

# The Post-Crises Output Growth Effects in a Globalized Economy

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# Introduction

## Context

- Ten years after the Global Financial Crisis (GFC), the level of output appears to have permanently been affected by the crisis.
- **Blanchard (2018)** :

**Advanced Economies (log) Real GDP and Extrapolated Trend**  
(index equals 100 in 2000)



Source: Data from the US Bureau of Economic Analysis and the Statistical Office of the European Communities.

Note: The figure shows the log real GDP since 2000 for both the United States and the European Union, normalized to equal 100 in 2000. The log linear trend is estimated over 2000Q1 to 2007Q4, and extrapolated up to 2017Q1.

# Introduction

## Context

- In the recent literature, this persistent output slump is related to inflation below target, and a chronically binding zero low bond.
- One general concept, several terms :
  - "hysteresis" : Summers (2014), Coeuré (2017) and Blanchard (2018) ;
  - "secular stagnation" : Eggertsson et al. (2016) ;
  - "new normal" : Candelon et al. (2016), Christensen and Rudebusch (2017) and Eggertsson et al. (2019).

# Introduction

## Context

- In this paper, we focus on the impact of banking, currency and stock markets crisis on output growth ;
- We define "new normal" as the expected lower output growth after a crisis, mostly in advanced economies, where consumers need to deleverage extensively over a long period of time.

# Introduction

## Motivation

- **Cerra and Saxena (2008)** report that output losses following financial crises and some political crises are highly persistent, definitively longer than a cycle. They document the presence of new growth regimes after crises ;
- **Candelon et al. (2016)** reproduce this study including the 2008 crisis. They also enhance the empirical framework by allowing individual countries' growth rates to be affected by common factors as well. A common growth factor emerges from their results, labeled as globalization.

# Introduction

## Motivation

- This factor "globalization" is an ex-post characterization of a statistical extract obtained from the common movements in the short-term output growth rate series.
- In this paper, we investigate the persistent impact of financial crises on economic growth in different regimes of globalization.

# Introduction

## Literature

- Theoretical literature ([Grossman and Helpman, 2015](#)) :
  - Trade openness and integration foster economic growth by increasing the market size of a country's production and introducing competition among firms ;
  - Financial openness and integration boost growth by enabling a more efficient allocation of capital, by facilitating the transfer of technology and know-how, and by increasing opportunities for higher returns and for risk diversification.
- Empirical literature ([Shin, 2017](#)) :
  - Trade openness contributes positively to growth. Financial openness and integration help boost trade, which, in turn, increase production ;
  - Financial globalization also makes the economy more vulnerable to crises and could impact growth negatively.



# Introduction

## Key Takeaways

- Relying on a nonlinear dynamic panel representation, this paper explains why the effects of globalization on growth weave into a tale of two opposite narratives ;
- On average, a country experiences higher growth, the more open and integrated it is into the world ;
- However, countries can also experience persistently lower medium-term output growth after a financial crisis, once globalization reaches a certain threshold.

# Empirical study

## Model

- Cerra and Saxena (2008) documented the presence of new growth regimes after crises.
- Original model :

$$g_{i,t} = a + \sum_{j=1}^p (\beta_j^{(1)} g_{i,t-j} + \delta_{i,j}^{(1)} D_{i,t-j}) + \eta_i + u_{i,t}, \quad (1)$$

# Empirical study

## Model

- To investigate the role of globalization in transitioning to a new growth regime, this paper builds a threshold panel VAR, where an endogenous transition variable determines the unobserved prevalent regime.
- Model (1) is rewritten as follows :

$$g_{i,t} = \mathbb{1}_{(q_{i,t-1} \leq \gamma)} [a_1 + \sum_{j=1}^p \beta_j^{(1)} g_{i,t-j} + \delta_{i,j}^{(1)} D_{i,t-j}] + \mathbb{1}_{(q_{i,t-1} > \gamma)} [a_2 + \sum_{j=1}^p \beta_j^{(2)} g_{i,t-j} + \delta_{i,j}^{(2)} D_{i,t-j}] + \eta_i + u_{i,t}, \quad (2)$$

# Empirical study

## Model

- We follow [Hansen \(2000\)](#), and instead of splitting the model (1) into a regime below the estimated threshold and the threshold discussed above, we estimate the model (1) for the whole sample and for one above this threshold.
- Model (2) is rewritten as follows :

$$g_{i,t} = a + \beta_j g_{i,t-1} + \delta_i D_{i,t-1} + \mathbb{1}_{(q_{i,t-1} > \gamma)} [a_2 + \beta^{(2)} g_{i,t-1} + \delta_i^{(2)} D_{i,t-1}] + \eta_i + u_{i,t}. \quad (3)$$

# Empirical study

## Model

### Dynamic Panel Threshold Model :

- Estimation
  - The globalization threshold is endogenously and recursively estimated in a dynamic panel using a GLM ;
  - The estimated threshold maximizes the log-likelihood of the model (Hansen, 1996 ; Seo and Shin, 2016) ;
  - Trimming value : 15 percent (Andrews, 1993-1998).
- Robustness checks
  - Confidence bounds are determined via block bootstrap ;
  - Likelihood Ratio Test for Linearity determined via block bootstrap (Hansen, 1996) ;
  - GMM is used instead of GLM.

# Empirical study

## Data

### KOF Globalization Index :

- Initially developed by [Dreher \(2006\)](#) and updated by [Dreher et al. \(2008\)](#) ;
- The closest measure consistent with the broader definition of globalization ([Ashenfelter et al., 2017](#)) ;
- The most inclusive measure of globalization, as it incorporates with specific data on economic, social and political globalization ([Potrafke, 2015](#)).

# Empirical study

## Data

### KOF Globalization Index :

- A composite index built from 4 sub-indices available for 192 countries from 1970 to 2014 ;
- In 2018, the KOF index was updated until 2016 and decomposed into a "de facto" part and a "de jure" part (see Gygli et al., 2019).

# Empirical study

## Data

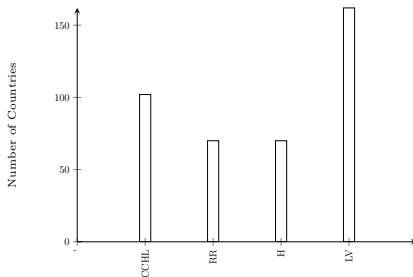
- A new database on financial crises is built from three different sources :
  - Reinhart-Rogoff (2010), 1800-2010, 70 countries ;
  - Harvard BS (2016), 1800-2016, 70 countries ;
  - Laeven-Valencia (2018), 1970-2017, 165 countries.
- After merging these different sources, we obtain :
  - CCHL (2018), 1970-2016, 102 countries ;
  - But missing values make us end with a final database : 1970-2014, 92 countries.



# Empirical study

## Data

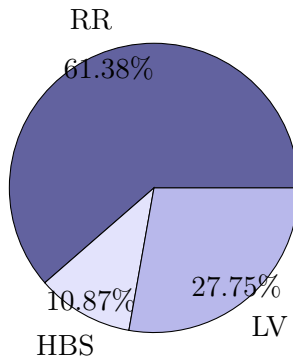
### Number of Countries - Crises Databases



**Notes :** This figure represents the number of countries covered by each data sources. CCHL, RR : Reinhart-Rogoff, H : Harvard Business School, LV : Laeven-Valencia

# Empirical study

## CCHL Crises Database



**Notes :** This figure represents the sources of the CCHL database. RR : Reinhart-Rogoff (1970-2010), HBS : Harvard Business School (1970-2016), LV : Laeven-Valencia (1970-2017)

Empirical study  
Results**TABLE** – Growth, Crises and Globalization - Overall KOF Globalization Index as a Transition Variable

	Full Sample	
	<i>Coeff.</i>	<i>sê.</i>
Intercept	2.806***	0.689
$g_{i,t-1}$	0.226***	0.017
$Banking_{i,t-1}$	-0.432	0.295
$Currency_{i,t-1}$	-0.630***	0.229
$Stock_{i,t-1}$	-1.900***	0.330
	Sample	
	$\gamma > 64$ [57 : 95]	
Intercept	0.480	0.335
$g_{i,t-1}$	-0.162***	0.039
$Banking_{i,t-1}$	-1.303***	0.509
$Currency_{i,t-1}$	0.443	0.571
$Stock_{i,t-1}$	-1.676***	0.531
Linearity test p-value < 1%		

# Empirical study

## Results

**TABLE** – Growth, Crises and Globalization - KOF Globalization subindices as Transition Variables

	KOF Economics		KOF Actual Flows		KOF Social		KOF Political	
	$\hat{Coeff.}$	$\hat{s}e.$	$\hat{Coeff.}$	$\hat{s}e.$	$\hat{Coeff.}$	$\hat{s}e.$	$\hat{Coeff.}$	$\hat{s}e.$
Full Sample								
Intercept	2.725***	0.682	2.747***	0.685	2.804***	0.689	2.602***	0.700
$g_{i,t-1}$	0.239***	0.016	0.234***	0.016	0.228***	0.017	0.262***	0.020
$Banking_{i,t-1}$	-0.526**	0.265	-0.599**	0.257	-0.444	0.283	-0.518	0.582
$Currency_{i,t-1}$	-0.478**	0.218	-0.482**	0.217	-0.605***	0.223	-0.912**	0.356
$Stock_{i,t-1}$	-2.132***	0.292	-2.155***	0.283	-2.166***	0.307	-1.236	0.824
Sample	$\gamma > 73$ [54 – 76]		$\gamma > 76$ [60 – 77]		$\gamma > 65$ [49 – 69]		$\gamma > 56$ [43 – 56]	
Intercept	1.992***	0.345	1.717***	0.351	0.391	0.337	0.950***	0.269
$g_{i,t-1}$	-0.551***	0.056	-0.404***	0.051	-0.174***	0.039	-0.153***	0.031
$Banking_{i,t-1}$	-2.474***	0.589	-2.008***	0.671	-1.417***	0.531	-0.579	0.638
$Currency_{i,t-1}$	-0.266	0.692	-0.167	0.721	0.713	0.650	0.502	0.434
$Stock_{i,t-1}$	-1.917***	0.604	-2.170***	0.677	-1.393**	0.570	-1.443*	0.861
L. test $P$ – value	< 1%		< 1%		< 1%		< 1%	

Empirical study  
Results**TABLE** – Growth, Crises and Globalization - KOF Globalization Indices "de facto" and "de jure" as Transition Variables

	Full Sample			
	de facto		de jure	
	<i>Coëff.</i>	<i>sê.</i>	<i>Coëff.</i>	<i>sê.</i>
Intercept	2.730***	0.688	2.453***	0.715
$g_{i,t-1}$	0.244***	0.017	0.086***	0.026
$Banking_{i,t-1}$	-0.509*	0.289	0.125	0.707
$Currency_{i,t-1}$	-0.528**	0.229	-1.087**	0.451
$Stock_{i,t-1}$	-2.072***	0.328	1.376	1.198
	Sample			
	> 64 [52 : 67]		> 39 [38 : 40]	
	<i>Coëff.</i>	<i>sê.</i>	<i>Coëff.</i>	<i>sê.</i>
Intercept	0.707**	0.349	0.270	0.306
$g_{i,t-1}$	-0.253***	0.038	0.168***	0.032
$Banking_{i,t-1}$	-1.302**	0.515	-0.953	0.750
$Currency_{i,t-1}$	0.053	0.561	0.812	0.505
$Stock_{i,t-1}$	-1.327**	0.521	-4.082***	1.220
L. test $P - value$	< 1%		< 1%	

Empirical study  
Results

TABLE – Growth, Crises and Globalization - High-income Countries

	KOF Overall		KOF Economics		KOF Actual Flows		KOF Social		KOF Political	
	<i>Coeff.</i>	<i>sê.</i>	<i>Coeff.</i>	<i>sê.</i>	<i>Coeff.</i>	<i>sê.</i>	<i>Coeff.</i>	<i>sê.</i>	<i>Coeff.</i>	<i>sê.</i>
Full Sample										
Intercept	2.410***	0.738	2.322***	0.651	2.345***	0.643	2.309***	0.699	1.570*	0.857
$g_{i,t-1}$	0.375***	0.038	0.368***	0.027	0.364***	0.027	0.392***	0.039	0.413***	0.034
$Banking_{i,t-1}$	0.184	0.642	-0.233	0.418	-0.400	0.365	0.161	0.538	2.622	1.72
$Currency_{i,t-1}$	-0.271	0.483	-0.128	0.391	-0.050	0.363	-0.239	0.428	0.935	0.972
$Stock_{i,t-1}$	-2.025***	0.539	-2.015***	0.396	-2.122***	0.361	-2.349***	0.454	-2.610*	1.425
Sample	$\gamma > 64$		$\gamma > 39$		$\gamma > 73$		$\gamma > 65$		$\gamma > 76$	
Intercept	1.156***	0.395	2.534***	0.334	2.668***	0.359	1.091***	0.354	2.735***	0.609
$g_{i,t-1}$	-0.315***	0.050	-0.737***	0.056	-0.736***	-0.057	-0.332***	0.050	-0.438***	0.048
$Banking_{i,t-1}$	-1.883**	0.750	-2.913***	0.625	-2.886***	0.692	-2.022***	0.676	-4.418**	1.750
$Currency_{i,t-1}$	-0.002	0.689	-0.578	0.692	-1.333*	0.794	0.269	0.701	-1.624	1.024
$Stock_{i,t-1}$	-1.226*	0.667	-2.073***	0.613	-2.237***	0.671	-0.967	0.633	-0.195	1.457
L. test $P - value$	< 1%		< 1%		< 1%		< 1%		< 1%	

Empirical study  
Results**TABLE** – Growth, Crises and Globalization - Middle- and Low-income Countries

	KOF Overall		KOF Economics		KOF Actual Flows		KOF Social		KOF Political	
	<i>Coeff.</i>	<i>sê.</i>	<i>Coeff.</i>	<i>sê.</i>	<i>Coeff.</i>	<i>sê.</i>	<i>Coeff.</i>	<i>sê.</i>	<i>Coeff.</i>	<i>sê.</i>
Full Sample										
Intercept	0.983	0.834	1.799**	0.822	2.122***	0.824	2.632***	0.762	0.669	0.849
$g_{i,t-1}$	0.166***	0.039	0.083*	0.044	0.176**	0.040	0.075***	0.032	0.303***	0.044
$Banking_{i,t-1}$	-0.251	1.067	-0.470	1.006	-0.685	0.899	-0.310	1.022	-0.123	0.950
$Currency_{i,t-1}$	0.394	0.650	1.876***	0.714	0.595	0.606	-0.972*	0.527	-0.195	0.634
$Stock_{i,t-1}$	5.346	3.412	2.158	1.994	0.436	1.250	0.174	1.440	2.474	1.757
Sample	$\gamma > 27$		$\gamma > 24$		$\gamma > 29$		$\gamma > 16$		$\gamma > 39$	
Intercept	1.997***	0.439	1.202***	0.418	0.907**	0.421	-0.020	0.351	2.358***	0.464
$g_{i,t-1}$	0.025	0.045	0.128***	0.049	0.022	0.046	0.188***	0.041	-0.143***	0.050
$Banking_{i,t-1}$	-0.313	1.126	-0.110	1.058	0.055	0.961	-0.191	1.082	-0.521	1.008
$Currency_{i,t-1}$	-1.148	0.710	-2.786***	0.759	-1.469**	0.663	0.632	0.607	-0.448	0.695
$Stock_{i,t-1}$	-7.692**	3.429	-4.574**	2.024	-2.982**	1.311	-2.583*	1.489	-4.971***	1.793
L. test <i>P</i> - value	< 1%		< 1%		< 1%		< 1%		< 1%	

Empirical study  
Robustness checks**TABLE** – Growth, Crises and Globalization - KoF Subcomponents as Transition Variables; Robustness Check : Contemporaneous Regressors

	KoF Overall		KoF Economics		KoF Actual Flows		KoF Social		KoF Political	
	<i>Coeff.</i>	<i>sè.</i>	<i>Coeff.</i>	<i>sè.</i>	<i>Coeff.</i>	<i>sè.</i>	<i>Coeff.</i>	<i>sè.</i>	<i>Coeff.</i>	<i>sè.</i>
Full Sample										
Intercept	2.209***	0.857	2.182**	0.858	2.211**	0.860	1.871**	0.754	1.865**	0.923
$g_{i,t-1}$	0.402***	0.026	0.406***	0.025	0.402***	0.026	0.491***	0.027	0.500***	0.042
$Banking_{i,t}$	-0.170	0.241	-0.344*	0.205	-0.368*	0.199	-0.037	0.230	-0.220	0.549
$Currency_{i,t}$	-0.182	0.238	-0.081	0.219	-0.127	0.220	0.056	0.228	-0.311	0.439
$Stock_{i,t}$	-1.967***	0.259	-2.187***	0.232	-2.127***	0.223	-2.121***	0.250	-1.003*	0.583
	$\gamma > 64$		$\gamma > 78$		$\gamma > 79$		$\gamma > 51$		$\gamma > 69$	
Intercept	0.693**	0.309	0.534**	0.234	0.339	0.308	1.314***	0.351	1.528***	0.357
$g_{i,t-1}$	-0.129**	0.052	-0.168***	0.060	-0.122**	0.062	-0.300***	0.067	-0.268***	0.057
$Banking_{i,t}$	-1.184***	0.333	-1.017**	0.396	-0.730	0.473	-1.619***	0.397	-0.624	0.591
$Currency_{i,t}$	0.164	0.384	-0.403	0.486	0.162	0.556	-0.187	0.400	0.062	0.483
$Stock_{i,t}$	-1.517***	0.422	-1.467***	0.455	-2.039***	0.526	-1.302***	0.423	-1.638***	0.618
<i>L</i> - test <i>P</i> - value	< 1%		< 1%		< 1%		< 1%		< 1%	



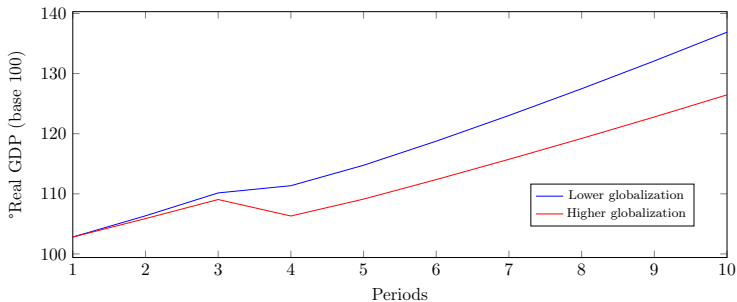
Empirical study  
Robustness checks**TABLE** – Growth, Crises and Globalization - Oil Price as the Transition Variable

	<i>Coeff.</i>	<i>sê.</i>
Full Sample		
Intercept	3.241***	0.692
$g_{i,t-1}$	0.110***	0.020
$Banking_{i,t}$	-1.001***	0.333
$Currency_{i,t}$	-0.875***	0.299
$Stock_{i,t}$	-1.861***	0.382
Sample $\gamma > 38$		
Intercept	-1.206***	0.206
$g_{-1}$	0.208***	0.031
$Banking_{i,t}$	0.397	0.467
$Currency_{i,t}$	0.820**	0.389
$Stock_{i,t}$	-1.172**	0.498
L-test P-value < 1%		

# Conclusion

## Policy Implications

Figure: Impact of Real GDP after a Banking Crisis



# Conclusion

## Policy Implications

- Globalization has a dual effect :
  - It increases the growth rate of output significantly over the sample for all groups of countries ;
  - It also exposes a country to a larger negative impact on short-term growth from a financial crisis.
- In particular :
  - High-income countries in a high-globalization regime face larger negative effects on growth from banking and stock market crises ;
  - Low-income countries in a high globalization regime face larger negative effects on growth from currency and stock market crises.

# Conclusion

## Policy Implications

"Is globalization good?"

- Our empirical analysis provides support for the recent conjectures made by [Cecchetti \(2012\)](#) and [Shin \(2017\)](#), that stress that globalization is beneficial up to a certain point, unless policies are in place to mitigate the negative effects on growth from financial crises ;
- Financial regulation and supervision are needed to help countries reap the benefits of globalization on output growth over time, and avoid the long lasting negative growth effects following a financial crisis.

# Conclusion

## Takeaways

Our contribution to the literature is twofold :

- We document the existence of a persistent lower output growth after a financial crisis, labeled as "new normal" ;
- Our results reconciles the earlier findings in the literature regarding the two opposite narratives of the effect of globalization on output growth.