

## Appendix 14 : Complete Econometric Code

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\*MASTER'S THESIS

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```
cd "/Users/jamesoswald/Desktop/Master Thesis/Code Stata"
```

```
use "/Users/jamesoswald/Desktop/Master Thesis/Code Stata/DataBaseThesis.dta", clear
```

\*CLEANING AND RECODING

```
encode country, generate(country_n)
```

```
encode countrycode, generate(countrycode_n)
```

```
summarize sovereigncrisis sovereignspreads generalgovernmentdebt
```

```
summarize sovereigncrisis sovereignspreads generalgovernmentdebt primarybalance  
overallfiscalbalance interestspaidonpublicdebt governmentexpenditure realgdpgrowth  
inflationrate governmentltinterestrates germanyaltinterestrates spreadvsgermany  
us10yearstreasuryyield sovereigncreditrating currentaccounttogdp ruleoflaw  
governmenteffectiveness politicalstability fiscalruleindex
```

\*PRE-ECONOMETRIC TESTS

```
// Fisher-type unit-root test(=stationarity test) in panel data
```

```
xtset country_n year
```

```
xtunitroot fisher generalgovernmentdebt, dfuller drift lags(1)
```

```
xtunitroot fisher primarybalance, dfuller drift lags(1)
```

```
xtunitroot fisher overallfiscalbalance, dfuller drift lags(1)
```

```
xtunitroot fisher interestspaidonpublicdebt, dfuller drift lags(1)
```

```
xtunitroot fisher governmentexpenditure, dfuller drift lags(1)
```

```
xtunitroot fisher realgdpgrowth, dfuller drift lags(1)
```

```
xtunitroot fisher inflationrate, dfuller drift lags(1)
```

```
xtunitroot fisher governmentltinterestrates, dfuller drift lags(1)
```

```
xtunitroot fisher germanyaltinterestrates, dfuller drift lags(1)
```

```
xtunitroot fisher spreadvsgermany, dfuller drift lags(1)
```

```
xtunitroot fisher us10yearstreasuryyield, dfuller drift lags(1)
```

```
xtunitroot fisher sovereigncreditrating, dfuller drift lags(1)
```

```
xtunitroot fisher currentaccounttogdp, dfuller drift lags(1)
```

```
xtunitroot fisher ruleoflaw, dfuller drift lags(1)
```

```
xtunitroot fisher governmenteffectiveness, dfuller drift lags(1)
```

```
xtunitroot fisher politicalstability, dfuller drift lags(1)
```

```
xtunitroot fisher fiscalruleindex, dfuller drift lags(1)
```

```
generate lag_debt = l.generalgovernmentdebt
```

```
generate diff_current_gdp = d.currentaccounttogdp
```

```
generate lag_diff_current_gdp = l.d.currentaccounttogdp
```

```
generate lag2_diff_current_gdp = l2.d.currentaccounttogdp
```

```
// Correlation
pwcorr sovereigncrisis sovereignspreads generalgovernmentdebt, star(0.10)
pwcorr sovereigncrisis sovereignspreads generalgovernmentdebt primarybalance
overallfiscalbalance interestspaidonpublicdebt governmentexpenditure realgdpgrowth
inflationrate governmentltinterestrates germanyntinterestrates spreadvsgermany
us10yearstreasuryyield sovereigncreditrating currentaccounttogdp ruleoflaw
governmenteffectiveness politicalstability fiscalruleindex, star(0.10)
```

## \*DESCRIPTIVE STATISTICS

```
summarize sovereignspreads generalgovernmentdebt inflationrate currentaccounttogdp
politicalstability
outreg2 using table_panel_stats.xls, replace sum(detail) keep(sovereignspreads
generalgovernmentdebt inflationrate currentaccounttogdp politicalstability) eqkeep(N mean
sd min max)
```

```
summarize sovereignspreads generalgovernmentdebt inflationrate currentaccounttogdp
politicalstability if country == "France"
outreg2 using table_panel_france.xls, replace sum(detail) keep(sovereignspreads
generalgovernmentdebt inflationrate currentaccounttogdp politicalstability) eqkeep(N mean
sd min max)
```

```
*****
```

## \*REGRESSIONS

```
*****
```

### \*POOLED LOGIT (LONG-TERM) -> STATIC MODEL IN LEVELS

```
xtset country_n year
logit sovereignspreads generalgovernmentdebt inflationrate currentaccounttogdp
politicalstability
lroc
```

### \*CONDITIONAL LOGIT (SHORT-TERM) -> STATIC MODEL IN LEVELS

```
tabulate country sovereignspreads
clogit sovereignspreads generalgovernmentdebt inflationrate currentaccounttogdp
politicalstability, group(country_n)
```

### \*POOLED LOGIT (LONG-TERM) -> STATIC MODEL IN DIFFERENCES

```
xtset country_n year
logit sovereignspreads d.generalgovernmentdebt d.inflationrate d.currentaccounttogdp
d.politicalstability
lroc
```

### \*POOLED LOGIT (LONG-TERM) -> STATIC MODEL IN DIFFERENCES & LEVELS

```

xtset country_n year
logit sovereignspreads generalgovernmentdebt inflationrate d.currentaccounttogdp
politicalstability
lroc
margins, dydx(*) post

```

#### \*POOLED LOGIT -> DYNAMIC MODEL

```

xtset country_n year
logit sovereignspreads generalgovernmentdebt l.generalgovernmentdebt inflationrate
d.currentaccounttogdp politicalstability
lroc

```

```

xtset country_n year
logit sovereignspreads generalgovernmentdebt l.generalgovernmentdebt inflationrate
l.inflationrate d.currentaccounttogdp politicalstability

```

```

logit sovereignspreads generalgovernmentdebt l.generalgovernmentdebt inflationrate
d.currentaccounttogdp l.d.currentaccounttogdp politicalstability

```

```

logit sovereignspreads generalgovernmentdebt l.generalgovernmentdebt inflationrate
d.currentaccounttogdp l.d.currentaccounttogdp politicalstability

```

```

logit sovereignspreads generalgovernmentdebt l.generalgovernmentdebt
l2.generalgovernmentdebt inflationrate d.currentaccounttogdp l.d.currentaccounttogdp
politicalstability

```

```

logit sovereignspreads generalgovernmentdebt l.generalgovernmentdebt inflationrate
d.currentaccounttogdp l.d.currentaccounttogdp l2.d.currentaccounttogdp politicalstability
lroc

```

#### \*CONDITIONAL LOGIT (SHORT-TERM) -> DYNAMIC MODEL

```

clogit sovereignspreads generalgovernmentdebt l.generalgovernmentdebt inflationrate
d.currentaccounttogdp l.d.currentaccounttogdp l2.d.currentaccounttogdp politicalstability,
group(country_n)

```

\*\*\*\*\*

#### \*AUROC COMPARISON TESTS (WALD / DELONG)

\*\*\*\*\*

#### \*STATIC POOLED LOGIT - LEVELS

```

logit sovereignspreads generalgovernmentdebt inflationrate currentaccounttogdp
politicalstability
predict p_levels if e(sample), pr

```

#### \*STATIC POOLED LOGIT - DIFFERENCES

```

logit sovereignspreads d.generalgovernmentdebt d.inflationrate d.currentaccounttogdp
d.politicalstability

```

predict p\_diff if e(sample), pr

#### \*MIXED POOLED LOGIT

logit sovereignspreads generalgovernmentdebt inflationrate d.currentaccounttogdp  
politicalstability

predict p\_mixed if e(sample), pr

#### \*DYNAMIC POOLED LOGIT

logit sovereignspreads generalgovernmentdebt l.generalgovernmentdebt inflationrate  
d.currentaccounttogdp l.d.currentaccounttogdp l2.d.currentaccounttogdp politicalstability

predict p\_dynamic if e(sample), pr

\*\*\*\*\*

#### \*PAIRWISE AUROC COMPARISONS

\*\*\*\*\*

#### \*Levels vs Differences

roccomp sovereignspreads p\_levels p\_diff

#### \*Levels vs Mixed

roccomp sovereignspreads p\_levels p\_mixed

#### \*Mixed vs Dynamic

roccomp sovereignspreads p\_mixed p\_dynamic

#### \*All models together

roccomp sovereignspreads p\_levels p\_diff p\_mixed p\_dynamic

#### \*FINAL MODELS

logit sovereignspreads generalgovernmentdebt inflationrate d.currentaccounttogdp  
politicalstability

margins, dydx(\*) post

outreg2 using Table\_reg1.xls, replace title(XXXXXX) keep(generalgovernmentdebt  
inflationrate d.currentaccounttogdp politicalstability) addtext(Estimator, Pooled Logit) dec(3)

logit sovereignspreads generalgovernmentdebt l.generalgovernmentdebt inflationrate  
d.currentaccounttogdp l.d.currentaccounttogdp l2.d.currentaccounttogdp politicalstability

margins, dydx(\*) post

outreg2 using Table\_reg1.xls, append title(XXXXXX) keep(generalgovernmentdebt  
l.generalgovernmentdebt inflationrate d.currentaccounttogdp l.d.currentaccounttogdp

l2.d.currentaccounttogdp politicalstability ) addtext(Estimator, Pooled Logit) dec(3)

clogit sovereignspreads generalgovernmentdebt inflationrate currentaccounttogdp  
politicalstability, group(country\_n)

aextlogit sovereignspreads generalgovernmentdebt inflationrate currentaccounttogdp  
politicalstability, nolog

outreg2 using Table\_reg1.xls, append title(XXXXXX) keep(generalgovernmentdebt  
inflationrate currentaccounttogdp politicalstability) addtext(Estimator, Conditional Logit)  
dec(3)

clogit sovereignspreads generalgovernmentdebt l.generalgovernmentdebt inflationrate  
d.currentaccounttogdp l.d.currentaccounttogdp l2.d.currentaccounttogdp politicalstability,  
group(country\_n)

```
aextlogit sovereignspreads generalgovernmentdebt lag_debt inflationrate diff_current_gdp
lag_diff_current_gdp lag2_diff_current_gdp politicalstability, nolog
outreg2 using Table_reg1.xls, append title(XXXXXX) keep(generalgovernmentdebt lag_debt
inflationrate diff_current_gdp lag_diff_current_gdp lag2_diff_current_gdp politicalstability)
addtext(Estimator, Conditional Logit) dec(3)
```

```
*****
```

```
*CONFUSION MATRIX*
```

```
*****
```

```
logit sovereignspreads generalgovernmentdebt l.generalgovernmentdebt inflationrate
d.currentaccounttogdp l.d.currentaccounttogdp l2.d.currentaccounttogdp politicalstability
predict p_final if e(sample), pr
```

```
generate pred_final = (p_final >= 0.5)
```

```
tabulate sovereignspreads pred_final
```

```
*****
```

```
*POST-ECONOMETRIC TESTS
```

```
*****
```

```
*HETEROSCEDASTICITY TEST
```

```
regress sovereignspreads generalgovernmentdebt l.generalgovernmentdebt inflationrate
d.currentaccounttogdp l.d.currentaccounttogdp l2.d.currentaccounttogdp politicalstability
estat imtest, white
```

```
*AUTOCORRELATION TEST
```

```
xtserial sovereignspreads generalgovernmentdebt lag_debt inflationrate diff_current_gdp
lag_diff_current_gdp lag2_diff_current_gdp politicalstability
```

```
*FINAL MODELS 2
```

```
logit sovereignspreads generalgovernmentdebt inflationrate d.currentaccounttogdp
politicalstability, cluster(country_n)
margins, dydx(*) post
outreg2 using Table_reg2.xls, replace title(XXXXXX) keep(generalgovernmentdebt
inflationrate d.currentaccounttogdp politicalstability) addtext(Estimator, Pooled Logit) dec(3)
logit sovereignspreads generalgovernmentdebt l.generalgovernmentdebt inflationrate
d.currentaccounttogdp l.d.currentaccounttogdp l2.d.currentaccounttogdp politicalstability,
cluster(country_n)
margins, dydx(*) post
outreg2 using Table_reg2.xls, append title(XXXXXX) keep(generalgovernmentdebt
l.generalgovernmentdebt inflationrate d.currentaccounttogdp l.d.currentaccounttogdp
l2.d.currentaccounttogdp politicalstability ) addtext(Estimator, Pooled Logit) dec(3)
clogit sovereignspreads generalgovernmentdebt inflationrate currentaccounttogdp
politicalstability, group(country_n) cluster(country_n)
aextlogit sovereignspreads generalgovernmentdebt inflationrate currentaccounttogdp
politicalstability, nolog vce(cluster country_n)
```

```

outreg2 using Table_reg2.xls, append title(XXXXXX) keep(generalgovernmentdebt
inflationrate currentaccounttogdp politicalstability) addtext(Estimator, Conditional Logit)
dec(3)
aextlogit sovereignspreads generalgovernmentdebt lag_debt inflationrate diff_current_gdp
lag_diff_current_gdp lag2_diff_current_gdp politicalstability, nolog vce(cluster country_n)
outreg2 using Table_reg2.xls, append title(XXXXXX) keep(generalgovernmentdebt lag_debt
inflationrate diff_current_gdp lag_diff_current_gdp lag2_diff_current_gdp politicalstability)
addtext(Estimator, Conditional Logit) dec(3)

```

```

*****

```

```

*FORECASTING

```

```

*****

```

```

*Forecasting (Pooled OLS)

```

```

*****

```

```

preserve
logit sovereignspreads generalgovernmentdebt l.generalgovernmentdebt inflationrate
d.currentaccounttogdp l.d.currentaccounttogdp l2.d.currentaccounttogdp politicalstability
predict sovereignspreads_hat
keep if country == "France" & year >= 2004
tset year
tsappend, add(3)
generate beta_0_pooled = -5.062634
generate beta_1_pooled = 0.1509433
generate beta_2_pooled = -0.118477
generate beta_3_pooled = 0.3869937
generate beta_4_pooled = 0.2506796
generate beta_5_pooled = 0.2372759
generate beta_6_pooled = 0.221047
generate beta_7_pooled = -0.0387604
save France_pooled_logit, replace
restore

```

```

*Scenario 1: Official forecast

```

```

use "/Users/jamesoswald/Desktop/Master Thesis/Code Stata/France_pooled_logit.dta",
clear

```

```

tset year
replace generalgovernmentdebt = 116.5 if generalgovernmentdebt == . & year ==
2025
replace generalgovernmentdebt = 119.1 if generalgovernmentdebt == . & year ==
2026
replace generalgovernmentdebt = 121.5 if generalgovernmentdebt == . & year ==
2027

```

```

replace lag_debt = 113.1 if lag_debt == . & year == 2025
replace lag_debt = 116.5 if lag_debt == . & year == 2026
replace lag_debt = 119.1 if lag_debt == . & year == 2027

```

```

replace inflationrate = 1.1 if inflationrate == . & year == 2025
replace inflationrate = 1.5 if inflationrate == . & year == 2026
replace inflationrate = 1.9 if inflationrate == . & year == 2027

```

```

replace currentaccounttogdp = -0.1 if currentaccounttogdp == . & year == 2025
replace currentaccounttogdp = -0.2 if currentaccounttogdp == . & year == 2026
replace currentaccounttogdp = -0.3 if currentaccounttogdp == . & year == 2027

replace diff_current_gdp = 0.2 if diff_current_gdp == . & year == 2025
replace diff_current_gdp = 0.1 if diff_current_gdp == . & year == 2026
replace diff_current_gdp = 0.1 if diff_current_gdp == . & year == 2027

replace lag_diff_current_gdp = 1.1 if lag_diff_current_gdp == . & year == 2025
replace lag_diff_current_gdp = 0.2 if lag_diff_current_gdp == . & year == 2026
replace lag_diff_current_gdp = 0.1 if lag_diff_current_gdp == . & year == 2027

replace lag2_diff_current_gdp = 0.4 if lag2_diff_current_gdp == . & year == 2025
replace lag2_diff_current_gdp = 1.1 if lag2_diff_current_gdp == . & year == 2026
replace lag2_diff_current_gdp = 0.2 if lag2_diff_current_gdp == . & year == 2027

replace politicalstability = 55.9242 if politicalstability == . & year == 2025
replace politicalstability = 55.9242 if politicalstability == . & year == 2026
replace politicalstability = 55.9242 if politicalstability == . & year == 2027

generate forecast_pooled = beta_0_pooled + generalgovernmentdebt*beta_1_pooled +
lag_debt*beta_2_pooled + inflationrate*beta_3_pooled + diff_current_gdp*beta_4_pooled +
lag_diff_current_gdp*beta_5_pooled + lag2_diff_current_gdp*beta_6_pooled +
politicalstability*beta_7_pooled
generate forecast_pooled_proba = 1 / (1+exp(-forecast_pooled))
replace sovereignspreads_hat = forecast_pooled if sovereignspreads_hat == .
replace sovereignspreads_hat = forecast_pooled_proba if year == 2025
replace sovereignspreads_hat = forecast_pooled_proba if year == 2026
replace sovereignspreads_hat = forecast_pooled_proba if year == 2027

*Scenario 2: Fixed changes
use "/Users/jamesoswald/Desktop/Master Thesis/Code Stata/France_pooled_logit.dta",
clear
tset year
replace generalgovernmentdebt = 114.8 if generalgovernmentdebt == . & year ==
2025
replace generalgovernmentdebt = 116.5 if generalgovernmentdebt == . & year ==
2026
replace generalgovernmentdebt = 118.2 if generalgovernmentdebt == . & year ==
2027

replace lag_debt = 113.1 if lag_debt == . & year == 2025
replace lag_debt = 114.8 if lag_debt == . & year == 2026
replace lag_debt = 116.5 if lag_debt == . & year == 2027

replace inflationrate = 2.47 if inflationrate == . & year == 2025
replace inflationrate = 2.64 if inflationrate == . & year == 2026
replace inflationrate = 2.81 if inflationrate == . & year == 2027

```

```

replace diff_current_gdp = 0.1 if diff_current_gdp == . & year == 2025
replace diff_current_gdp = 0.1 if diff_current_gdp == . & year == 2026
replace diff_current_gdp = 0.1 if diff_current_gdp == . & year == 2027

replace lag_diff_current_gdp = 1.1 if lag_diff_current_gdp == . & year == 2025
replace lag_diff_current_gdp = 0.1 if lag_diff_current_gdp == . & year == 2026
replace lag_diff_current_gdp = 0.1 if lag_diff_current_gdp == . & year == 2027

replace lag2_diff_current_gdp = 0.4 if lag2_diff_current_gdp == . & year == 2025
replace lag2_diff_current_gdp = 1.1 if lag2_diff_current_gdp == . & year == 2026
replace lag2_diff_current_gdp = 0.1 if lag2_diff_current_gdp == . & year == 2027

replace politicalstability = 55.9242 if politicalstability == . & year == 2025
replace politicalstability = 55.9242 if politicalstability == . & year == 2026
replace politicalstability = 55.9242 if politicalstability == . & year == 2027

generate forecast_pooled = beta_0_pooled + generalgovernmentdebt*beta_1_pooled +
lag_debt*beta_2_pooled + inflationrate*beta_3_pooled + diff_current_gdp*beta_4_pooled +
lag_diff_current_gdp*beta_5_pooled + lag2_diff_current_gdp*beta_6_pooled +
politicalstability*beta_7_pooled
generate forecast_pooled_proba = 1 / (1+exp(-forecast_pooled))
replace sovereignspreads_hat = forecast_pooled_proba if sovereignspreads_hat == .

*Scenario 3: Debt shock
use "/Users/jamesoswald/Desktop/Master Thesis/Code Stata/France_pooled_logit.dta",
clear
tset year
replace generalgovernmentdebt = 121.5 if generalgovernmentdebt == . & year ==
2025
replace generalgovernmentdebt = 129.1 if generalgovernmentdebt == . & year ==
2026
replace generalgovernmentdebt = 136.5 if generalgovernmentdebt == . & year ==
2027

replace lag_debt = 113.1 if lag_debt == . & year == 2025
replace lag_debt = 121.5 if lag_debt == . & year == 2026
replace lag_debt = 129.1 if lag_debt == . & year == 2027

replace inflationrate = 1.6 if inflationrate == . & year == 2025
replace inflationrate = 2.5 if inflationrate == . & year == 2026
replace inflationrate = 3.4 if inflationrate == . & year == 2027

replace diff_current_gdp = -0.7 if diff_current_gdp == . & year == 2025
replace diff_current_gdp = -0.6 if diff_current_gdp == . & year == 2026
replace diff_current_gdp = -0.6 if diff_current_gdp == . & year == 2027

replace lag_diff_current_gdp = 1.1 if lag_diff_current_gdp == . & year == 2025
replace lag_diff_current_gdp = -0.7 if lag_diff_current_gdp == . & year == 2026
replace lag_diff_current_gdp = -0.6 if lag_diff_current_gdp == . & year == 2027

```

```

replace lag2_diff_current_gdp = 0.4 if lag2_diff_current_gdp == . & year == 2025
replace lag2_diff_current_gdp = 1.1 if lag2_diff_current_gdp == . & year == 2026
replace lag2_diff_current_gdp = -0.7 if lag2_diff_current_gdp == . & year == 2027

replace politicalstability = 55.9242 if politicalstability == . & year == 2025
replace politicalstability = 55.9242 if politicalstability == . & year == 2026
replace politicalstability = 55.9242 if politicalstability == . & year == 2027

generate forecast_pooled = beta_0_pooled + generalgovernmentdebt*beta_1_pooled +
lag_debt*beta_2_pooled + inflationrate*beta_3_pooled + diff_current_gdp*beta_4_pooled +
lag_diff_current_gdp*beta_5_pooled + lag2_diff_current_gdp*beta_6_pooled +
politicalstability*beta_7_pooled
generate forecast_pooled_proba = 1 / (1+exp(-forecast_pooled))
replace sovereignspreads_hat = forecast_pooled_proba if sovereignspreads_hat == .

*****
*Forecasting (Clogit)
*****

preserve
clogit sovereignspreads generalgovernmentdebt l.generalgovernmentdebt inflationrate
d.currentaccounttogdp l.d.currentaccounttogdp l2.d.currentaccounttogdp politicalstability,
group(country_n)
predict sovereignspreads_hat, pc1
keep if country == "France" & year >= 2004
tset year
tsappend, add(3)
generate beta_1_clogit = 0.2020829
generate beta_2_clogit = -0.1047931
generate beta_3_clogit = 0.3980852
generate beta_4_clogit = 0.3130379
generate beta_5_clogit = 0.3045657
generate beta_6_clogit = 0.2553222
generate beta_7_clogit = -0.197877
save France_clogit, replace
restore

*Scenario 1: Official forecast
use "/Users/jamesoswald/Desktop/Master Thesis/Code Stata/France_clogit.dta", clear
tset year
replace generalgovernmentdebt = 116.5 if generalgovernmentdebt == . & year ==
2025
replace generalgovernmentdebt = 119.1 if generalgovernmentdebt == . & year ==
2026
replace generalgovernmentdebt = 121.5 if generalgovernmentdebt == . & year ==
2027

replace lag_debt = 113.1 if lag_debt == . & year == 2025
replace lag_debt = 116.5 if lag_debt == . & year == 2026
replace lag_debt = 119.1 if lag_debt == . & year == 2027

```

```

replace inflationrate = 1.1 if inflationrate == . & year == 2025
replace inflationrate = 1.5 if inflationrate == . & year == 2026
replace inflationrate = 1.9 if inflationrate == . & year == 2027

replace diff_current_gdp = 0.2 if diff_current_gdp == . & year == 2025
replace diff_current_gdp = 0.1 if diff_current_gdp == . & year == 2026
replace diff_current_gdp = 0.1 if diff_current_gdp == . & year == 2027

replace lag_diff_current_gdp = 1.1 if lag_diff_current_gdp == . & year == 2025
replace lag_diff_current_gdp = 0.2 if lag_diff_current_gdp == . & year == 2026
replace lag_diff_current_gdp = 0.1 if lag_diff_current_gdp == . & year == 2027

replace lag2_diff_current_gdp = 0.4 if lag2_diff_current_gdp == . & year == 2025
replace lag2_diff_current_gdp = 1.1 if lag2_diff_current_gdp == . & year == 2026
replace lag2_diff_current_gdp = 0.2 if lag2_diff_current_gdp == . & year == 2027

replace politicalstability = 55.9242 if politicalstability == . & year == 2025
replace politicalstability = 55.9242 if politicalstability == . & year == 2026
replace politicalstability = 55.9242 if politicalstability == . & year == 2027

generate forecast_clogit = generalgovernmentdebt*beta_1_clogit +
lag_debt*beta_2_clogit + inflationrate*beta_3_clogit + diff_current_gdp*beta_4_clogit +
lag_diff_current_gdp*beta_5_clogit + lag2_diff_current_gdp*beta_6_clogit +
politicalstability*beta_7_clogit
generate forecast_clogit_prob = exp(forecast_clogit)
bysort country_n: egen denom = total(forecast_clogit_prob)
generate proba_clogit = forecast_clogit_prob / denom
replace sovereignspreads_hat = proba_clogit if sovereignspreads_hat == .

*Scenario 2: Fixed changes
use "/Users/jamesoswald/Desktop/Master Thesis/Code Stata/France_clogit.dta", clear
tset year
2025 replace generalgovernmentdebt = 114.8 if generalgovernmentdebt == . & year ==
2026 replace generalgovernmentdebt = 116.5 if generalgovernmentdebt == . & year ==
2027 replace generalgovernmentdebt = 118.2 if generalgovernmentdebt == . & year ==

replace lag_debt = 113.1 if lag_debt == . & year == 2025
replace lag_debt = 114.8 if lag_debt == . & year == 2026
replace lag_debt = 116.5 if lag_debt == . & year == 2027

replace inflationrate = 2.47 if inflationrate == . & year == 2025
replace inflationrate = 2.64 if inflationrate == . & year == 2026
replace inflationrate = 2.81 if inflationrate == . & year == 2027

replace diff_current_gdp = 0.1 if diff_current_gdp == . & year == 2025
replace diff_current_gdp = 0.1 if diff_current_gdp == . & year == 2026
replace diff_current_gdp = 0.1 if diff_current_gdp == . & year == 2027

```

```

replace lag_diff_current_gdp = 1.1 if lag_diff_current_gdp == . & year == 2025
replace lag_diff_current_gdp = 0.1 if lag_diff_current_gdp == . & year == 2026
replace lag_diff_current_gdp = 0.1 if lag_diff_current_gdp == . & year == 2027

replace lag2_diff_current_gdp = 0.4 if lag2_diff_current_gdp == . & year == 2025
replace lag2_diff_current_gdp = 1.1 if lag2_diff_current_gdp == . & year == 2026
replace lag2_diff_current_gdp = 0.1 if lag2_diff_current_gdp == . & year == 2027

replace politicalstability = 55.9242 if politicalstability == . & year == 2025
replace politicalstability = 55.9242 if politicalstability == . & year == 2026
replace politicalstability = 55.9242 if politicalstability == . & year == 2027

generate forecast_clogit = generalgovernmentdebt*beta_1_clogit +
lag_debt*beta_2_clogit + inflationrate*beta_3_clogit + diff_current_gdp*beta_4_clogit +
lag_diff_current_gdp*beta_5_clogit + lag2_diff_current_gdp*beta_6_clogit +
politicalstability*beta_7_clogit
generate forecast_clogit_prob = exp(forecast_clogit)
bysort country_n: egen denom = total(forecast_clogit_prob)
generate proba_clogit = forecast_clogit_prob / denom
replace sovereignspreads_hat = proba_clogit if sovereignspreads_hat == .

*Scenario 3: Debt shock
use "/Users/jamesoswald/Desktop/Master Thesis/Code Stata/France_clogit.dta", clear
tset year
replace generalgovernmentdebt = 121.5 if generalgovernmentdebt == . & year ==
2025
replace generalgovernmentdebt = 129.1 if generalgovernmentdebt == . & year ==
2026
replace generalgovernmentdebt = 136.5 if generalgovernmentdebt == . & year ==
2027

replace lag_debt = 113.1 if lag_debt == . & year == 2025
replace lag_debt = 121.5 if lag_debt == . & year == 2026
replace lag_debt = 129.1 if lag_debt == . & year == 2027

replace inflationrate = 1.6 if inflationrate == . & year == 2025
replace inflationrate = 2.5 if inflationrate == . & year == 2026
replace inflationrate = 3.4 if inflationrate == . & year == 2027

replace diff_current_gdp = -0.7 if diff_current_gdp == . & year == 2025
replace diff_current_gdp = -0.6 if diff_current_gdp == . & year == 2026
replace diff_current_gdp = -0.6 if diff_current_gdp == . & year == 2027

replace lag_diff_current_gdp = 1.1 if lag_diff_current_gdp == . & year == 2025
replace lag_diff_current_gdp = -0.7 if lag_diff_current_gdp == . & year == 2026
replace lag_diff_current_gdp = -0.6 if lag_diff_current_gdp == . & year == 2027

replace lag2_diff_current_gdp = 0.4 if lag2_diff_current_gdp == . & year == 2025
replace lag2_diff_current_gdp = 1.1 if lag2_diff_current_gdp == . & year == 2026

```

```

replace lag2_diff_current_gdp = -0.7 if lag2_diff_current_gdp == . & year == 2027

replace politicalstability = 55.9242 if politicalstability == . & year == 2025
replace politicalstability = 55.9242 if politicalstability == . & year == 2026
replace politicalstability = 55.9242 if politicalstability == . & year == 2027

generate forecast_clogit = generalgovernmentdebt*beta_1_clogit +
lag_debt*beta_2_clogit + inflationrate*beta_3_clogit + diff_current_gdp*beta_4_clogit +
lag_diff_current_gdp*beta_5_clogit + lag2_diff_current_gdp*beta_6_clogit +
politicalstability*beta_7_clogit
generate forecast_clogit_prob = exp(forecast_clogit)
bysort country_n: egen denom = total(forecast_clogit_prob)
generate proba_clogit = forecast_clogit_prob / denom
replace sovereignspreads_hat = proba_clogit if sovereignspreads_hat == .

*****
*FORECASTING DATA
*****

/*Schemes
    set scheme s2color // original
        economist //The Economist style
        s1color // white background
        s1rcolor // black background
        s1mono // black/white
        plottig // see appendix graphs
        plotpain
        lean1
        lean2 */

use "C:\James - 2026\Forecasting_france.dta", replace

*Pooled - Forecasting
    foreach var of varlist pooled1 pooled2 pooled3 clogit1 clogit2 clogit3 {
        replace `var' = `var' * 100
    }

generate pooled_baseline = pooled1
replace pooled_baseline = . if year == 2025
replace pooled_baseline = . if year == 2026
replace pooled_baseline = . if year == 2027

replace pooled1 = . if year < 2024
replace pooled2 = . if year < 2024
replace pooled3 = . if year < 2024

twoway (line pooled_baseline year, lcolor(black)) (line pooled1 year, lcolor(ebblue)) (line
pooled2 year, lcolor(green)) (line pooled3 year, lcolor(red)), ///

```

```

legend(order(2 "Scenario 1: Official forecast" 3 "Scenario 2: Historical trend" 4 "Scenario 3:
Adverse stress") pos(6) row(1)) ///
yttitle("Probability of having a sovereign stress episode") xtitle("Year") ///
title("Forecasting for France - Sovereign spread crisis") subtitle("Pooled logit regressions") ///
xlabel(2004(4)2028) xline(2024)

```

#### \*Clogit - Forecasting

```

generate clogit_baseline = clogit1
replace clogit_baseline = . if year == 2025
replace clogit_baseline = . if year == 2026
replace clogit_baseline = . if year == 2027

```

```

replace clogit1 = . if year < 2024
replace clogit2 = . if year < 2024
replace clogit3 = . if year < 2024

```

```

twoway (line clogit_baseline year, lcolor(black)) (line clogit1 year, lcolor(ebblue)) (line
clogit2 year, lcolor(green)) (line clogit3 year, lcolor(red)), ///
legend(order(2 "Scenario 1: Official forecast" 3 "Scenario 2: Historical trend" 4 "Scenario 3:
Adverse stress") pos(6) row(1)) ///
yttitle("Probability of having a sovereign stress episode") xtitle("Year") ///
title("Forecasting for France - Sovereign spread crisis") subtitle("Conditional logit
regressions") ///
xlabel(2004(4)2028) xline(2024)

```