ARMA-X Figures

Contents

SPY Models

We choose the specification in the armax_models file. In this file, we will just run said specifications to produce nice tables and graphs to include in our final paper.

```
models <- list()

# ARMA-X(3,3,1) with Tweet Dummy as Exogenous
models[["Model 1"]] <- armax(data$SPY_vol, xreg = data$dummy, latex = F,
                             nb.lags = 1, p = 3, q = 3)

# ARMA-X(3,3,1) with Tweet Count as Exogenous
models[["Model 2"]] <- armax(data$SPY_vol, xreg = data$N, latex = F,
                             nb.lags = 1, p = 3, q = 3)

# ARMA-X(3,2,3) with Tariff Mentions as Exogenous
models[["Model 3"]] <- armax(data$SPY_vol, xreg = data$tariff, latex = F,
                             nb.lags = 3, p = 3, q = 2)

# ARMA-X(3,2,1) with Trade Mentions as Exogenous
models[["Model 4"]] <- armax(data$SPY_vol, xreg = data$trade, latex = F,
                             nb.lags = 1, p = 3, q = 2)

# ARMA-X(3,2,0) with China Mentions as Exogenous
models[["Model 5"]] <- armax(data$SPY_vol, xreg = data$china, latex = F,
                             nb.lags = 0, p = 3, q = 2)
```

```
names = c("AR(1)", "AR(2)", "AR(3)",
  "MA(1)", "MA(2)", "MA(3)",
  "Constant",
  "$TweetDummy_{t}$", "$TweetDummy_{t-1}$",
  "$TweetCount_{t}$", "$TweetCount_{t-1}$",
  "$Tariff_{t}$", "$Tariff_{t-1}$", "$Tariff_{t-2}$", "$Tariff_{t-3}$",
  "$Trade_{t}$", "$Trade_{t-1}$",
  "$China_{t}$")

texreg(
  models,
  custom.model.names = names(models),
  custom.coef.names = names,
  caption = "Combined ARMAX Models",
  label = "tab:combined_armax",
  digits = 4
)
```

	Model 1	Model 2	Model 3	Model 4	Model 5
AR(1)	0.0300	0.0278	0.2200^{***}	2.1903^{***}	0.2209^{***}
	(0.0510)	(0.0510)	(0.0084)	(0.0096)	(0.0084)
AR(2)	0.7229^{***}	0.7210^{***}	0.9388^{***}	-1.4727^{***}	0.9382^{***}
	(0.0397)	(0.0399)	(0.0037)	(0.0173)	(0.0037)
AR(3)	0.2110^{***}	0.2148^{***}	-0.1837^{***}	0.2784^{***}	-0.1837^{***}
	(0.0287)	(0.0284)	(0.0079)	(0.0082)	(0.0079)
MA(1)	0.2751^{***}	0.2779^{***}	0.0870^{***}	-1.8955^{***}	0.0878^{***}
	(0.0496)	(0.0496)	(0.0042)	(0.0062)	(0.0042)
MA(2)	-0.6445^{***}	-0.6430^{***}	-0.8960^{***}	0.9165^{***}	-0.8950^{***}
	(0.0284)	(0.0285)	(0.0042)	(0.0063)	(0.0042)
MA(3)	-0.3527^{***}	-0.3563^{***}			
	(0.0256)	(0.0253)			
Constant	0.0202^{***}	0.0211^{***}	0.0219^{***}	0.0225^{***}	0.0225^{***}
	(0.0042)	(0.0042)	(0.0042)	(0.0028)	(0.0042)
$TweetDummy_t$	0.0014^{***}				
	(0.0002)				
$TweetDummy_{t-1}$	0.0008^{***}				
	(0.0002)				
$TweetCount_t$		0.0004^{***}			
		(0.0001)			
$TweetCount_{t-1}$		0.0002^{**}			
		(0.0001)			
$Tariff_t$			0.0035^{*}		
			(0.0014)		
$Tariff_{t-1}$			0.0191^{***}		
			(0.0015)		
$Tariff_{t-2}$			0.0103^{***}		
			(0.0015)		
$Tariff_{t-3}$			-0.0045^{**}		
			(0.0014)		
$Trade_t$				0.0032	
				(0.0018)	
$Trade_{t-1}$				0.0016	
				(0.0018)	
$China_t$					0.0026^{*}
					(0.0012)
AIC	−45761.2161	−45737.6695	−46020.9547	−45816.1540	−45840.5349
AICc	−45761.2051	−45737.6585	−46020.9415	−45816.1449	−45840.5277
BIC	−45682.1963	−45658.6497	−45934.0340	−45745.0361	−45777.3186
Log Likelihood	22890.6081	22878.8348	23021.4774	22917.0770	22928.2675
Num. obs.	19970	19970	19968	19970	19971

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table 1: Combined ARMAX Models