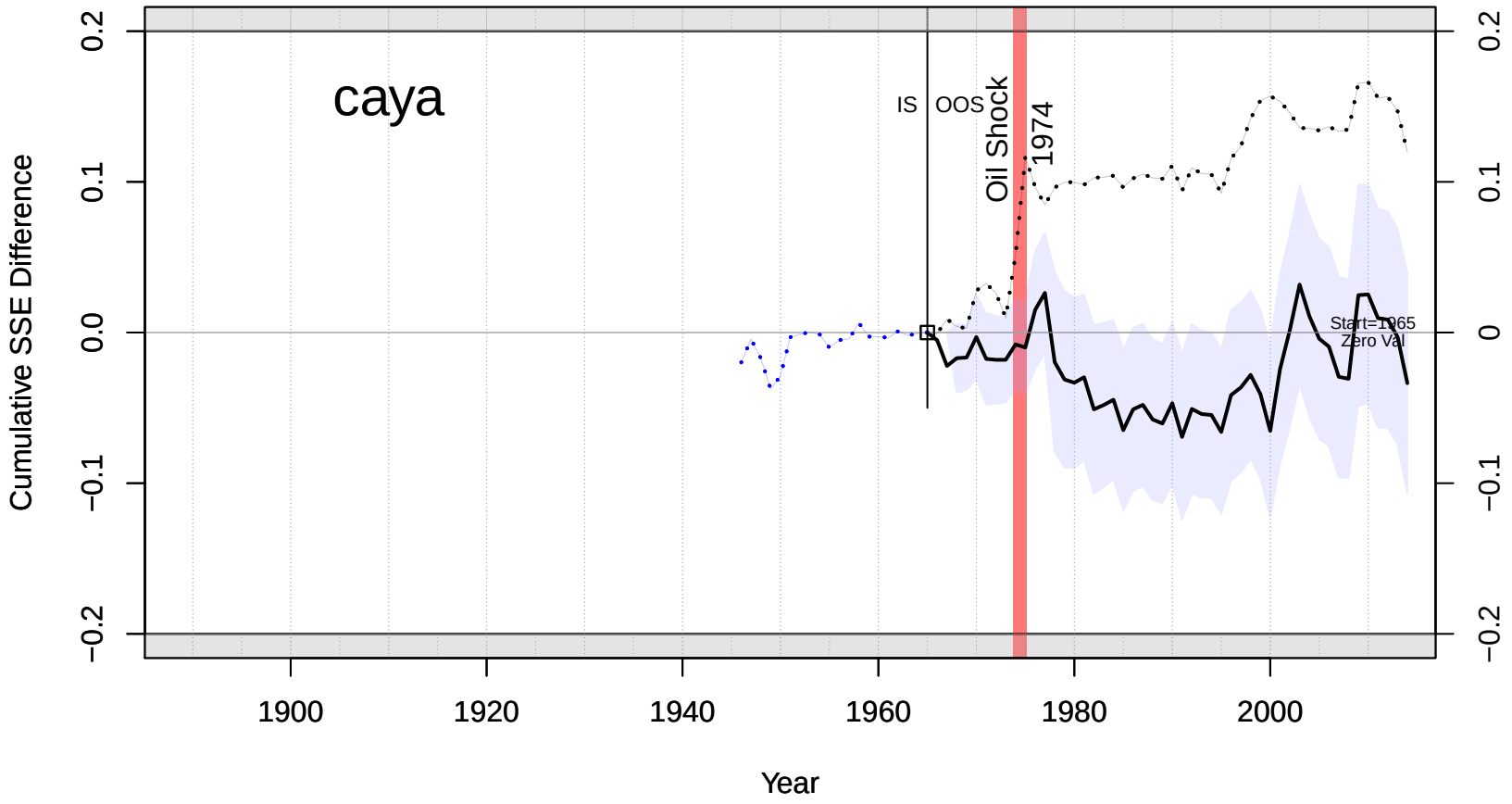

Figure 19: all