

Credit Constraint, Cyclical Fiscal Policy and Industry Growth

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¹The views expressed here are those of the authors and do not necessarily reflect the views of Banque de France.

Motivation

- This paper is concerned with the effect of macro policy on growth
- The debate over the growth effect of macro policy is an old one. On the one hand, mainstream view: growth is primarily affected by structural factors
 - Education and R&D
 - Financial Development and Access to Credit
 - Trade Openness and Product Market Competition (although not as clear as the former)
- On the other hand, from current crisis and resulting policy debates, emerges the idea that counter-cyclical macro policy may after all be necessary to preserve growth potential

Motivation

- This paper looks for evidence of any systematic relationship between cyclical macro policy and long run growth
- Hence a challenge to the traditional dichotomy between short run stabilization and long run growth
- In a second best world (credit-liquidity constraints), macroeconomic volatility is harmful for growth because firms reduce productivity enhancing investments when they expect more volatile shocks
- Stabilizing macro policies -which reduce macro volatility- could therefore contribute to raise growth

The empirical investigation

The straightforward approach

The empirical investigation

The straightforward approach

- An empirical assessment of the effects of cyclical fiscal policy on growth: A regression with productivity growth in country j at time t on the LHS and fiscal policy cyclicity in country j at time t on the RHS

$$g_{jt} = \alpha X_{jt} + \beta (fpc)_{jt} + \varepsilon_{jt}$$

- Macro policy cyclicity can be measured by regressing a fiscal policy indicator (fiscal surplus to GDP) on a measure of excess demand (output gap)

$$FS_{jt} = \gamma_{jt} + (fpc)_{jt} GAP_{jt} + u_{jt}$$

- A time varying fpc can be estimated with rolling window or Gaussian OLS. The right hand side can be enriched taking into account persistence, debt stabilization, etc. . .

The empirical investigation

Issues involved in the straightforward approach

The empirical investigation

Issues involved in the straightforward approach

- Reverse causality. Cyclical macro policy can affect growth but the reverse causality is also likely to hold:
 - Ex: High growth reduces public debt. Cutting taxes or raising expenditures in bad times is then easier
 - Ex: Low growth can reduce monetary policy counter-cyclicality if the zero bound on nominal interest rates becomes binding
- IV estimation does not fully solve the problem because time varying cyclicality fpc is estimated using forward information

The empirical investigation

A possible solution to the causality issue

The empirical investigation

A possible solution to the causality issue

- Our solution to the endogeneity issue: build on Rajan and Zingales (1998) to interact macro policy with industry level characteristics to measure the impact cyclical *macro* policy on *industry* growth.
- Macro policy can affect industry growth, but growth of a particular industry has more limited effect on macro policy
- Our conjecture: Macro policy cyclical effect on growth is larger in industries with larger external financial dependence
- Even if our investigation is not directly about aggregate growth, it helps identify the channel whereby cyclical macro policy can affect aggregate growth. In this sense, it complements previous macro level analysis (Aghion and Marinescu 2007)

The empirical specification

The empirical specification

- Main regression equation

$$g_{ij} = \alpha_i + \beta_j + \lambda (fd)_i \times (fpc)_j + \delta \log y_{ij} + \varepsilon_{ij}$$

- Left hand side variable:
 - Value added growth in industry i in country j
 - Labor productivity growth in industry i in country j
- Right hand side variables:
 - fd : financial dependence in industry i in the US
 - fpc : fiscal policy counter-cyclicality in country j
 - $\log(y)$: log of initial conditions
 - Any possible control variable

The empirical specification

The empirical specification

- Auxiliary regression equation

$$FP_{jt} = \eta_j + (fpc)_j GAP_{jt} + \omega_{jt}$$

- Left hand side variable FP_{jt} :
 - Total fiscal balance to GDP in country j at time t
 - Primary fiscal balance to GDP
 - Government revenues to GDP
 - Government expenditures to GDP
 - Government consumption to GDP
 - Government investment to GDP
- Right hand side variable:
 - GAP_{jt} : output gap in country j at time t

- Industry level data from EU KLEMS, 18 OECD countries, 45 manufacturing industries. Different time spans considered over the period 1980-2005
- Financial dependence data from Raddatz (2006) and Rajan and Zingales (1998). Both are based on Compustat. Data for 1980-1990
- Macro variables from OECD economic outlook or World Bank Financial Structure and Development Dataset. Time span is identical to that of industry level data

Total fiscal balance cyclicality and value added growth

Total fiscal balance cyclicality and value added growth

Table 1a: Real Value Added Growth and Total Fiscal Balance Counter-cyclicity

Estimation Period	(i)	(ii)	(iii)	(iv)	(v)	(vi)
	1980-2005	1980-2000	1985-2005	1985-2000	1990-2005	1990-2000
Log of Initial Share in Manufacturing Value Added	-0.903*** (0.242)	-0.930*** (0.251)	-0.648 (0.374)	-0.737* (0.410)	-0.739 (0.473)	-1.124* (0.550)
Interaction (External Financial Dependence × Total Fiscal Balance to GDP Counter-Cyclicity)	7.003*** (1.998)	6.786*** (2.294)	6.393** (2.551)	7.375*** (2.299)	4.815** (2.138)	5.788** (1.992)
Observations	574	575	576	577	594	595
R-squared	0.523	0.508	0.507	0.503	0.474	0.451

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each ISIC industry in each country. *Initial Share in Manufacturing Value Added* is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. *External financial dependence* is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. *Total Fiscal Balance to GDP Counter-Cyclicity* is the regression coefficient of the output gap when total fiscal balance to GDP is regressed on a constant and the output gap. The interaction variable is the product of external financial dependence and total fiscal balance to GDP counter-cyclicity. All estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Primary fiscal balance cyclicalality and value added growth

Primary fiscal balance cyclicity and value added growth

Table 1b: Real Value Added Growth and Primary Fiscal Balance Counter-cyclicity

Estimation Period	(i)	(ii)	(iii)	(iv)	(v)	(vi)
	1980-2005	1980-2000	1985-2005	1985-2000	1990-2005	1990-2000
Log of Initial Share in Manufacturing Value Added	-0.933*** (0.217)	-0.925*** (0.219)	-0.688* (0.383)	-0.721* (0.407)	-0.816 (0.487)	-1.137* (0.551)
Interaction (External Financial dependence × Primary Fiscal Balance to GDP Counter-Cyclicity)	5.409*** (1.419)	5.343*** (1.786)	5.330*** (1.680)	5.947*** (1.714)	4.772** (2.056)	5.413** (1.860)
Observations	574	575	576	577	594	595
R-squared	0.522	0.508	0.509	0.502	0.478	0.453

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each ISIC industry in each country. *Initial Share in Manufacturing Value Added* is the the ratio of beginning of estimation period real value added at the industry level to total manufacturing beginning of period real value added. *External financial dependence* is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. *Primary Fiscal Balance to GDP Counter-Cyclicity* is the regression coefficient of the output gap when primary fiscal balance to GDP is regressed on a constant and the output gap. The interaction variable is the product of external financial dependence and net total fiscal balance to GDP counter-cyclicity. All estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Primary fiscal balance cyclicality and productivity growth

Primary fiscal balance cyclicity and productivity growth

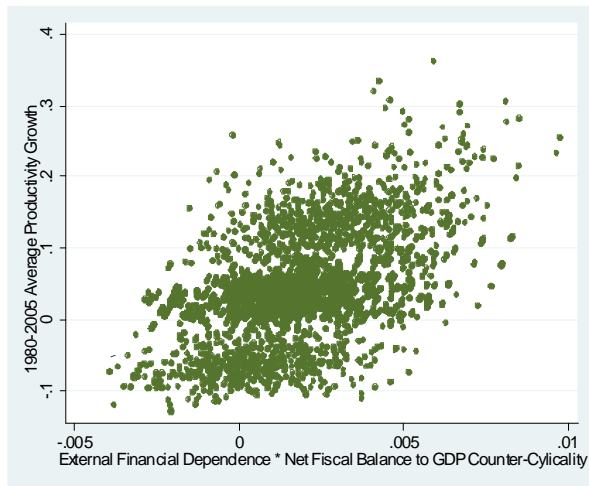
Table 2b: Labor Productivity Growth and Primary Fiscal Balance Counter-cyclicity

Estimation Period	(i) 1980-2005	(ii) 1980-2000	(iii) 1985-2005	(iv) 1985-2000	(v) 1990-2005	(vi) 1990-2000
Log of Initial Relative Labor Productivity	-2.127*** (0.566)	-2.333*** (0.527)	-2.048*** (0.504)	-2.474*** (0.661)	-2.154*** (0.495)	-3.241*** (0.735)
Interaction (External Financial dependence × Primary Fiscal Balance to GDP Counter-Cyclicity)	3.575*** (0.704)	3.759*** (0.641)	4.095*** (1.229)	4.160*** (1.070)	3.935** (1.492)	3.839** (1.445)
Observations	573	573	573	573	586	586
R-squared	0.443	0.412	0.455	0.434	0.420	0.400

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each ISIC industry in each country. *Initial Relative Labor Productivity* is the ratio of industry beginning of period labor productivity to total manufacturing beginning of period labor productivity. *External Financial Dependence* is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. *Primary Fiscal Balance to GDP Counter-Cyclicity* is the regression coefficient of the output gap when primary fiscal balance to GDP is regressed on a constant and the output gap. The interaction variable is the product of external financial dependence and net total fiscal balance to GDP counter-cyclicity. All estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Total fiscal balance cyclicality and productivity growth

Total fiscal balance cyclicity and productivity growth



Productivity Growth vs. interaction of External Financial Dependence and Fiscal Balance to GDP Counter-Cyclicality

Total fiscal balance cyclicality and value added growth

Separating positive and negative external financial dependence industries

Total fiscal balance cyclicality and value added growth

Separating positive and negative external financial dependence industries

Table 6a: Real Value Added Growth and Total Fiscal Balance Counter-cyclicality

Estimation Period	(i)	(ii)	(iii)	(iv)	(v)	(vi)
	1980-2005	1980-2000	1985-2005	1985-2000	1990-2005	1990-2000
Log of Initial Share in Manufacturing Value Added	-0.959*** (0.245)	-0.969*** (0.256)	-0.715* (0.366)	-0.782* (0.420)	-0.837* (0.477)	-1.232** (0.554)
(Positive External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicality)	9.009*** (2.542)	8.308*** (2.642)	8.809*** (2.869)	9.113*** (2.504)	7.571** (2.694)	8.570*** (2.078)
(Negative External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicality)	-6.459 (3.895)	-2.973 (5.303)	-10.58** (4.463)	-4.268 (6.099)	-14.19*** (3.896)	-13.05* (6.768)
Observations	574	575	576	577	594	595
R-squared	0.526	0.510	0.512	0.505	0.484	0.459

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each ISIC industry in each country. Initial Share in Manufacturing Value Added is the ratio of beginning of period real value added at the industry level to total manufacturing beginning of period real value added. Positive (resp. Negative) External Financial Dependence is equal to the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990 when this fraction is positive (resp. negative) and is equal to zero otherwise. Total Fiscal Balance to GDP Counter-Cyclicality is the regression coefficient of the output gap when net total fiscal balance to GDP is regressed on a constant and the output gap. The interaction variable is the product of positive or negative external financial dependence and total fiscal balance to GDP counter-cyclicality. All estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Primary fiscal balance cyclicality and productivity growth

Separating positive and negative external financial dependence industries

Primary fiscal balance cyclicity and productivity growth

Separating positive and negative external financial dependence industries

Table 7b: Labor Productivity Growth and Primary Fiscal Balance Counter-cyclicity

Estimation Period	(i) 1980-2005	(ii) 1980-2000	(iii) 1985-2005	(iv) 1985-2000	(v) 1990-2005	(vi) 1990-2000
Log of Initial Relative Labor Productivity	-2.140*** (0.555)	-2.319*** (0.537)	-2.127*** (0.479)	-2.506*** (0.665)	-2.445*** (0.390)	-3.539*** (0.645)
(Positive External Financial Dependence) × (Primary Fiscal Balance to GDP counter-Cyclicity)	5.805*** (0.839)	5.678*** (0.772)	7.062*** (1.340)	6.511*** (0.962)	7.349*** (1.756)	6.854*** (1.341)
(Negative External Financial Dependence) × (Primary Fiscal Balance to GDP counter-Cyclicity)	-10.81*** (3.565)	-8.592*** (2.666)	-15.69*** (4.175)	-11.45** (5.105)	-21.00*** (4.121)	-18.83*** (4.737)
Observations	573	573	573	573	586	586
R-squared	0.452	0.418	0.472	0.443	0.451	0.424

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each ISIC industry in each country. *Initial Relative Labor Productivity* is the ratio of industry beginning of period labor productivity to total manufacturing beginning of period labor productivity. *Positive* (resp. *Negative*) *External Financial Dependence* is equal to the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990 when this fraction is positive (resp. negative) and is equal to zero otherwise. *Net Primary Fiscal Balance to GDP Counter-Cyclicity* is the regression coefficient of the output gap when net primary fiscal balance to GDP is regressed on a constant and the output gap. The interaction variable is the product of positive or negative external financial dependence and net total fiscal balance to GDP counter-cyclicity. All estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Three simple questions

Three simple questions

- How big are these numbers? How does the magnitude of these effects compare with that of effects previously estimated in the literature?
- Which component in fiscal policy is producing the growth enhancing effect of fiscal policy counter-cyclicality?
- Does the effect of fiscal policy counter-cyclicality survive the inclusion of controls describing fiscal policy itself or structural characteristics of the economy?

The magnitude

The magnitude

- Compute growth gain from a change from 1st to 3rd quartile in financial dependence and primary fiscal balance to GDP counter-cyclicality.

Time Span	1980-2005	1980-2000	1985-2005
Value Added growth	1,30%	1,29%	1,77%
Productivity Growth	0,86%	0,91%	1,36%

- The increase in labor productivity growth due to fiscal policy counter-cyclicality is of similar magnitude to the increase in real value added growth stemming from financial development as computed by Rajan and Zingales.
- Around 70% of the increase in real value added growth stems from an increase in labor productivity employment, the other 30% stems from an increase in employment

Counter-cyclical government revenues vs expenditures

Counter-cyclical government revenues vs expenditures

Table 8b: Labor Productivity Growth and Government Receipts to GDP Counter-Cyclicity

Estimation Period	(i) 1980-2005	(ii) 1980-2000	(iii) 1985-2005	(iv) 1985-2000	(v) 1990-2005	(vi) 1990-2000
Log of Initial Relative Labour Productivity	-2.212*** (0.572)	-2.404*** (0.539)	-2.254*** (0.518)	-2.637*** (0.676)	-2.366*** (0.440)	-3.489*** (0.658)
(Positive External Financial Dependence) × (Government Receipts to GDP Counter-Cyclicity)	1.356 (2.919)	2.311 (2.632)	3.872 (3.886)	6.087* (3.029)	3.285 (3.412)	9.185*** (3.017)
(Negative External Financial Dependence) × (Government Receipts to GDP Counter-Cyclicity)	-1.155 (5.722)	-3.208 (3.956)	-9.719 (9.249)	-12.56* (6.100)	-20.71** (9.482)	-33.10*** (8.388)
Observations	573	573	573	573	586	586
R-squared	0.431	0.402	0.443	0.429	0.407	0.410

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each ISIC industry in each country. *Initial Relative Labor Productivity* is the ratio of industry beginning of period labor productivity to total manufacturing beginning of period labor productivity. *Positive* (resp. *Negative*) *External Financial Dependence* is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990 when this fraction is positive (resp. negative) and is equal to zero otherwise. *Government Receipts to GDP Counter-Cyclicity* is the regression coefficient of the output gap when government receipts to GDP is regressed on a constant and the output gap. The interaction variable is the product of positive or negative external financial dependence and government receipts to GDP counter-cyclicity. All estimated coefficient are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

⇒ *Stabilizing government revenues have a limited impact on productivity growth*

Counter-cyclical government revenues vs expenditures

Counter-cyclical government revenues vs expenditures

Table 9b: Labor Productivity Growth and Government Spending to GDP Counter-Cyclicality

Estimation Period	(i) 1980-2005	(ii) 1980-2000	(iii) 1985-2005	(iv) 1985-2000	(v) 1990-2005	(vi) 1990-2000
Log of Initial Relative Labor Productivity	-2.143*** (0.553)	-2.394*** (0.563)	-2.224*** (0.553)	-2.672*** (0.764)	-2.413*** (0.443)	-3.507*** (0.666)
(Positive External Financial Dependence) × (Government Spending to GDP Pro-Cyclicality)	-3.688*** (1.157)	-3.434** (1.349)	-4.927** (2.244)	-3.624* (2.101)	-9.233*** (1.613)	-9.823*** (2.632)
(Negative External Financial Dependence) × (Government Spending to GDP Pro-Cyclicality)	9.668** (3.648)	6.825 (4.134)	14.40** (5.936)	7.439 (5.608)	22.42*** (7.357)	22.02** (8.376)
Observations	573	573	573	573	586	586
R-squared	0.431	0.402	0.443	0.429	0.407	0.410

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each ISIC industry in each country. *Initial Relative Labor Productivity* is the ratio of industry beginning of period labor productivity to total manufacturing beginning of period labor productivity. *Positive* (resp. *Negative*) *External Financial Dependence* is equal to the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990 when this fraction is positive (resp. negative) and is equal to zero otherwise. *Government Spending to GDP Pro-Cyclicality* is the regression coefficient of the output gap when government spending to GDP is regressed on a constant and the output gap. The interaction variable is the product of positive or negative external financial dependence and government spending to GDP pro-cyclicality. All estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

⇒ *Stabilizing government expenditures have a significant impact on productivity growth*

Stabilizing fiscal policy vs current account balance

Stabilizing fiscal policy vs current account balance

Table 13a: Real Value Added Growth, Total Fiscal Balance Counter-Cyclicity and Current Account Balance

Estimation Period	(i)	(ii)	(iii)	(iv)	(v)	(iv)
	1980-2005	1980-2000	1985-2005	1985-2000	1990-2005	1990-2000
Log of Initial Share in Manufacturing Value Added	-1.053*** (0.205)	-1.043*** (0.227)	-0.840** (0.358)	-0.886** (0.408)	-1.020** (0.454)	-1.364** (0.548)
(Positive External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicity)	8.926*** (2.526)	8.402*** (2.626)	8.197*** (2.332)	8.857*** (2.257)	7.452*** (2.372)	8.622*** (1.900)
(Negative External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicity)	-8.834** (4.109)	-4.122 (4.736)	-14.87*** (4.419)	-7.760 (6.702)	-14.42*** (3.772)	-14.24** (5.608)
(Positive External Financial Dependence) × (Average Current Account Balance to GDP)	0.314 (0.455)	0.210 (0.566)	0.622 (0.584)	0.606 (0.794)	0.625 (0.434)	0.544 (0.531)
(Negative External Financial Dependence) × (Average Current Account Balance to GDP)	1.453* (0.807)	2.034 (1.222)	1.297 (1.070)	1.753 (1.892)	0.354 (0.931)	2.184 (1.579)
Observations	574	575	576	577	594	595
R-squared	0.529	0.512	0.519	0.510	0.491	0.466

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each ISIC industry in each country. *Initial Share in Manufacturing Value Added* is the ratio of beginning of period real value added at the industry level to total manufacturing beginning of period real value added. *Positive* (resp. *Negative*) *External Financial Dependence* is equal to the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990 when this fraction is positive (resp. negative) and is equal to zero otherwise. *Total Fiscal Balance to GDP Counter-Cyclicity* is the regression coefficient of the output gap when total fiscal balance to GDP is regressed on a constant and the output gap. *Average Current Account Balance to GDP* is the simple mean of current account balance to GDP. The interaction variables are the product of variables in parentheses. All estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

⇒ *Controlling for borrowing from abroad does not alter the positive impact of stabilizing fiscal policy.*

Stabilizing fiscal policy vs financial development

Stabilizing fiscal policy vs financial development

Estimation Period	(i)	(ii)	(iii)	(iv)	(v)	(iv)
	1980-2005	1980-2000	1985-2005	1985-2000	1990-2005	1990-2000
Log of Initial Share in Manufacturing Value Added	-1.094*** (0.215)	-1.153*** (0.216)	-0.862** (0.323)	-1.005** (0.348)	-0.856* (0.468)	-1.255** (0.567)
(Positive External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicality)	9.079*** (2.429)	8.716*** (2.571)	8.102*** (2.699)	8.681*** (2.368)	7.337*** (2.619)	8.248*** (1.904)
(Negative External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicality)	-7.015 (4.458)	-2.263 (4.948)	-12.57** (4.987)	-5.210 (5.828)	-14.46*** (4.253)	-13.35* (6.736)
(External Financial Dependence) × (Average Private Credit to GDP)	5.191* (2.571)	5.745** (2.167)	6.001 (3.472)	6.629** (2.370)	1.217 (3.455)	1.243 (1.800)
Observations	574	575	576	577	594	595
R-squared	0.531	0.516	0.519	0.515	0.485	0.460

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each ISIC industry in each country. *Initial Share in Manufacturing Value Added* is the the ratio of beginning of period real value added at the industry level to total manufacturing beginning of period real value added. *Positive (resp. Negative) External financial dependence* is equal to the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990 when this fraction is positive (resp. negative) and is equal to zero otherwise. *Total Fiscal Balance to GDP Counter-Cyclicality* is the regression coefficient of the output gap when total fiscal balance to GDP is regressed on a constant and the output gap. *Average private credit to GDP* is the simple mean private credit to GDP. The interaction variables are the product of variables in parentheses. All estimated coefficient are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

⇒ *Controlling for private credit to GDP does not alter the positive impact of stabilizing fiscal policy.*

Stabilizing fiscal policy vs average inflation

Stabilizing fiscal policy vs average inflation

Estimation Period	(i) 1980-2005	(ii) 1980-2000	(iii) 1985-2005	(iv) 1985-2000	(v) 1990-2005	(iv) 1990-2000
Log of Initial Share in Manufacturing Value Added	-1.155*** (0.197)	-1.167*** (0.218)	-0.917** (0.336)	-0.949** (0.387)	-1.105** (0.486)	-1.425** (0.540)
(Positive External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicality)	7.877*** (2.050)	6.937*** (1.963)	6.176** (2.154)	6.276*** (1.916)	5.889** (2.576)	6.506*** (2.212)
(Negative External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicality)	-9.646* (4.607)	-5.951 (4.749)	-17.27*** (5.705)	-10.43 (5.988)	-17.40*** (4.812)	-17.27** (5.987)
(Overall External Financial Dependence) × (Average CPI Inflation)	-0.890** (0.307)	-0.841*** (0.267)	-1.555*** (0.453)	-1.309*** (0.397)	-1.984*** (0.602)	-1.633*** (0.548)
Observations	574	575	576	577	594	595
R-squared	0.536	0.520	0.527	0.517	0.498	0.468

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each ISIC industry in each country. *Initial Share in Manufacturing Value Added* is the ratio of industry beginning of period real value added to total manufacturing beginning of period real value added. *Positive* (resp. *Negative*) *External Financial Dependence* is equal to the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990 if the fraction positive, (resp. negative) and is equal to zero otherwise. *Total Fiscal Balance to GDP Counter-Cyclicality* is the regression coefficient of the output gap when total fiscal balance to GDP is regressed on a constant and the output gap. *Average CPI Inflation* is the simple mean of consumer price index inflation. The interaction variables are the product of variables in parentheses. All estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

⇒ *Controlling for average CPI inflation does not alter the positive impact of stabilizing fiscal policy. Negative effect of Inflation is driven by outliers (high inflation countries like Greece).*

Cyclical vs average fiscal policy

Cyclical vs average fiscal policy

Estimation Period	(i)	(ii)	(iii)	(iv)	(v)	(iv)
	1980-2005	1980-2000	1985-2005	1985-2000	1990-2005	1990-2000
Log of Initial Relative Labor Productivity	-2.055*** (0.529)	-2.313*** (0.529)	-2.117*** (0.448)	-2.459*** (0.676)	-2.443*** (0.392)	-3.575*** (0.639)
Interaction (Positive External Financial Dependence × Total Fiscal Balance to GDP Counter-Cyclicalities)	6.345*** (2.076)	7.502*** (1.870)	7.349** (3.163)	7.107* (3.418)	7.376*** (2.262)	7.952*** (1.983)
Interaction (Negative External Financial Dependence × Total Fiscal Balance to GDP Counter-Cyclicalities)	-13.63* (7.530)	-15.91** (6.148)	-25.42** (8.723)	-24.15* (12.24)	-22.31*** (4.400)	-27.07*** (6.039)
Interaction (Positive External Financial Dependence × Average Total Fiscal Balance to GDP)	0.515 (0.444)	-0.0908 (0.407)	0.557 (0.635)	0.329 (0.908)	0.397 (0.620)	-0.234 (0.853)
Interaction (Negative External Financial Dependence × Average Total Fiscal Balance to GDP)	-0.925 (1.826)	1.462 (1.478)	0.394 (2.639)	2.785 (2.885)	-1.570 (1.962)	3.429 (2.791)
Observations	573	573	573	573	586	586
R-squared	0.455	0.420	0.475	0.448	0.446	0.427

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each ISIC industry in each country. *Initial Relative Labor Productivity* is the ratio of industry beginning of period labor productivity to total manufacturing beginning of period labor productivity. *Positive (resp. Negative) External financial dependence* is equal to the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990 when this fraction is positive (resp. negative) and is equal to zero otherwise. *Total Fiscal Balance to GDP Counter-Cyclicalities* is the regression coefficient of the output gap when total fiscal balance to GDP is regressed on a constant and the output gap. *Average total fiscal balance to GDP* is the simple mean of total fiscal balance to GDP. The interaction variables are the product of variables in parentheses. All estimated coefficient are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

⇒ *Controlling for average fiscal balance does not alter the positive impact of stabilizing fiscal policy.*

Conclusions

- ① Thus: counter-cyclical fiscal policy raises long run industry growth, and the more so in industries with higher external financial dependence
- ② Avenues for further research: look at other industry interactors such as asset tangibility, K/L ratios.... Look at the composition of government expenditures (consumption, investment, transfers). Look at interplay between macro and "industrial" policy. Interact other aspects of macro policy (monetary policy) with industry characteristics.

Conclusions

Table 12a: Real Value Added Growth and Government Consumption to GDP Counter-Cyclicality

Estimation Period	(i) 1980-2005	(ii) 1980-2000	(iii) 1985-2005	(iv) 1985-2000	(v) 1990-2005	(vi) 1990-2000
Log of Initial Share in Manufacturing Value Added	-1.212*** (0.243)	-1.191*** (0.324)	-0.761** (0.318)	-0.682* (0.372)	-1.059* (0.509)	-1.586** (0.555)
(Positive External Financial Dependence) × (Government Consumption to GDP Pro-Cyclicality)	-19.98*** (5.354)	-19.02*** (4.567)	-19.20*** (6.167)	-15.44** (6.764)	-21.70*** (5.969)	-31.77*** (5.854)
(Negative External Financial Dependence) × (Government Consumption to GDP Pro-Cyclicality)	13.75 (11.86)	7.092 (12.27)	14.89 (13.65)	-2.531 (16.14)	25.71 (20.30)	37.20 (35.05)
Observations	510	511	512	513	530	531
R-squared	0.529	0.512	0.515	0.501	0.491	0.472

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each ISIC industry in each country. *Initial Share in Manufacturing Value Added* is the ratio of beginning of period real value added at the industry level to total manufacturing beginning of period real value added. *Positive* (resp. *Negative*) *External Financial Dependence* is equal to the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990 when this fraction is positive (resp. negative) and is equal to zero otherwise. *Government Consumption to GDP Pro-Cyclicality* is the regression coefficient of the output gap when government consumption to GDP is regressed on a constant and the output gap. The interaction variable is the product of variables in parentheses. All estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Conclusions

Table 10a: Real Value Added Growth and Government Investment to GDP Counter-Cyclicality

Estimation Period	(i) 1980-2005	(ii) 1980-2000	(iii) 1985-2005	(iv) 1985-2000	(v) 1990-2005	(vi) 1990-2000
Log of Initial Share in Manufacturing Value Added	-0.867*** (0.257)	-0.947*** (0.289)	-0.594* (0.309)	-0.607* (0.349)	-0.643* (0.376)	-1.055** (0.504)
(Positive External Financial Dependence) × (Government Investment to GDP Pro-Cyclicality)	2.918 (12.50)	-8.423 (10.23)	27.79* (14.54)	4.272 (13.27)	-1.880 (14.36)	-18.76 (11.78)
(Negative External Financial Dependence) × (Government Investment to GDP Pro-Cyclicality)	2.431 (31.67)	0.342 (28.19)	-32.57 (30.61)	-20.21 (34.46)	45.13 (32.35)	50.97 (38.52)
Observations	541	542	543	544	561	562
R-squared	0.511	0.499	0.505	0.487	0.468	0.444

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each ISIC industry in each country. *Initial Share in Manufacturing Value Added* is the ratio of beginning of period real value added at the industry level to total manufacturing beginning of period real value added. *Positive* (resp. *Negative*) *External Financial Dependence* is equal to the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990 when this fraction is positive (resp. negative) and is equal to zero otherwise. *Government Investment to GDP Pro-Cyclicality* is the regression coefficient of the output gap when government investment to GDP is regressed on a constant and the output gap. The interaction variable is the product of positive or negative external financial dependence and government investment to GDP pro-cyclicality. All estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).