# Credit Constraints, Cyclical Fiscal Policy and Industry Growth*

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**Abstract**

This paper evaluates whether the cyclical pattern of fiscal policy can affect growth. We first build a simple endogenous growth model where entrepreneurs face a tighter borrowing constraint when they invest in more risky yet more productive projects. In this framework, a counter-cyclical fiscal policy prompts entrepreneurs to take more risky bets because it dampens the negative impact of more risky investments on the access to external finance. A stabilizing fiscal policy is therefore growth enhancing. Secondly the paper takes this prediction to the data following the Rajan-Zingales (1998) methodology. Empirical evidence shows that (i) value added and productivity growth -measured at the industry level- is larger when fiscal policy -measured at the country level- is more counter-cyclical, (ii) the positive growth effect of fiscal policy counter-cyclicality is larger in industries with heavier reliance on external finance.

Keywords: growth, financial dependence, fiscal policy, counter-cyclicality

JEL Classification: E32, E62

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# 1 Introduction

Standard macroeconomic textbooks generally present macroeconomics in two separate bodies: in the long term an economy's performance is essentially influenced by structural characteristics, such as education, R&D, openness to trade, competition or financial development. In the short term however, the economy is essentially influenced by the shocks it undergoes and stabilization policies undertaken (fiscal and monetary policy). These two approaches have been considered for long as separate and distinct bodies of research. Stabilization policies for instance are considered to have no significant impact on the long run performance of an economy. The point of this paper is to investigate (the relevance of) this dichotomy focusing on the impact, if any, of cyclical fiscal policy on growth. To answer this question, we take a two step approach. First we build a simple model to illustrate how the cyclical component of fiscal policy can affect growth. Second we take the theoretical predictions to the data and provide empirical evidence of a statistically and economically significant impact of stabilizing fiscal policy on growth.

The theoretical part of the paper is based on a model with risk neutral entrepreneurs and lenders. Entrepreneurs can choose a project to invest in among a set of existing projects, the more productive being also the more risky. When states of nature are non verifiable -or alternatively if verifiability is sufficiently costly- then entrepreneurs who invest in more productive projects also face a tighter borrowing constraint because higher average productivity implies lower output in bad states and hence a lower ability to pay back liabilities. To put it in a nutshell, when states of nature are non verifiable, pledgeable income is negatively related to average productivity which creates a trade-off for entrepreneurs in their technological choice. The government can then alter this trade-off by imposing state contingent taxes. Namely a pro-cyclical fiscal policy, i.e. high taxes in bad states and low taxes in good states, tends to amplify the negative effect of more risky investments on the ability to borrow. As consequence, entrepreneurs optimally choose less risky and less productive projects. On the contrary a counter-cyclical fiscal policy, i.e. low taxes in bad states and high taxes in good states, tends to dampen the negative effect of more risky investments on the ability to borrow which prompts entrepreneurs to take more risky bets. Moreover the positive effect of counter-cyclical fiscal policy on productivity growth increases with the share of investment financed through external capital

but decreases with income pledgeability. The second part of the paper is devoted to test empirically these three predictions: (i) counter-cyclical fiscal policy is growth enhancing, (ii) the growth enhancing impact of counter-cyclical fiscal policy should increase with the share of investment financed through external capital, (iii) but decrease with income pledgeability.

A simple approach to assessing the impact of counter-cyclical economic policies on growth consists in running a regression with a growth indicator (output or labour productivity) as a dependent variable and an indicator of counter-cyclicality in economic policies as an explanatory variable. Every thing else equal, this framework can tell whether the cyclical properties of macro policy do affect growth significantly and in case they do, how much growth increase can be expected from a change in macro policy, for instance moving from a procyclical to an acyclical policy. However there are three important issues that preclude a proper interpretation of this type of straightforward exercise. First cyclicality in economic policies (by now, we will only focus on fiscal policy) is generally captured through a unique time-invariant parameter which only varies in the country dimension. As a result, standard cross-country panel regression cannot be used to assess to the effect of the cyclical pattern of fiscal policy on growth in as much as the former is perfectly collinear to the fixed effect that is traditionally introduced to control for unobserved cross-country heterogeneity. To solve this issue, Aghion and Marinescu (2007) introduce time-varying estimates of fiscal policy cyclicality.[1] While this is a step forward in the effort to capturing the growth effect of fiscal policy cyclicality –while at the same time controlling for unobserved heterogeneity-, this is at the cost of loosing precision in the estimates of fiscal policy cyclicality. Secondly the causality issue -namely does fiscal policy cyclicality affect growth or does growth modify the cyclical pattern of fiscal policy- cannot be properly addressed with a macro level analysis. This question is fundamental to derive the policy implications of the empirical exercise. In particular estimating the growth gain/cost to a change in the cyclical pattern of fiscal policy highly depends on whether the causality issue has been properly addressed. One particular reason is that fiscal policy cyclicality is used in growth regressions as a right hand side variable while the estimation of time-varying fiscal policy cyclicality requires using the full data sample. In these circumstances, instrumental

[1] Time varying estimates of cyclicality can be obtained with a number of non parametric methods.

variable cannot be of any help.[2] A final concern is identification. A macro level analysis cannot help testing the theoretical mechanism underlying the relationship if any between cyclical fiscal policy and growth. let alone the problem of control variables –the econometrics must be robust to the inclusion of a number of control variables representing other standard theoretical models-. Hence even if the argument -that the cyclical pattern of fiscal policy is important for growth- is empirically verified, the channel through which this conclusion works remains uncovered with a macro level analysis.

The approach we provide in this paper proposes a possible remedy for each of these issues. Based on the theoretical predictions developed above, we apply the methodology provided by Rajan and Zingales (1998) in their seminal paper and draw a relationship between growth at the industry level to fiscal policy cyclicality at the macro level. Moreover as predicted by our model, fiscal policy cyclicality is interacted by industry level external financial dependence to test whether industries which rely more heavily on external finance benefit more from counter-cyclical fiscal policy. This approach proves to be useful in solving the issues stated above. First, because we use a country - industry panel dataset, we can estimate counter-cyclicality in fiscal policy based on a time-invariant parameter. As previously fiscal policy counter-cyclicality is collinear to country fixed effects. However we test the conclusion that the growth effect of fiscal policy counter-cyclicality is larger for industries that rely more on external finance. Hence the interaction between a country level and an industry level variable solves the collinearity issue. Second the interaction term helps solve the identification issue because it shows that the effect of fiscal policy counter-cyclicality goes through the financial structure of the firm – or the industry- hence validating the theoretical framework described above. Finally and most importantly, this approach is a step forward in dealing with the causality issue. Because macro policy can affect industry level growth while the opposite - industry level growth affecting macro policy- is much less likely, this approach can be useful to assess whether the cyclical pattern of fiscal policy has a causal impact on growth.[3] There is however a downside to the industry level investigation.

[2] IV regressions usually use internal instruments, i.e. lagged values of right hand side variables. In the case of time-varying estimates of fiscal policy cyclicality, that boils down to using forward information as instruments, in which case instruments cannot be exogenous.

[3] Fiscal policy cyclicality could be endogenous to the industry level composition of total output if for example industries that benefit more from fiscal policy counter-cyclicality do lobby more for counter-cyclical fiscal policy. However to the extent that there are decreasing returns to scale (which is plausible given that we focus here on manufacturing industries and happens to be empirically verified), that should rather imply a downward bias in our estimates of the positive impact of fiscal policy counter-

The difference in difference approach has nothing to say about the magnitude of the macroeconomic growth gain/loss to different patterns of cyclicality in fiscal policy. The empirical estimates of the industry level growth gain due to a change in the cyclical pattern of fiscal policy are, above all, qualitative evidence of the growth effect of counter-cyclical fiscal policy. Results detailed below cannot be used to derive directly the growth implications of different fiscal policies.[4]

The empirical results of the paper can be divided into three main parts. First fiscal policy counter-cyclicality - measured as the sensitivity to the output gap of total or primary fiscal balance to GDP - has a positive significant and robust impact on industry growth, larger reliance on external finance amplifying this effect. This property holds both for real value added as well as for labour productivity growth. Based on these results, the magnitude of the diff-in-diff effect is derived, i.e. how much extra growth following an increase in fiscal policy counter-cyclicality and financial dependence. Figures happen to be relatively large, especially when compared to those obtained from similar investigations (especially those in Rajan and Zingales, 1998), hence suggesting that the effect of counter-cyclical fiscal policy is both statically and economically significant. Second we go through a number of robustness checks by introducing a number of control variables. We show that the impact of counter-cyclical fiscal policy on growth is indeed robust to the inclusion of other growth determinants. Third, we provide different partitions of fiscal policy (expenditures, revenues, consumption, investment, etc...) and look at which component is indeed driving the positive growth effect of counter-cyclical fiscal policy. We uncover two unexpected results. First counter-cyclicality in government consumption affects significantly indsutry growth while counter-cyclicality in government investment does not. Second counter-cyclicality in government receipts has no significant effect on industry growth but counter-cyclicality in government expenditures does have a significant positive impact on industry growth. Finally an instrumental variable estimation is carried out whose results are very close to those obtained in the very first regressions, thus confirming both qualitatively and quantitatively the first results of the paper.

cyclicality on growth. Hence controlling for this possible endogeneity relationship, in case it is first order, would probably reinforce the results we obtain here by reducing this downward bias.

[4] A further limit to a direct interpretation of our results relates to our focus on growth for manufacturing industries while the total share of manufacturing industries in total value added in about one third not more. Deriving the global macroeconomic effect of fiscal policy cyclicality would require an assessment of the impact on the service sector.

The rest of the paper is organized as follows. The next section lays down the theoretical model and derives the main predictions to be tested empirically. Section 3 details the econometric methodology and presents the data used in estimations. The basic as well as the more elaborate specifications are tested in section 4. In particular we check if the growth impact of counter-cyclical fiscal policy is robust to the inclusions of structural characteristics. We also investigate which part of fiscal policy is indeed important for growth through its counter-cyclicality (expenditures, revenues, consumption, investment, etc...). Conclusions are eventually drawn in section 5.

# 2 Cyclical fiscal policy and growth: a toy model

## 2.1 Timing and Technology

We consider an economy with a continuum of mass one of risk neutral agents and a single good. Agents live for one period. Each agent owns a unitary initial capital endowment. A proportion $e$ of agents are entrepreneurs, a proportion $1-e$ are lenders. At the beginning of life, entrepreneurs choose a production technology among technologies with different average productivities. A technology is characterized by a pair $\{A_h, A_l\}$ where $A_s$ is productivity in state $s$. A more productive technology on average is more volatile. Denoting $m = \frac{A_h+A_l}{2}$ the average productivity and $\sigma = \frac{A_h-A_l}{2}$ the standard deviation in productivity, associated with a technology $\{A_h, A_l\}$, we assume for simplicity that $m$ is linear in $\sigma$

$$m = a_0 + a_1\sigma \tag{1}$$

(1) defines the technological frontier for entrepreneurs. To make the problem interesting, we assume that $a_0 > 0$ and $0 < a_1 < 1$. Once they have selected a technology, entrepreneurs decide how much capital to invest in that technology and therefore how much to borrow from lenders on the capital market. Lenders can lend capital to entrepreneurs, which they do inelastically to simplify. There are two equiprobable states

of nature, high $s = h$ and low $s = l$ and one of them realizes in the middle of the period

$$\Pr(s = h) = \Pr(s = l) = 1/2 \tag{2}$$

The technology delivers output at the end of the period which is produced according to the AK technology

$$Y_s^t = T^t A_s K \tag{3}$$

where $K$ is the total capital invested at the beginning of the period, $s$ is the state of nature that realizes over the period, and $T^t$ is the stock of knowledge at the beginning of period $t$. Let

$$y_s^t = \frac{Y_s^t}{T^t} \tag{4}$$

denote the knowledge adjusted final output at date $t$. Following Aghion Angeletos, Banerjee and Manova (2005), knowledge grows between two successive periods at a rate which is proportional (for simplicity, equal) to aggregate production last period:

$$T_{t+1} - T_t = Y^t \tag{5}$$

so that the growth rate of knowledge is simply equal to $y_s^t$. Finally there is a government which can levy taxes. To simplify the analysis, we assume that the government makes no expenditures.

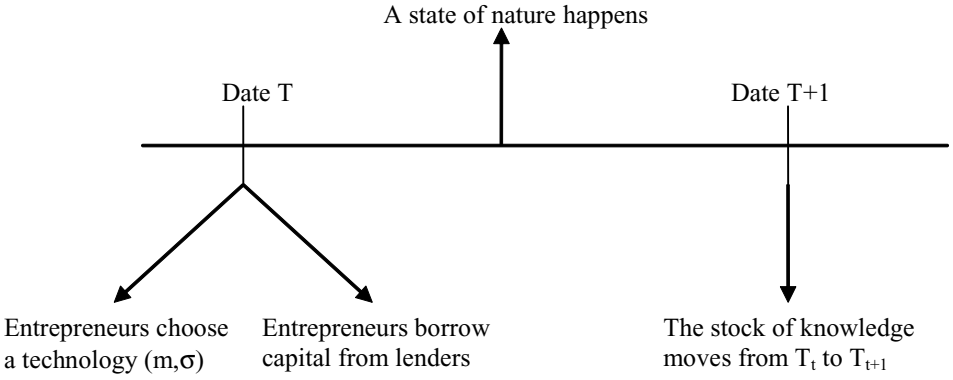

Figure 1: Timing of the model

## 2.2 Borrowing and technology choice by entrepreneurs

We shall solve the model by backward induction. For given choice of the technology, consider an entrepreneur $i$ with unitary initial capital endowment who borrows $d_i$ units of capital from lenders. If the government imposes in state $s$ taxes on entrepreneurs $\tau_s q_i$ where $q_i$ is entrepreneur $i$ total investment, then the knowledge adjusted expected profits at the end of period $t$ of entrepreneur $i$ write as:

$$E\pi_s^t = \frac{A_l - \tau_l + A_h - \tau_h}{2}(1 + d_i) - (1 + r)\, d_i \tag{6}$$

where $r$ is the equilibrium interest rate which we shall derive below. Let us now introduce capital market imperfections. Capital market imperfections result from an ex post enforceability problem (see Aghion-Banerjee-Piketty (1999)) which prevents the lender from extracting more than $\mu$ times her post-tax income, in other words:

$$(1 + r)\, d_i \leq \mu\,(A_s - \tau_s)\,(1 + d_i) \tag{7}$$

Hence the government can enforce contingent repayments whereas private agents (lenders here) cannot. Thus entrepreneur $i$ will choose her borrowing $d_i$ to

$$\begin{gathered} \max_{d_i} E\pi_s^t(d_i) = \tfrac{1}{2}\left[A_l - \tau_l + A_h - \tau_h\right](1 + d_i) - (1 + r)\, d_i \\ \text{s.t. } (1 + r)\, d_i \leq \mu\,(A_s - \tau_s)\,(1 + d_i)\,,\ s = \{l, h\} \end{gathered} \tag{8}$$

We shall restrict attention to the case where $A_l - \tau_l + A_h - \tau_h > 2\,(1 + r)$, so that the borrowing constraint is binding in equilibrium, and where $A_l - \tau_l < A_h - \tau_h$, so that the borrowing constraint is binding in the bad state of nature. The maximum expected profit of entrepreneur $i$ for given technology $\{A_h, A_l\}$ is then equal to:

$$E\pi_s^t = \frac{\frac{1}{2}\left[A_l - \tau_l + A_h - \tau_h\right] - \mu\,(A_l - \tau_l)}{(1 + r) - \mu\,(A_l - \tau_l)}(1 + r) \tag{9}$$

Now let us move back one step and consider the entrepreneur's optimal choice of technology. Writing $A_l = m - \sigma$ and $A_h = m + \sigma$, entrepreneur $i$ will choose the technology $(m, \sigma)$ that maximizes ex ante expected profits

$$\begin{gathered} \max_{\sigma} E\pi_s^t(m,\sigma) = \frac{m-\tau-\mu(m-\sigma-\tau_l)}{(1+r)-\mu(m-\sigma-\tau_l)}(1+r) \\ \text{s.t. } m \leq a_0 + a_1\sigma \end{gathered} \tag{10}$$

where $\tau$ is the average tax rate; $\tau = \frac{\tau_l+\tau_h}{2}$. The corresponding first order condition writes as

$$\frac{1+r}{\mu} = \frac{a_0 - a_1\tau_l - \tau(1-a_1)}{a_1 + \mu(1-a_1)} \tag{11}$$

## 2.3 Equilibrium of the capital market

Given that the borrowing constraint (7) must hold for any state of nature, the individual demand for capital solves

$$(1+r)\,d_i = \mu(A_l - \tau_l)(1+d_i) \tag{12}$$

and aggregate demand for capital $D$ is the sum of individual capital demands $d_i$ by all entrepreneurs

$$D = e\frac{\mu(A_l - \tau_l)}{1+r-\mu(A_l-\tau_l)} \tag{13}$$

Aggregate capital supply $S$ is simply equal to the sum of capital endowments over all lenders, namely: $S = (1-e)$. In equilibrium of the capital market we have $D = S$ or equivalently:

$$\frac{1+r}{\mu} = \frac{e}{1-e}(A_l - \tau_l) \tag{14}$$

Consequently with relations (11) and (14) we can determine the optimal technological choice of entrepreneurs at the equilibrium of the economy.

**Proposition 1** *The equilibrium average growth rate of the economy verfies* $m_{eq} = a_0 + a_1\sigma_{eq}$ *with*

$$\sigma_{eq} = \frac{a_0-\tau_l}{1-a_1}\left[1-\lambda\left(e,\mu\right)\right] + \lambda\left(e,\mu\right)\frac{\tau_h-\tau_l}{2}$$

$$\lambda\left(e,\mu\right) = \frac{1-e}{e}\frac{1}{a_1+\mu(1-a_1)}$$

**Proof.** The optimal technology chosen by entrepreneurs at the equilibrium of the capital market verifies

$$\frac{e}{1-e}\left(A_l-\tau_l\right) = \frac{a_0-a_1\tau_l-\tau\left(1-a_1\right)}{a_1+\mu\left(1-a_1\right)}$$

This relation can then be simplified as

$$\sigma = \frac{a_0-\tau_l}{1-a_1}\left[1-\frac{1-e}{e}\frac{1}{a_1+\mu\left(1-a_1\right)}\right] + \frac{1-e}{e}\frac{1}{a_1+\mu\left(1-a_1\right)}\frac{\tau_h-\tau_l}{2}$$

■

## 2.4 Fiscal policy and growth

Fiscal policy has two effects on aggregate productivity and therefore on growth: a pure taxation effect through which larger taxes $\tau_l$ reduces productivity and a counter-cyclicality effect through which larger taxes $\tau_h$ in good times and lower taxes $\tau_l$ in bad times contribute to raise productivity, namely:

$$\sigma_{eq} = \underbrace{\left[1-\lambda\left(e,\mu\right)\right]\frac{a_0-\tau_l}{1-a_1}}_{\text{pure taxation effect}} + \underbrace{\lambda\left(e,\mu\right)\frac{\tau_h-\tau_l}{2}}_{\text{counter-cyclicality effect}}$$

An increase in government taxes counter-cyclicality, i.e. an increase in $\tau_h - \tau_l$, therefore raises every thing else equal, average growth since $\partial\sigma_{eq}/\partial\left(\tau_h-\tau_l\right) > 0$. Moreover this effect is amplified when there are fewer entrepreneurs, i.e. when the share of investment financed through external funds is larger since $\partial\lambda/\partial e < 0$. On the contrary this effect is dampened when the share of pleadgeable income $\mu$ is larger since $\partial\lambda/\partial\mu < 0$. The remaining of the paper is devoted to an empirical investigation of these properties.

# 3 Data and econometric methodology

The empirical investigation is based on a regression where the dependent variable (henceforth LHS variable) is the average annual growth rate of real value added or alternatively labour productivity in industry $j$ in country $k$ for a given period of time. Labour productivity is defined as the ratio of real value added to total employment.[5] On the right hand side, industry and country fixed effects $\{\alpha_j;\beta_k\}$ control for unobserved heterogeneity between industries and countries. The variable of interest $(fd_j)\times\left(fpc_k^{t,t+n}\right)$, is the interaction between industry $j$ external financial dependence and country $k$ fiscal policy cyclicality for the period $[t,t+n]$. Finally, a control for initial conditions is included. When the LHS variable is the growth rate of real value added, the ratio of initial real value added in industry $j$ in country $k$ to total real value added in the manufacturing sector in country $k$ controls for initial conditions. When the LHS variable is labour productivity growth, the ratio of initial labour productivity in industry $j$ in country $k$ to labour productivity in the manufacturing sector in country $k$ is included. Denoting $y_{jk}^{\tau}$ (resp. $y_k^{\tau}$) real value added or alternatively labour productivity in industry $j$ (resp. in manufacturing) in country $k$ in year $\tau$ and $\varepsilon_{jk}$ as an error term, the empirical investigation is based on estimating the regression

$$\frac{1}{n}\left[\ln\left(y_{jk}^{t+n}\right)-\ln\left(y_{jk}^{t}\right)\right]=\alpha_j+\beta_k+\gamma\left(fd_j\right)\times\left(fpc_k^{t,t+n}\right)-\delta\log\left(\frac{y_{jk}^{t}}{y_k^{t}}\right)+\varepsilon_{jk} \tag{15}$$

Following Rajan and Zingales (1998) we measure industry level external financial dependence with firm level data for the US. External financial dependence is computed as the ratio of capital expenditures minus cash flow from operations divided by capital expenditures accross all firms in a given industry. Proceeding this way is valid as long as (i) differences in financing across industries are largely driven by differences in technology, (ii) technological differences persist across countries, (iii) countries are relatively similar in terms of overall firm environment. Under these three assumptions, the US based measure of external finance is likely to be a valid measure of external financial dependence for countries other than the US.[6] In reality

[5] Although we also have access to industry level data on hours worked, we prefer to focus on productivity per worker and not productivity per hour because measurement error is more likely to affect the latter than the former.

[6] Note however that this measure is unlikely to be valid for the US as it likely reflects the equilibrium of supply and demand for capital in the US and is hence endogenous.

these three conditions are likely to be verified. For instance if pharmaceuticals require proportionally more external finance than textiles in the US, this is likely to be the case in other countries. Moreover given that we focus on a subset of developed OECD countries, cross-industry differences are likely to persist across countries. Finally because the US is one of the most developed capital market in the world, US based measures of external financial dependence are likely to give the least noisy measures of industry level demand for external finance.

The last ingredient needed to estimate (15) is fiscal policy cyclicality. A simple benchmark to begin with consists in estimating fiscal policy cyclicality as the marginal change in fiscal policy following a change in the output gap. Hence country $k$ fiscal policy cyclicality ($fpc_k^{t,t+n}$) over the period $[t;t+n]$ can be estimated with the following regression

$$def_k^\tau = \eta_k + \left(fpc_k^{t,t+n}\right) z_k^\tau + u_k^\tau \tag{16}$$

where $\tau \in [t;t+n]$, $def_k^\tau$ is a measure of fiscal policy in country $k$ in year $\tau$ (fiscal balance, primary balance, expenditures, revenues, etc...), $z_k^\tau$ is a measure of the output gap of the economy in country $k$ in year $\tau$, $\eta_k$ is a constant and $u_k^\tau$ is an error term. The output gap is measured as the difference between output and trend output. It therefore represents the position of the economy in the cycle. Equation (16) is estimated for each country. For instance if the LHS is fiscal balance to GDP, a positive (resp. negative) parameter ($fpc_k^{t,t+n}$) reflects a counter-cyclical (resp. pro-cyclical) fiscal policy as the government fiscal balance is larger (resp. smaller) when economic conditions improve.

While this benchmark equation is extremely simplistic, it must be regarded as a first step. More elaborated fiscal policy specifications can be considered. In particular, following Gali and Perrotti (2003) fiscal policy cyclicality can be measured in a regression including a debt stabilization motive and controlling for fiscal policy persistence. Noting $b_k^\tau$ the ratio of public debt to GDP in country $k$ in year $\tau$, a more elaborate estimation of fiscal policy cyclicality $\left(fpc_{2,k}^{t,t+n}\right)$ over the period $[t;t+n]$ can be obtained estimating the

following equation:[7]

$$def_k^\tau = \alpha_k + \left(fpc_{2,k}^{t,t+n}\right) z_k^\tau + \beta_k b_k^{\tau-1} + \gamma_k def_k^{\tau-1} + \varepsilon_k^\tau \tag{17}$$

To estimate the basic specification (15) we can rely on a simple OLS procedure which if need be can be corrected for heteroscedasticity bias. The reason why we can proceed this way is that the right hand side variable i.e. the interaction term between industry financial dependence and fiscal policy cyclicality is in theory exogenous to the LHS variable, industry value added growth or industry labour productivity growth. On the one hand financial dependence is measured in the US while industry growth on the LHS is considered for other countries than the US. Hence reverse causality in the sense that industry growth outside the US could affect the industry financing structure in the US seems quite implausible. Moreover in some cases the LHS variable is measured on a post 1990 period while the financial dependence indicator is always measured on a pre 1990 period, hence further reducing the possibility of reverse causality. On the other hand fiscal policy cyclicality is measured at the macro level while the LHS variable is measured at the industry level which in theory precludes any case for reverse causality as long as each sector individually represents a small share of total output in the economy. Moreover as a cross-check of the validity of these arguments, we also carry out instrumental variable regressions where fiscal policy cyclicality is instrumented. We then verify that equations passing over-identification tests confirm our results.[8]

We focus our empirical investigation on the industrialized OECD countries, i.e. we abstract from Central and Eastern European countries (Hungary, Poland, Slovakia, and the Check Republic), and emerging markets (Mexico, Turkey and South Korea). We end up with a panel of seventeen countries which as stated above does not include the US. Data is available from 1980 to 2005. We consider six different time spans 1980-2005, 1980-2000, 1985-2005, 1985-2000, 1990-2005, 1990-2000. The latter cases are useful because Germany can then be included to our sample.[9] Data used come from three different sources. Industry level real value added growth and labour productivity growth data come from EU KLEMS dataset which provides annual

[7] Results presented in this paper are based on the simple fiscal policy counter-cyclicality specification (16). Using specification (17) does not modify the main conclusions of the paper.

[8] Next tables will show a large degree of similarity between OLS and IV estimations, thus confirming that our empirical strategy properly addresses the reverse causality issue, even in the case of OLS estimation.

[9] See appendix for country sample and other details on data.

industry level data for a large number of indicators.[10] The primary source of data on industry financial dependence is Compustat which gathers balance sheets and income statements for US listed firms. We draw on Rajan and Zingales (1998) and Raddatz (2006) to compute dataset the industry level indicators for financial dependence.[11] Finally macroeconomic fiscal and other control variables come from the OECD Economic Outlook dataset and from the World Bank Financial Development and Structure database.[12]

# 4 The basic specification

We first estimate the benchmark equation (15) in the case where the LHS variable is real value added growth and fiscal policy cyclicality is measured using equation (16). We consider two different cases; one where the LHS variable of (16) is total fiscal balance to GDP (table 1a) and another where the LHS of (16) is primary fiscal balance to GDP (table 1b).

Insert table 1a here

Insert table 1b here

As detailed above, we consider six different time spans as is shown in each table, fiscal policy cyclicality being measured in each regression on the relevant time period. Empirical results show that real value added growth is significantly and positively affected by the interaction of financial dependence and fiscal policy cyclicality: a larger sensitivity of total fiscal balance -or net primary fiscal balance- to GDP to the output gap raises industry real valued added growth, and the more so for industries with higher external financial dependence. Note that estimated coefficients are highly significant -in spite of the relatively conservative standard errors estimates given clustering at the country level- and relatively stable across periods especially in the case where the fiscal policy indicator is the net primary fiscal balance to GDP. Finally estimated coefficients are usually larger when the fiscal policy indicator is the total fiscal balance to GDP. This sounds natural given

[10] Data is is available at the following address: http://www.euklems.net/data/08i/all_countries_08I.txt

[11] Rajan and Zingales data is accessible at the following address: http://faculty.chicagogsb.edu/luigi.zingales/research/financing.htm

[12] OECD Economic Outlook dataset is accessible at the following address: http://titania.sourceoecd.org. The World Bank Financial Development and Structure database is accessible at the following address: http://siteresources.worldbank.org

that sensitivity to the output gap is likely to be lower for total than for primary fiscal balance (cf. figure 1 and figure 2 in appendix).[13] These results can be extended to the case where labour productivity growth is the LHS variable.

Insert table 2a here

Insert table 2b here

As is shown in table 2a and 2b, labour productivity growth is significantly affected by the interaction of financial dependence and fiscal policy cyclicality: a larger sensitivity of total fiscal balance -or net primary fiscal balance- to GDP to the output gap raises industry labour productivity growth, and the more so for industries with higher external financial dependence. Hence decomposing real value added growth into labour productivity growth and employment growth, this last set of regressions shows that the growth gain in real value added due to counter-cyclical fiscal policies is indeed driven both by a growth gain in employment and a growth gain in labour productivity growth. Comparing the estimated coefficients in table 1a and table 2a shows that approximately 60 to 80% of the gain in real value added growth due to a more counter-cyclical fiscal policy is attributable to a increase in labour productivity growth while 20 to 40% is due to an increase in employment. Similar -although slightly larger- figures are obtained from comparing table 1b and table 2b (70 to 80% of the gain in real value added growth due to a more counter-cyclical fiscal policy is attributable to a increase in labour productivity growth).

The natural question is then how big are the numbers estimated? To give a sense of the magnitudes involved here, we compute the growth gain for an industry moving from the 25% to the 75% percentile in external financial dependence in a country where fiscal policy counter-cyclicality would also move from the 25% to the 75% percentile, measuring fiscal policy with primary fiscal balance to GDP. The approximate growth gain in terms of real value added is between one and a half and two and a half percentage points per year while the growth gain in terms of productivity growth is around one percentage point per year.

[13] For instance, net primary fiscal balance to GDP is almost always counter-cyclical (positive output gap sensitivity) while total fiscal balance to GDP is pro-cyclical in a number of countries (negative output gap sensitivity).

| Time Period | 1980-2000 | 1980-2005 | 1985-2000 | 1985-2005 | 1990-2005 | 1990-2000 |
|---|---|---|---|---|---|---|
| Table 1b | 1,30% | 1,29% | 1,77% | 2,00% | 1,73% | 2,08% |
| Table 2b | 0,86% | 0,91% | 1,36% | 1,40% | 1,43% | 1,47% |

Table 3: Growth gain from a change in financial dependence and fiscal policy cyclicality

These numbers are fairly large especially if compared with the original results in Rajan and Zingales (1998). According to their results the real value added growth gain to moving from the 25% to the 75% percentile in terms of financial development and external financial dependence is roughly about 1% per year. Hence some of our estimates for labour productivity growth are larger than their estimates for real value added growth. On of the main reasons for this difference is that dispersion accross countries in the cylicality of primary fiscal balance is indeed very large. Hence moving from the 25% to the 75% percentile in terms of primary fiscal balance to GDP counter-cyclicality implies a very large change in the design of fiscal policy alon the cycle. Moreover this simple computation does not take into account the possible costs associated with the transition from a steady state with low fiscal policy counter-cyclicality to a steady state with high fiscal policy counter-cyclicality. It is therefore only meant to suggest that differences in fiscal policy counter-cyclicality can be an important driver of differences in value added and productivity growth at the industry level.

Before going into further investigation, it worth looking at two issues. The first one consists in verifying whether any particular country in the sample is indeed driving the empirical results. To examine this point we withdraw countries one by one and check whether the main results still hold.

Insert table 4a here

Table 3a indeed shows that the interaction of industry level external financial dependence and fiscal policy counter-cyclicality is always a significant determinant of industry real value added growth. Moreover estimated coefficients are relatively stable, which confirms that none of the countries in the sample is driving by itself the result that fiscal policy counter-cyclicality is growth enhancing neither in terms of statistical signif-

icance nor in terms economic magnitude. This is somewaht unsurprinsing given the relatively homogenous set of coutries we focus on. Table 4a shows that this also applies to labour productivity: no single country in the sample is responsible for the positive effect of fiscal policy counter-cyclicality on labour productivity.

Insert table 5a here

The second issue that devotes some attention is related to the existence of some industries with negative external financial dependence. These are industries for which capital expenditures have been lower than internally generated funds over the 1980-1990 period in the US. For such industries, a more counter-cyclical fiscal policy in the sense of a larger sensitivity of fiscal balance to the output gap translates into a lower (more negative) interaction term. A positive coefficient of the interaction term would then imply that a counter-cyclical fiscal policy is indeed growth reducing and not growth enhancing. To check the validity of this point, we separate the interaction term in two variables: an interaction between external financial dependence and fiscal policy counter-cyclicality for industries with positive external financial dependence and an interaction term for industries with negative external financial dependence. If counter-cyclical fiscal policy is indeed growth enhancing we should obtain a positive coefficient when financial dependence is positive but a negative coefficient when financial dependence is positive.

Insert table 6a here

Insert table 6b here

Table 6a and table 6b essentially show that splitting the interaction term into two components depending on whether external financial dependence is positive or negative tends to confirm the result that fiscal policy counter-cyclicality enhances real value added growth since the coefficient of the interaction term is positive only when external financial dependence is positive. Hence for industries with negative external financial dependence, moving from a pro to a counter-cyclical fiscal policy moves the interaction term from a positive to a negative figure which raises growth given the negative estimated coefficient. Note however that magnitude

and statistical significance of the estimated coefficient is larger for the positive component of the interaction term while the negative component is not always significant. This is not surprising given that industries with a negative external financial dependence represent a small share of the sample. Finally as is shown in table 7a and 7b, this result holds both for real value added as well as for labour productivity growth.

Insert table 7a here

Insert table 7b here

## 4.1 Opening the fiscal policy box

If fiscal policy, understood as fiscal balance, counter-cyclicality promotes growth in terms of value added and labour productivity, one is inclined to ask which component of fiscal policy is growth enhancing when counter-cyclical and which item of fiscal policy has no effect on growth through its counter-cyclicality. To provide a possible answer to this question, we examine two different decompositions. First we split fiscal policy into receipts and expenditures and ask counter-cyclicality in which component is (more) important for growth. Second, we divide fiscal expenditures between government consumption and government investment and ask a similar question.

Insert table 8a here

Insert table 8b here

Empirical evidence shows that counter-cyclicality in government receipts does not seem to play a significant role neither for real value added growth nor for labour productivity growth. This would suggest that the positive effect on growth of fiscal balance counter-cyclicality is mainly coming from counter-cyclicality in expenditures. Indeed the interaction term between external financial dependence and counter-cyclicality in government expenditures to GDP is a significant determinant of industry growth both for real value added

and labour productivity.

Insert table 9a here

Insert table 9b here

This brings two remarks. First it seems that the the positive impact of fiscal policy counter-cyclicality on growth deos not stem from the simple effect of automatic stabilizers since the latter is presumably more relevant for government receipts than for government expenditures. Put differently, the positive effect of counter-cyclical fiscal policy goes beyond the simple effect of automatic stabilizers. Second the result that counter-cyclicality in government expenditures is growth enhancing suggests that fiscal policy affects growth through a demand channel. If a countercyclical fiscal policy raises productivity growth by smoothing the aggregate demand, then it is natural that government expenditures are more important for stabilization than government receipts. In the model developed above, counter-cyclical government expenditures typically raise aggregate demand and hence the value of collateral in downturns which raises entrepreneurs' ability to invest in more productive, yet more risky projects. On the contrary counter-cyclical government receipts can do the same only as long as the effect of a reduction in taxes is not offset by the drop in aggregate demand. Next we focus on government expenditures and ask which type of expenditure is growth enhancing through its counter-cyclicality? To do so we focus on the impact of government consumption and government investment on real value added growth.

Insert table 10a here

Insert table 10b here

In this case, empirical evidence seems to point out that counter-cyclical fiscal policy is growth enhancing mainly through government consumption not government investment since the former is significant while the latter is not. There may be several reasons that can account for this result. First government consumption counter-cyclicality is likely to exhibit larger variation across countries than government investment counter-

cyclicality because in most countries government investment is planned over long time horizons so that countries end up being relatively similar in terms of government investment counter-cyclicality. On the contrary, government consumption counter-cyclicality displays much larger dispersion. As a matter of fact in our sample, dispersion across countries in government consumption counter-cyclicality $\sigma_c$ is about two times larger than dispersion in government investment counter-cyclicality $\sigma_i$. Second, the volume of government investment is relatively small compared to the volume of government consumption. Indeed in our sample, average government consumption to GDP across countries $m_c$ is more than six times larger than average government investment to GDP $m_i$.

| Time Period | 1980-2000 | 1980-2005 | 1985-2000 | 1985-2005 | 1990-2005 | 1990-2000 |
|---|---|---|---|---|---|---|
| $\sigma_c/\sigma_i$ | 2,17 | 2,59 | 1,84 | 2,34 | 2,08 | 1,37 |
| $m_c/m_i$ | 6,21 | 6,40 | 6,42 | 6,62 | 6,78 | 6,57 |

Table 11: Dispersion in government consumption relative to government investment

As a consequence the effect of government investment counter-cyclicality is likely to be of second order importance compared to the effect of government consumption counter-cyclicality. The empirical analysis for labour productivity growth delivers essentially a similar result. As in the case of real value added growth, counter-cyclicality in government consumption is a significant growth predictor while counter-cyclicality in government investment is not.

Insert table 12a here

Insert table 12b here

Hence the traditional distinction between government consumption -usually regarded as unproductive spending- and government investment -regarded as (more) productive spending- does not apply here. One reason for this result is possibly that countries where government consumption is more counter-cyclical are also countries where government consumption is more productive in the sense that it is more efficiently used as a substitute to private demand, especially in downturns.

## 4.2 Counter-cyclicality and competing stories

Up to now we have provided evidence that countercyclical fiscal policy has a significant positive impact on industry real value added and labour productivity growth. In this section, we challenge this result by looking at how its significance changes when it competes with standard factors that are know to affect growth at the industry level. Put differently, how robust is the effect of counter-cyclical fiscal policy on growth? To what extent are we picking up other stories? While an exhaustive study to determine how the story related stabilizing fiscal policy compares with alternative explanations would be very long, we propose to focus on a limited but insightful number of them. First if industries differ mainly in the split between internal and external funds to finance investment, then it seems natural that industries located in countries which have been borrowing from abroad, i.e. running current account deficits, should be growing faster because a current account deficit implies that the country as a whole is importing capital. On the contrary industries located in current account surplus countries should be growing slower, everything else equal. Empirical evidence shows however that this is not the case: the interaction of current account balance and external financial dependence has no significant impact neither on real value added growth nor on labour productivity growth while the impact of the interaction between external financial dependence and stabilizing fiscal policy is still significant. Moreover the magnitude of estimated coefficients is relatively unchanged while significance is enhanced. Hence the impact on growth of a stabilizing fiscal policy is robust to controlling for the current account balance.

Insert table 13a here

Insert table 13b here

Next we look at the impact of inflation. In theory one of the negative effects of inflation relates to its impact on the allocative efficiency of capital. When inflation is higher, the financial system allocates less efficiently capital. As a consequence, this negative effect is more likely to verified for industries with high reliance on external finance because investors will face more difficulties to identify the high productivity projects

which will translate into more capital allocated to low productivity projects. On the contrary, for industries with no external financial dependence, this negative effect does not apply by definition. Hence the negative impact of inflation should be dampened.

Insert table 14a here

Insert table 14b here

Empirical evidence provides two results. First inflation does exert a significant negative impact on industry growth which amplifies for industries with larger reliance on external capital. But this effect is robust only when real value added growth is on the LHS. Significance is lower or even absent when labour productivity growth is the dependent variable. What this means is that inflation is costly not necessarily because it reduces productivity growth but more likely because it reduces employment growth, firms adjusting their labour demand to cope with the misallocation of capital. This way, value added growth is hurt but productivity growth is not. Second, the effect of counter-cyclical fiscal policy is both significant and robust to the inclusion of inflation as a control variable. Put differently, the positive effect on growth of a stabilizing fiscal policy is not related the fact that countries in which fiscal policy is more counter-cyclical would be countries with lower average inflation and hence higher allocative efficiency.

Thirdly, we look at financial development. A large part of the growth literature stresses the impact of financial constraints on growth. Indeed industries with larger financial dependence are reasonably expected to grow faster if tey can access external fund more easily, at a cheaper cost. Hence, it seems natural to confront our results to the possibility that fiscal policy counter-cyclicality is simply a proxy for financial development, which could be a very natural outcome given the existence of a positive relationship between fiscal policy counter-cyclicality and financial development (cf. Aghion and Marisnecu (2007)). In the two next tables, we test how the effect of fiscal policy counter-cyclicality on growth compares with the effect of

financial development.

Insert table 15a here

Insert table 15b here

As previously, we focus on two different indicators for fiscal policy: total and primary fiscal balance counter-cyclicality. As to financial development, we also use two different indicators: private credit to GDP and stock market capitalization to GDP. For value added growth as for labour productivity growth, we do not find any case where the effect of counter-cyclical fiscal policy is not robust to introducing financial development. Hence we can conclude that the growth effect of cyclical macro policy is at least as important as can be the growth effect of structural reforms in the sense of fostering financial development or reducing barriers to access finance. While this sounds like an incredibly challenging result, it worth noting that the effect of financial development itself as highlighted by Rajan and Zingales in their paper is not robust to the sample we use here. Put differently the result that financial development raises growth at the industry level and more so for high financial dependence industry does not hold when focusing on developed OECD countries as we do here. Hence it is not surprising that we also end up with a similar result although with different data for a different period. While this general result clearly deserves more scrutiny to be taken for granted, an important policy implication is that structural reforms should go hand in hand with a reform in the design of cyclical macro policy.[14]

Finally if the cyclical component of fiscal policy does significantly affect real value added an labour productivity growth, it is also likely that the structural component of fiscal policy plays a similar role. Indeed counter-cyclical fiscal policy may be growth enhancing not because counter-cyclicality is valuable on its own but because counter-cyclicality in fiscal policy reflects better designed fiscal policy. higher efficiency. For instance if differences in fiscal balance counter-cyclicality systematically vary with differences in average

[14] Although we simply present regressions with real value added growth as a dependent variable, the same result applies to labour productivity growth. Moreover the growth effect of fiscal policy counter-cyclicality is also robust when the analysis is extended to include other right hand side financial variables such as liquid liabilities to GDP, private credit by banks or stock market turnover ratio. More generally, the same result holds when a horse race is run between fiscal policy counter-cyclicality on the one hand and average inflation, average openness to trade or average current account balance to GDP on the other hand.

fiscal balance across countries, then it could be that more counter-cyclical fiscal policy reflects higher fiscal discipline in which we could mistakenly attribute to fiscal counter-cyclicality what in reality is a result of fiscal discipline. To study this question, we run a horse race regression with counter-cyclicality in total fiscal balance (resp. primary fiscal balance) to GDP on the one hand and the average fiscal balance (resp. average primary balance) to GDP on the other hand.

Insert table 16a here

Insert table 16b here

Table 16a shows that the average level of the total fiscal balance to GDP ratio does not in general embed significant explanatory power to account for real value added growth. On the contrary the effect of counter-cyclical fiscal balance is still significant which implies that the effect of counter-cyclical fiscal policy on growth does no go through the structural component of fiscal policy. There are however some estimations where the average fiscal balance to GDP does play a significant positive impact, a lower average fiscal deficit to GDP raising industry value added growth (cf. column (i) and (iii)). Now when we turn to labour productivity growth on the LHS (table 16b), the average fiscal balance to GDP has so significant effect whatsoever, while counter-cyclicality in fiscal balance is still significant. The positive effect of a stabilizing fiscal policy on labour productivity growth is hence robust to controlling for the average fiscal policy balance and therefore does not proxy for the effectof average fiscal policy. However this does not necessarily imply that fiscal discipline in the sense of a moderate average fiscal deficit has no implications for growth. In particular fiscal discipline is likely to be a prerequisite for stabilizing fiscal policies in as much as a large average fiscal deficit would preclude any government from stabilizing the economy in downturns if the government, as any other agent faces a borrowing constraint.

### 4.3 Dampening effects

In the theoretical model described above, the impact of counter-cyclical fiscal policy on growth is amplified when external financial dependence is larger but dampened when the share of pledgeable income is bigger. In this section we test the second prediction, namely whether a larger share of pledgeable income tends to reduce the positive effect of fiscal policy counter–cyclicality on growth. Income pledgeability is captured through the volume of private credit to GDP because when a larger share of income is pledgeable to outside investors, entrepreneurs borrow more capital and the volume of credit is larger. Two additional terms are introduced compared with to the standard specification (15). We first add the interaction of private credit to GDP and external financial dependence and secondly the interaction of private credit to GDP, fiscal policy counter-cyclicality and external financial dependence. The first term controls for the positive effect of private credit on growth while the second term is designed to capture dampening effects of private credit on the impact of fiscal policy counter-cyclicality on growth. Note however that there may be alternative ways to investigate the existence of dampening effects. For instance countries could be divided between those with above and those with below median private credit to GDP. However this last procedure has not proved very successful in identifying dampening of amplifying effects. This is why we use a triple linear interaction.

Insert table 17a here

Insert table 17b here

We present estimations for real value added and labour productivity growth when the fiscal policy indicator is total fiscal balance to GDP. In this case empirical evidence shows that a larger volume of private credit to GDP effectively tends to dampen the positive effect on growth of fiscal policy counter-cyclicality since the coefficient of the triple interaction term is almost always negative. However this dampening effect is barely statistically significant, especially for labour productivity growth. There are two possible reasons. First it is likely that identifying dampening or amplifying effects through a triple interaction is difficult because the triple interaction term is likely to be collinear with the two simple interaction terms, especially

in our case where the number of countries is relatively small. Second private credit to GDP is likely to be a relatively poor proxy for income pledgeability. As a result, these empirical evidence are at best suggestive of the existence of dampening effects. But clearly more investigation is needed with a larger cross-country dimension and/or a better proxy for income pledgeability.

### 4.4 Instrumental variable estimation

An important limit to the empirical investigation we carry out in this paper is the fact that counter-cyclicality of macro policy cannot be observed. It can only be inferred through a regression. This can pose a number of problems. Among these problems lies the fact that counter-cyclicality is measured with a standard error. Hence OLS estimation is not consistent as long as we do not observe the "true" value of counter-cyclicality but a "noisy" one. Reducing the impact of this problem on the significance of our results can be done through instrumental variable estimations. Hence we instrument fiscal policy counter-cyclicality with variables which have two characteristics. First, these variables are directly observed, none is inferred from another model. Second they are all predetermined with respect to the counter-cyclicality index we instrument. This means that the period the instruments are observed on is anterior to the period on which counter-cyclicality has been inferred. We use as instruments log of GDP per worker, imports to GDP, current account balance to GDP, long term interest rate, CPI inflation and private credit to GDP.

Insert table 18a here

Insert table 18b here

The instrumental variable estimations are hence an attempt to determine whether the interaction between financial dependence and fiscal policy counter-cyclicality could be a significant determinant of industry level growth solely because the standard errors around the estimates of fiscal policy counter-cyclicality have not been properly taken into account in the estimations. Table 18a and table 18b provide estimations when total fiscal balance to GDP -the fiscal policy indicator used- is instrumented with variables detailed above.

Two main conclusions emerge from these estimations. First the positive effect of counter-cyclical fiscal policy on growth is robust to the instrumental variable estimation. For both value added growth and labour productivity growth, the results show that higher counter-cyclicality in fiscal policy significantly improves industry growth and the more so for industries with larger external financial dependence. The second conclusions that bears attention is that the magnitudes estimated in the IV estimations are either roughly similar to those we first estimated especially in tables 1 and table 2 or larger. Using instruments to estimate the effect of fiscal policy counter-cyclicality does not appear to modify at the first order the estimated differential in real value added and labour productivity growth rates stemming from different cyclicality in fiscal policies. Moreover what these estimations show is that in any case we would be willing to consider differences between IV and OLS estimations, that would imply larger rather smaller growth differentials given that the magnitude of coefficients is at least equal and in general larger with IV estimations. Finally as is shown in tables 19a and 19b, considering the case different interactions for positive and negative external financial dependence does not modify the above results: the effect on growth of fiscal policy counter-cyclicality interacted by external financial dependence is robust and in general larger with IV estimations.

Insert table 19a here

Insert table 19b here

# 5 Conclusions

In this paper we have tried to evaluate whether and how the cyclical pattern of macro policy can affect growth, focusing on fiscal policy. Following the Rajan-Zingales (1998) methodology, we have drawn a relationship between fiscal policy counter-cyclicality –measured at the macro level– and growth (both value added and productivity) at the industry level. This simple methodology has the advantage to properly handle the reverse causality issue: namely that within our setup, fiscal policy can affect growth while the opposite is not possible because the former is measured at the macro level while the latter is measured at the industry level. Based

on this framework, we have provided evidence that (i) industries have grown faster in economies where fiscal policy has been more counter-cyclical, both in terms of output and productivity (ii) that the positive growth effects of fiscal policy counter-cyclicality have been larger for industries which rely proportionally more on external finance. These two conclusions have been shown to be robust to the inclusion of a large number of structural macroeconomic variables, including financial development, openness to trade or net current account position. Hence, the cyclical pattern of fiscal policy is probably at least as important as can be structural features in their impact on growth.

The results have three different consequences for future research. First they call for a wide renewal of theoretical research on the business cycle and growth to build a proper assessment of the interactions that exist between them especially through the financial channel. Second, a natural question that emerges from this paper is whether and how the results on fiscal policy counter-cyclicality extend to monetary policy counter-cyclicality. This is an important question as monetary policy can move more easily than fiscal policy, although transmission lags can be larger for the former than the latter. Finally if the conclusion that counter-cyclicality in macro policy contributes to raise growth proves to be relevant, them comes the question of the determinants of counter-cyclicality and especially the institutional arrangements that can foster or prevent counter-cyclicality. This final theme could be of great importance to revisit the debate on growth and institutions.

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# 6 Appendix

| Countries in the sample | Abbreviations |
|---|---|
| Australia | AUS |
| Austria | AUT |
| Belgium | BEL |
| Germany | DEU |
| Denmark | DNK |
| Spain | ESP |
| Finland | FIN |
| France | FRA |
| Great-Britain | GBR |
| Greece | GRC |
| Ireland | IRE |
| Italy | ITA |
| Japan | JPN |
| Luxembourg | LUX |
| Netherlands | NLD |
| Portugal | PRT |
| Sweden | SWE |

Industries in the sample

| Description | ISIC rev.3 code |
|---|---|
| FOOD , BEVERAGES AND TOBACCO | 15t16 |
| Food and beverages | 15 |
| Tobacco | 16 |
| TEXTILES, TEXTILE , LEATHER AND FOOTWEAR | 17t19 |
| Textiles and textile | 17t18 |
| Textiles | 17 |
| Wearing apparel, dressing and dying of fur | 18 |
| Leather, leather and footwear | 19 |
| WOOD AND OF WOOD AND CORK | 20 |
| PULP, PAPER, PAPER , PRINTING AND PUBLISHING | 21t22 |
| Pulp, paper and paper | 21 |
| Printing, publishing and reproduction | 22 |
| Publishing | 221 |
| Printing and reproduction | 22x |
| CHEMICAL, RUBBER, PLASTICS AND FUEL | 23t25 |
| Coke, refined petroleum and nuclear fuel | 23 |
| Chemicals and chemical | 24 |
| Pharmaceuticals | 244 |
| Chemicals excluding pharmaceuticals | 24x |
| Rubber and plastics | 25 |
| OTHER NON-METALLIC MINERAL | 26 |
| BASIC METALS AND FABRICATED METAL | 27t28 |
| Basic metals | 27 |
| Fabricated metal | 28 |
| MACHINERY, NEC | 29 |
| ELECTRICAL AND OPTICAL EQUIPMENT | 30t33 |
| Office, accounting and computing machinery | 30 |
| Electrical engineering | 31t32 |
| Electrical machinery and apparatus, nec | 31 |
| Insulated wire | 313 |
| Other electrical machinery and apparatus nec | 31x |
| Radio, television and communication equipment | 32 |
| Electronic valves and tubes | 321 |
| Telecommunication equipment | 322 |
| Radio and television receivers | 323 |
| Medical, precision and optical instruments | 33 |
| Scientific instruments | 331t3 |
| Other instruments | 334t5 |
| TRANSPORT EQUIPMENT | 34t35 |
| Motor vehicles, trailers and semi-trailers | 34 |
| Other transport equipment | 35 |
| Building and repairing of ships and boats | 351 |
| Aircraft and spacecraft | 353 |
| Railroad equipment and transport equipment nec | 35x |
| MANUFACTURING NEC; RECYCLING | 36t37 |
| Manufacturing nec | 36 |
| Recycling | 37 |

Data Sources

| Variable | Source |
|---|---|
| Industry Real Value Added | EU KLEMS |
| Industry Labour Productivity | EU KLEMS |
| External Financial Dependence | Compustat |
| Output Gap | OECD Economic Outlook |
| Total Fiscal Balance | OECD Economic Outlook |
| Primary Fiscal Balance | OECD Economic Outlook |
| Government Consumption | OECD Economic Outlook |
| Government Investment | OECD Economic Outlook |
| Government Expenditues | OECD Economic Outlook |
| Government Receipts | OECD Economic Outlook |
| CPI Inflation | OECD Economic Outlook |
| Current Account Balance | OECD Economic Outlook |
| Private Credit | World Bank Financial Structure and Development |

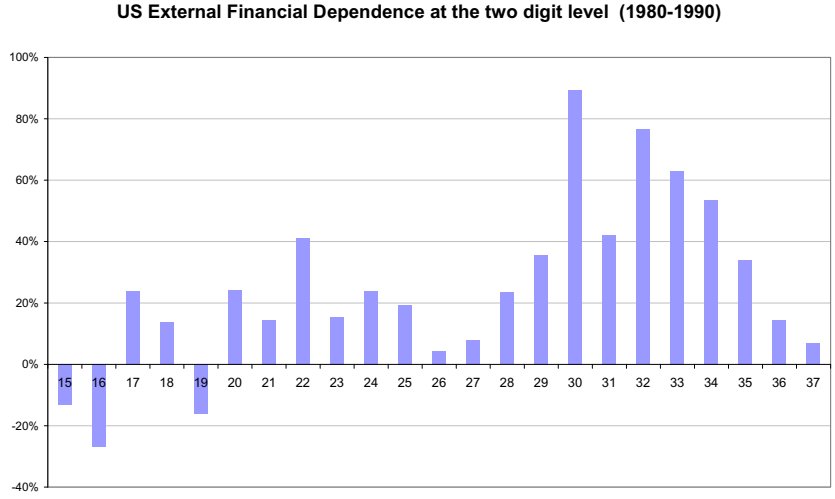


Figure 2

Source: Compustat and ISIC Rev. 3.

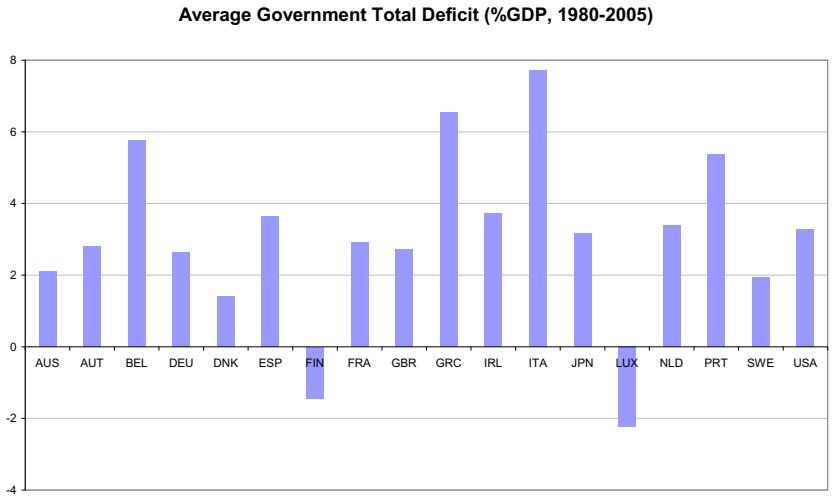


Figure 3

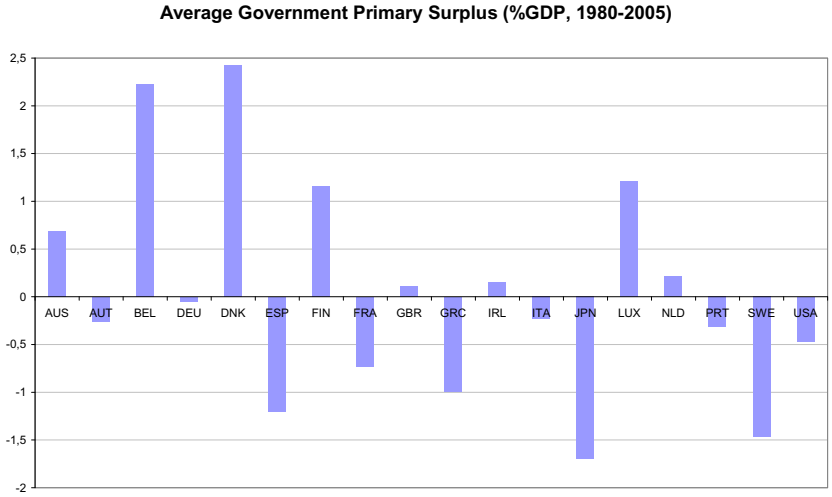


Figure 4

Source: OECD economic outlook and authors' computations.

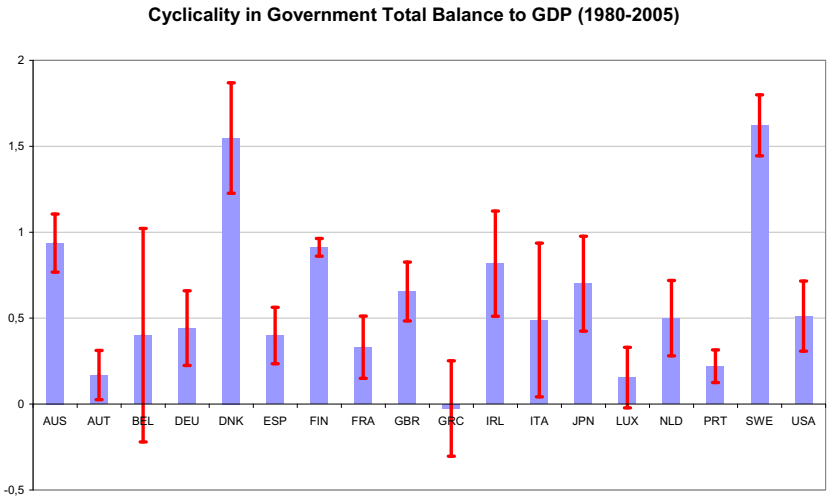


Figure 5

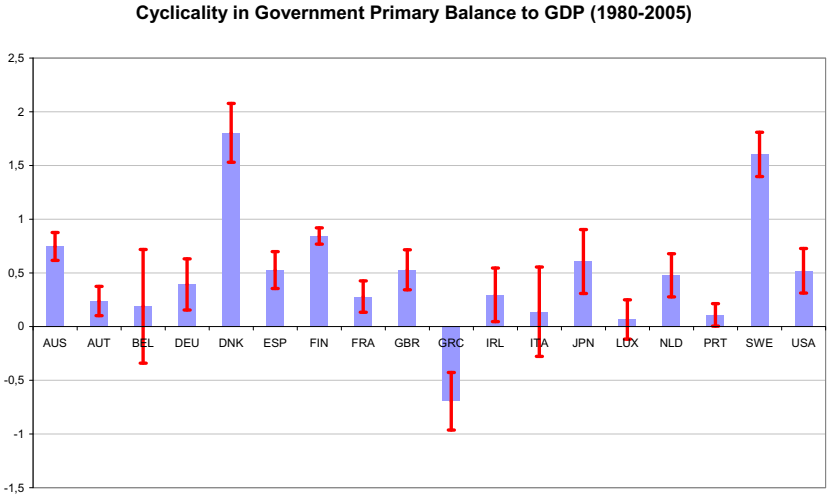


Figure 6

Note: Each bar represents the estimated coefficient $\alpha_i$ in the regression: $fb_{it} = \alpha_i (gap_{it}) + \beta_i + \varepsilon_{it}$ where $fb_{it}$ is alternatively government total fiscal balance to GDP (figure 5) or government primary fiscal balance to GDP (figure 6) in country $i$ at time $t$, $gap_{it}$ is the output gap in country $i$ at time $t$. Each line represents two standard deviations of the estimated coefficient $\alpha_i$. See below for the list of abbreviations of country names. Source: OECD economic outlook and authors' computations.

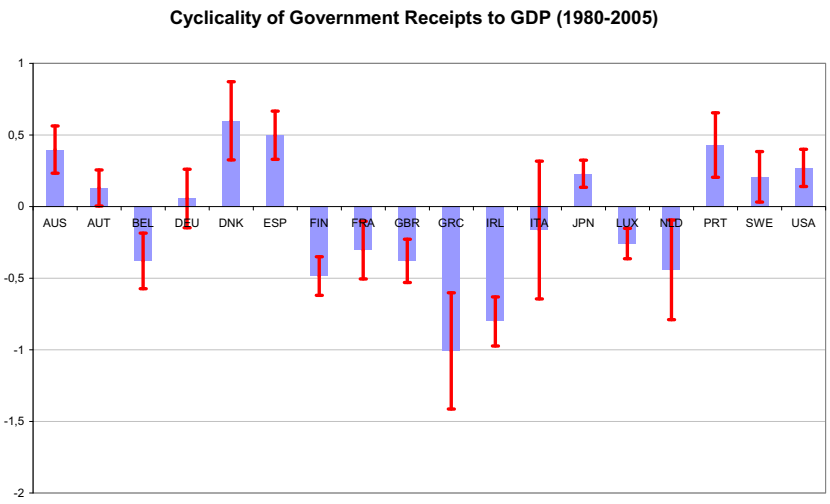


Figure 7

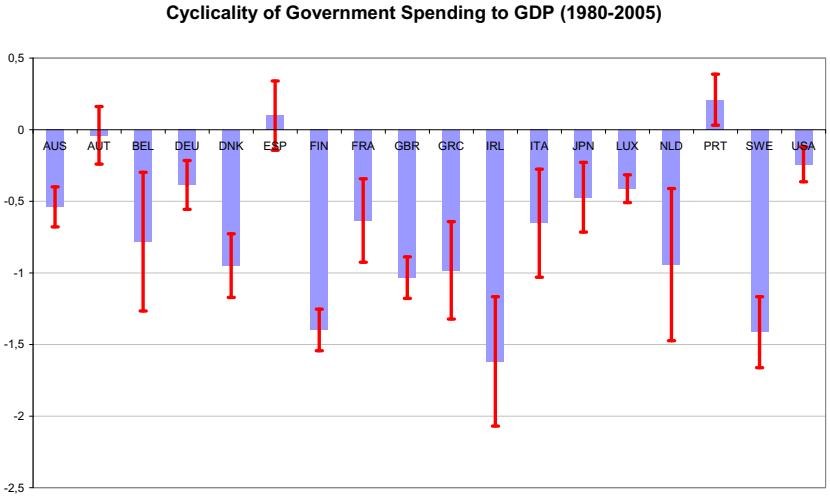


Figure 8

Note: Each bar represents the coefficient $\alpha_i$ in the OLS regression: $gy_{it} = \alpha_i (gap_{it}) + \beta_i + \varepsilon_{it}$ where $gy_{it}$ is alternatively government receipts to GDP (figure 7) or government spending to GDP (figure 8) in country $i$ at time $t$ and $gap_{it}$ is the output gap in country $i$ at time $t$. Each line represents two standard deviations of the estimated coefficient $\alpha_i$. See below for the list of abbreviations of country names. Source: OECD economic outlook and authors' computations.

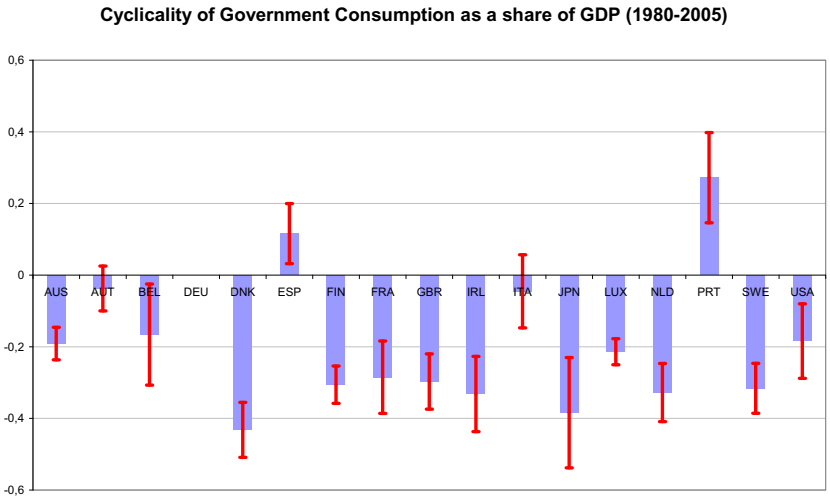


Figure 9

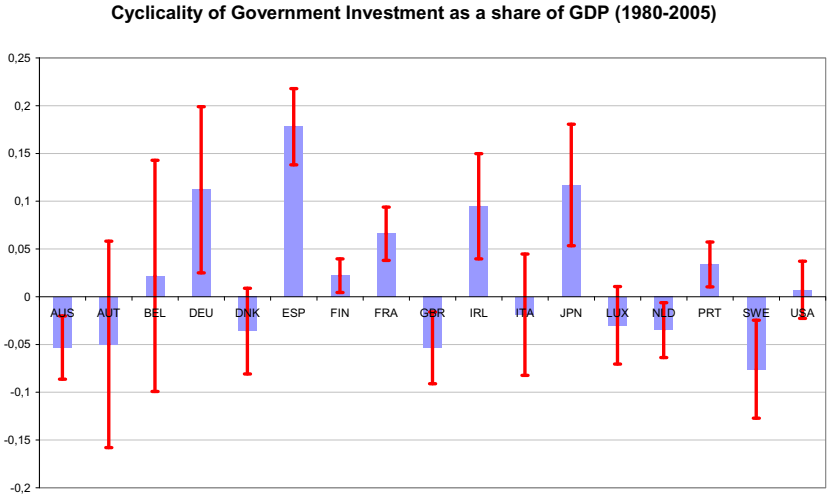


Figure 10

Note: Each bar represents the coefficient $\alpha_i$ in the OLS regression: $gd_{it} = \alpha_i (gap_{it}) + \beta_i + \varepsilon_{it}$ where $gc_{it}$ is alternatively government consumption to GDP (figure 9) or government investment to GDP (figure 10) in country $i$ at time $t$ and $gap_{it}$ is the output gap in country $i$ at time $t$. Each line represents two standard deviations of the estimated coefficient $\alpha_i$. See below for the list of abbreviations of country names. Source: OECD economic outlook and authors' computations.

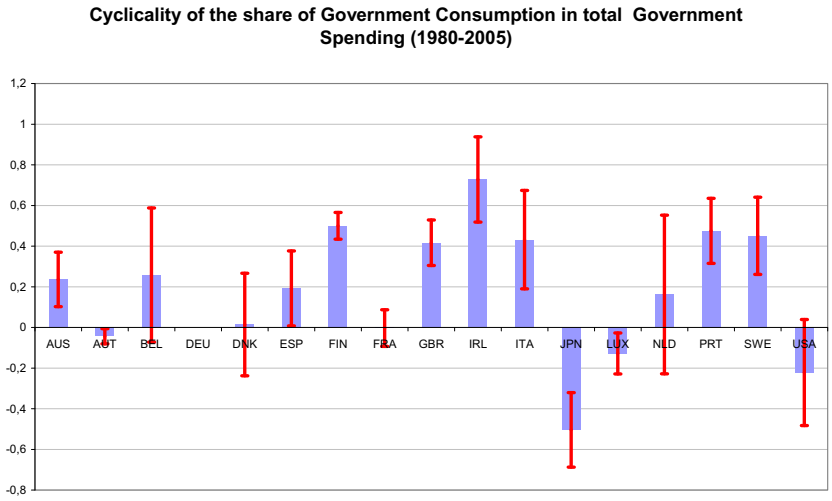


Figure 11

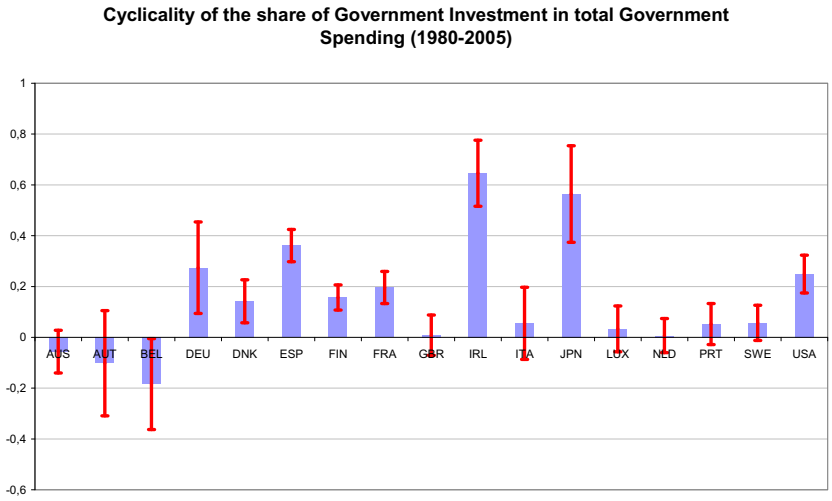


Figure 12

Note: Each bar represents the coefficient $\alpha_i$ in the OLS regression: $gds_{it} = \alpha_i (gap_{it}) + \beta_i + \varepsilon_{it}$ where $gds_{it}$ is alternatively the share of government consumption in total government spending (figure 11) or the share of government investment in total government spending (figure 12) in country $i$ at time $t$ and $gap_{it}$ is the output gap in country $i$ at time $t$. Each line represents two standard deviations of the estimated coefficient $\alpha_i$. See below for the list of abbreviations of country names. Source: OECD economic outlook and authors' computations.

| Table 1a: Real Value Added Growth and Total Fiscal Balance Counter-cyclicality | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (vi)<br>1990-2000 |
| Log of Initial Share in Manufacturing Value Added | **-0.903*****<br>*(0.242)* | **-0.930*****<br>*(0.251)* | **-0.648**<br>*(0.374)* | **-0.737***<br>*(0.410)* | **-0.739**<br>*(0.473)* | **-1.124***<br>*(0.550)* |
| Interaction (External Financial Dependence × Total Fiscal Balance to GDP Counter-Cyclicality) | **7.003*****<br>*(1.998)* | **6.786*****<br>*(2.294)* | **6.393****<br>*(2.551)* | **7.375*****<br>*(2.299)* | **4.815****<br>*(2.138)* | **5.788****<br>*(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-Cyclicality* 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-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. **; *).

| Table 1b: Real Value Added Growth and Primary Fiscal Balance Counter-cyclicality | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (vi)<br>1990-2000 |
| Log of Initial Share in Manufacturing Value Added | **-0.933*****<br>*(0.217)* | **-0.925*****<br>*(0.219)* | **-0.688***<br>*(0.383)* | **-0.721***<br>*(0.407)* | **-0.816**<br>*(0.487)* | **-1.137***<br>*(0.551)* |
| Interaction (External Financial dependence × Primary Fiscal Balance to GDP Counter-Cyclicality) | **5.409*****<br>*(1.419)* | **5.343*****<br>*(1.786)* | **5.330*****<br>*(1.680)* | **5.947*****<br>*(1.714)* | **4.772****<br>*(2.056)* | **5.413****<br>*(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-Cyclicality* 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-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. **; *).

| Table 2a: Labor Productivity Growth and Total Fiscal Balance Counter-cyclicality | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (vi)<br>1990-2000 |
| Log of Initial Relative Labor Productivity | **-2.096*****<br>*(0.533)* | **-2.332*****<br>*(0.516)* | **-2.081*****<br>*(0.524)* | **-2.475*****<br>*(0.685)* | **-2.199*****<br>*(0.487)* | **-3.247*****<br>*(0.737)* |
| Interaction (External Financial dependence × Total Fiscal Balance to GDP Counter-Cyclicality) | **4.479*****<br>*(1.282)* | **4.732*****<br>*(1.002)* | **4.576****<br>*(1.991)* | **4.829*****<br>*(1.526)* | **3.810***<br>*(1.849)* | **4.027****<br>*(1.620)* |
| Observations | 573 | 573 | 573 | 573 | 586 | 586 |
| R-squared | 0.442 | 0.412 | 0.451 | 0.432 | 0.414 | 0.398 |

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. *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. The interaction variable is the product of external financial dependence and net 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. **; *).

| Table 2b: Labor Productivity Growth and Primary Fiscal Balance Counter-cyclicality | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (vi)<br>1990-2000 |
| Log of Initial Relative Labor Productivity | **-2.127*****<br>*(0.566)* | **-2.333*****<br>*(0.527)* | **-2.048*****<br>*(0.504)* | **-2.474*****<br>*(0.661)* | **-2.154*****<br>*(0.495)* | **-3.241*****<br>*(0.735)* |
| Interaction (External Financial dependence × Primary Fiscal Balance to GDP Counter-Cyclicality) | **3.575*****<br>*(0.704)* | **3.759*****<br>*(0.641)* | **4.095*****<br>*(1.229)* | **4.160*****<br>*(1.070)* | **3.935****<br>*(1.492)* | **3.839****<br>*(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-Cyclicality* 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-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. **; *).

**Table 4a: Real Value Added Growth and Fiscal Policy Counter-cyclicality**

| Estimation Period: 1980-2005<br>Country withdrawn | None | AUS | AUT | BEL | DEU | DNK | ESP | FIN | FRA |
|---|---|---|---|---|---|---|---|---|---|
| Log of initial share in manufacturing Value Added | **-0.903*** ** | **-0.896*** ** | **-0.839*** ** | **-0.872*** ** | **-0.909*** ** | **-0.943*** ** | **-0.833*** ** | **-0.877*** ** | **-0.993*** ** |
| | *(0.242)* | *(0.251)* | *(0.241)* | *(0.253)* | *(0.256)* | *(0.244)* | *(0.263)* | *(0.247)* | *(0.249)* |
| Interaction (External Financial dependence × Total Fiscal Balance to GDP Counter-Cyclicality) | **7.003*** ** | **7.211*** ** | **7.478*** ** | **6.712*** ** | **7.160*** ** | **7.888** ** | **6.580*** ** | **6.784*** ** | **8.089*** ** |
| | *(1.998)* | *(2.081)* | *(2.126)* | *(2.074)* | *(2.046)* | *(2.685)* | *(1.973)* | *(1.955)* | *(1.917)* |
| Observations | 574 | 542 | 541 | 538 | 543 | 539 | 530 | 543 | 533 |
| R-squared | 0.523 | 0.522 | 0.521 | 0.529 | 0.521 | 0.512 | 0.557 | 0.514 | 0.620 |
| Estimation Period: 1980-2005<br>Country withdrawn | GBR | GRC | IRL | ITA | JPN | LUX | NLD | PRT | SWE |
| Log of initial share in manufacturing Value Added | **-0.839*** ** | **-1.016*** ** | **-0.869*** ** | **-0.937*** ** | **-1.044*** ** | **-0.803*** ** | **-0.841*** ** | **-0.921*** ** | **-0.888*** ** |
| | *(0.279)* | *(0.231)* | *(0.258)* | *(0.238)* | *(0.223)* | *(0.267)* | *(0.251)* | *(0.261)* | *(0.271)* |
| Interaction (External Financial dependence × Total Fiscal Balance to GDP Counter-Cyclicality) | **7.078*** ** | **5.558*** ** | **6.420*** ** | **6.831*** ** | **7.030*** ** | **6.951*** ** | **6.882*** ** | **7.029*** ** | **7.732** ** |
| | *(1.997)* | *(1.565)* | *(1.724)* | *(2.088)* | *(1.965)* | *(2.017)* | *(2.042)* | *(2.166)* | *(2.713)* |
| Observations | 529 | 541 | 534 | 547 | 536 | 553 | 547 | 546 | 542 |
| R-squared | 0.544 | 0.523 | 0.463 | 0.532 | 0.522 | 0.527 | 0.528 | 0.527 | 0.527 |

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. The country code in each column represents the country withdrawn from sample estimation. *Initial Share in Manufacturing Value Added* is the the ratio of industry beginning of period real value added 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. *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. The interaction variable is the product of 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. **; *).

| Table 5a: Labor Productivity Growth and Fiscal Policy Counter-cyclicality | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Estimation Period: 1980-2005<br>Country withdrawn | None | AUS | AUT | BEL | DEU | DNK | ESP | FIN | FRA |
| Log of Initial Relative Productivity | **-2.127*** **<br>*(0.566)* | **-2.101*** **<br>*(0.580)* | **-1.953*** **<br>*(0.592)* | **-2.093*** **<br>*(0.561)* | **-2.091*** **<br>*(0.571)* | **-2.039*** **<br>*(0.604)* | **-2.049*** **<br>*(0.563)* | **-2.102*** **<br>*(0.593)* | **-2.416*** **<br>*(0.621)* |
| Interaction (External Financial dependence × Primary Fiscal Balance to GDP Counter-Cyclicality) | **3.575*** **<br>*(0.704)* | **3.665*** **<br>*(0.679)* | **3.645*** **<br>*(0.719)* | **3.497*** **<br>*(0.744)* | **3.615*** **<br>*(0.715)* | **3.590*** **<br>*(1.071)* | **3.645*** **<br>*(0.662)* | **3.633*** **<br>*(0.714)* | **3.943*** **<br>*(0.599)* |
| Observations | 573 | 542 | 540 | 537 | 546 | 537 | 529 | 541 | 532 |
| R-squared | 0.443 | 0.442 | 0.444 | 0.446 | 0.442 | 0.432 | 0.460 | 0.433 | 0.573 |
| Estimation Period: 1980-2005<br>Country withdrawn | GBR | GRC | IRL | ITA | JPN | LUX | NLD | PRT | SWE |
| Log of Initial Relative Productivity | **-2.089*** **<br>*(0.567)* | **-2.060*** **<br>*(0.654)* | **-1.727** **<br>*(0.632)* | **-2.161*** **<br>*(0.551)* | **-2.517*** **<br>*(0.425)* | **-2.285*** **<br>*(0.536)* | **-2.114*** **<br>*(0.576)* | **-2.188*** **<br>*(0.633)* | **-2.141*** **<br>*(0.602)* |
| Interaction (External Financial dependence) × (Primary Fiscal Balance to GDP Counter-Cyclicality) | **3.613*** **<br>*(0.691)* | **3.223*** **<br>*(1.065)* | **3.876*** **<br>*(0.691)* | **3.411*** **<br>*(0.743)* | **3.619*** **<br>*(0.674)* | **3.457*** **<br>*(0.712)* | **3.568*** **<br>*(0.702)* | **3.649*** **<br>*(0.730)* | **3.004*** **<br>*(0.778)* |
| Observations | 529 | 540 | 533 | 546 | 532 | 552 | 547 | 544 | 541 |
| R-squared | 0.451 | 0.430 | 0.379 | 0.446 | 0.486 | 0.453 | 0.451 | 0.444 | 0.438 |

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. The country code in each column represents the country withdrawn from sample estimation. *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. *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. The interaction variable is the product of external financial dependence and total fiscal balance to GDP counter-cyclicality. 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. **; *).

| Table 6a: Real Value Added Growth and Total Fiscal Balance Counter-cyclicality | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (vi)<br>1990-2000 |
| Log of Initial Share in Manufacturing Value Added | **-0.959*****<br>*(0.245)* | **-0.969*****<br>*(0.256)* | **-0.715***<br>*(0.366)* | **-0.782***<br>*(0.420)* | **-0.837***<br>*(0.477)* | **-1.232****<br>*(0.554)* |
| (Positive External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicality) | **9.009*****<br>*(2.542)* | **8.308*****<br>*(2.642)* | **8.809*****<br>*(2.869)* | **9.113*****<br>*(2.504)* | **7.571****<br>*(2.694)* | **8.570*****<br>*(2.078)* |
| (Negative External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicality) | **-6.459**<br>*(3.895)* | **-2.973**<br>*(5.303)* | **-10.58****<br>*(4.463)* | **-4.268**<br>*(6.099)* | **-14.19*****<br>*(3.896)* | **-13.05***<br>*(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. **; *).

| Table 6b: Real Value Added Growth and Primary Fiscal Balance Counter-cyclicality | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (vi)<br>1990-2000 |
| Log of initial share in manufacturing Value Added | **-0.971*****<br>*(0.214)* | **-0.951*****<br>*(0.218)* | **-0.736***<br>*(0.381)* | **-0.752***<br>*(0.414)* | **-0.890***<br>*(0.502)* | **-1.209****<br>*(0.551)* |
| (Positive External Financial Dependence) × (Primary Fiscal Balance to GDP counter-Cyclicality) | **6.756*****<br>*(1.753)* | **6.376*****<br>*(1.886)* | **7.007*****<br>*(1.979)* | **7.175*****<br>*(1.819)* | **7.069****<br>*(2.573)* | **7.532*****<br>*(1.919)* |
| (Negative External Financial Dependence) × (Primary Fiscal Balance to GDP counter-Cyclicality) | **-3.076**<br>*(2.022)* | **-1.091**<br>*(3.816)* | **-5.582***<br>*(2.734)* | **-2.025**<br>*(4.082)* | **-11.47*****<br>*(3.830)* | **-9.709**<br>*(6.288)* |
| Observations | 574 | 575 | 576 | 577 | 594 | 595 |
| R-squared | 0.524 | 0.509 | 0.512 | 0.503 | 0.487 | 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. *Primary Fiscal Balance to GDP Counter-Cyclicality* 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 positive or negative external financial dependence and primary 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. **; *).

| Table 7a: Labor Productivity Growth and Total Fiscal Balance Counter-cyclicality | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (vi)<br>1990-2000 |
| Log of Initial Relative Labour Productivity | **-2.105*****<br>*(0.518)* | **-2.317*****<br>*(0.527)* | **-2.182*****<br>*(0.488)* | **-2.524*****<br>*(0.684)* | **-2.480*****<br>*(0.385)* | **-3.552*****<br>*(0.638)* |
| (Positive External Financial Dependence) × (Total Fiscal Balance to GDP counter-Cyclicality) | **7.493*****<br>*(1.464)* | **7.303*****<br>*(1.370)* | **8.659*****<br>*(2.093)* | **7.859*****<br>*(1.427)* | **7.652*****<br>*(2.213)* | **7.664*****<br>*(1.511)* |
| (Negative External Financial Dependence) × (Total Fiscal Balance to GDP counter-Cyclicality) | **-15.89*****<br>*(5.222)* | **-12.40*****<br>*(3.941)* | **-24.05*****<br>*(5.199)* | **-16.01****<br>*(6.937)* | **-23.83*****<br>*(4.347)* | **-22.26*****<br>*(4.829)* |
| Observations | 573 | 573 | 573 | 573 | 586 | 586 |
| R-squared | 0.453 | 0.419 | 0.472 | 0.443 | 0.445 | 0.425 |

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 beginning of period labor productivity at the industry level 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-Cyclicality* 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 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. **; *).

| Table 7b: Labor Productivity Growth and Primary Fiscal Balance Counter-cyclicality | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (vi)<br>1990-2000 |
| Log of Initial Relative Labor Productivity | **-2.140*****<br>*(0.555)* | **-2.319*****<br>*(0.537)* | **-2.127*****<br>*(0.479)* | **-2.506*****<br>*(0.665)* | **-2.445*****<br>*(0.390)* | **-3.539*****<br>*(0.645)* |
| (Positive External Financial Dependence) × (Primary Fiscal Balance to GDP counter-Cyclicality) | **5.805*****<br>*(0.839)* | **5.678*****<br>*(0.772)* | **7.062*****<br>*(1.340)* | **6.511*****<br>*(0.962)* | **7.349*****<br>*(1.756)* | **6.854*****<br>*(1.341)* |
| (Negative External Financial Dependence) × (Primary Fiscal Balance to GDP counter-Cyclicality) | **-10.81*****<br>*(3.565)* | **-8.592*****<br>*(2.666)* | **-15.69*****<br>*(4.175)* | **-11.45****<br>*(5.105)* | **-21.00*****<br>*(4.121)* | **-18.83*****<br>*(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-Cyclicality* 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-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. **; *).

| Table 8a: Real Value Added Growth and Government Receipts to GDP Counter-Cyclicality | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (vi)<br>1990-2000 |
| Log of Initial Share in Manufacturing Value Added | **-0.682**** | **-0.686**** | **-0.365** | **-0.421** | **-0.396** | **-0.778** |
| | *(0.269)* | *(0.260)* | *(0.392)* | *(0.339)* | *(0.490)* | *(0.535)* |
| (Positive External Financial Dependence) × (Government Receipts to GDP Counter-Cyclicality) | **1.248** | **2.398** | **2.423** | **4.677** | **1.613** | **7.489** |
| | *(4.525)* | *(4.005)* | *(5.756)* | *(5.044)* | *(4.522)* | *(4.638)* |
| (Negative External Financial Dependence) × (Government Receipts to GDP Counter-Cyclicality) | **0.742** | **0.280** | **-5.473** | **-3.591** | **-16.38**** | **-21.37*** |
| | *(3.986)* | *(3.931)* | *(6.696)* | *(6.750)* | *(6.522)* | *(10.43)* |
| Observations | 574 | 575 | 576 | 577 | 594 | 595 |
| R-squared | 0.503 | 0.492 | 0.491 | 0.485 | 0.462 | 0.441 |

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 Receipts to GDP Counter-Cyclicality* 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-cyclicality. 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. **; *).

| Table 8b: Labor Productivity Growth and Government Receipts to GDP Counter-Cyclicality | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (vi)<br>1990-2000 |
| Log of Initial Relative Labour Productivity | **-2.212*****<br>*(0.572)* | **-2.404*****<br>*(0.539)* | **-2.254*****<br>*(0.518)* | **-2.637*****<br>*(0.676)* | **-2.366*****<br>*(0.440)* | **-3.489*****<br>*(0.658)* |
| (Positive External Financial Dependence) × (Government Receipts to GDP Counter-Cyclicality) | **1.356**<br>*(2.919)* | **2.311**<br>*(2.632)* | **3.872**<br>*(3.886)* | **6.087***<br>*(3.029)* | **3.285**<br>*(3.412)* | **9.185*****<br>*(3.017)* |
| (Negative External Financial Dependence) × (Government Receipts to GDP Counter-Cyclicality) | **-1.155**<br>*(5.722)* | **-3.208**<br>*(3.956)* | **-9.719**<br>*(9.249)* | **-12.56***<br>*(6.100)* | **-20.71****<br>*(9.482)* | **-33.10*****<br>*(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-Cyclicality* 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-cyclicality. 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. **; *).

| Table 9a: Real Value Added Growth and Government Spending to GDP Counter-Cyclicality | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (vi)<br>1990-2000 |
| Log of Initial Share in Manufacturing Value Added | **-0.770**** | **-0.770*** | **-0.523** | **-0.545** | **-0.880*** | **-1.304**** |
| | *(0.349)* | *(0.416)* | *(0.458)* | *(0.537)* | *(0.468)* | *(0.562)* |
| (Positive External Financial Dependence) × (Government Spending to GDP Pro-Cyclicality) | **-4.490**** | **-3.785** | **-5.756**** | **-5.670** | **-10.09***** | **-13.51***** |
| | *(1.960)* | *(2.574)* | *(2.331)* | *(3.557)* | *(2.431)* | *(2.587)* |
| (Negative External Financial Dependence) × (Government Spending to GDP Pro-Cyclicality) | **4.642** | **2.203** | **5.943** | **1.906** | **10.53*** | **11.03** |
| | *(3.553)* | *(4.485)* | *(4.572)* | *(6.396)* | *(5.217)* | *(11.27)* |
| Observations | 574 | 575 | 576 | 577 | 594 | 595 |
| R-squared | 0.511 | 0.495 | 0.501 | 0.489 | 0.491 | 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 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 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 total 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. **; *).

| Table 9b: Labor Productivity Growth and Government Spending to GDP Counter-Cyclicality | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (vi)<br>1990-2000 |
| Log of Initial Relative Labor Productivity | **-2.143*****<br>*(0.553)* | **-2.394*****<br>*(0.563)* | **-2.224*****<br>*(0.553)* | **-2.672*****<br>*(0.764)* | **-2.413*****<br>*(0.443)* | **-3.507*****<br>*(0.666)* |
| (Positive External Financial Dependence) × (Government Spending to GDP Pro-Cyclicality) | **-3.688*****<br>*(1.157)* | **-3.434****<br>*(1.349)* | **-4.927****<br>*(2.244)* | **-3.624***<br>*(2.101)* | **-9.233*****<br>*(1.613)* | **-9.823*****<br>*(2.632)* |
| (Negative External Financial Dependence) × (Government Spending to GDP Pro-Cyclicality) | **9.668****<br>*(3.648)* | **6.825**<br>*(4.134)* | **14.40****<br>*(5.936)* | **7.439**<br>*(5.608)* | **22.42*****<br>*(7.357)* | **22.02****<br>*(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. **; *).

| Table 10a: Real Value Added Growth and Government Investment to GDP Counter-Cyclicality | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (vi)<br>1990-2000 |
| Log of Initial Share in Manufacturing Value Added | **-0.867*****<br>*(0.257)* | **-0.947*****<br>*(0.289)* | **-0.594***<br>*(0.309)* | **-0.607***<br>*(0.349)* | **-0.643***<br>*(0.376)* | **-1.055****<br>*(0.504)* |
| (Positive External Financial Dependence) × (Government Investment to GDP Pro-Cyclicality) | **2.918**<br>*(12.50)* | **-8.423**<br>*(10.23)* | **27.79***<br>*(14.54)* | **4.272**<br>*(13.27)* | **-1.880**<br>*(14.36)* | **-18.76**<br>*(11.78)* |
| (Negative External Financial Dependence) × (Government Investment to GDP Pro-Cyclicality) | **2.431**<br>*(31.67)* | **0.342**<br>*(28.19)* | **-32.57**<br>*(30.61)* | **-20.21**<br>*(34.46)* | **45.13**<br>*(32.35)* | **50.97**<br>*(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. **; *).

| Table 10b: Labor Productivity Growth and Government Investment to GDP Counter-Cyclicality | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (vi)<br>1990-2000 |
| Log of Initial Relative Labor Productivity | **-2.019*****<br>*(0.535)* | **-2.182*****<br>*(0.580)* | **-1.962*****<br>*(0.553)* | **-2.283*****<br>*(0.646)* | **-2.238*****<br>*(0.532)* | **-3.285*****<br>*(0.686)* |
| (Positive External Financial Dependence) × (Government Investment to GDP Pro-Cyclicality) | **-7.242**<br>*(11.39)* | **-9.828**<br>*(9.479)* | **20.50***<br>*(11.80)* | **5.261**<br>*(10.53)* | **-9.561**<br>*(12.33)* | **-15.54***<br>*(9.098)* |
| (Negative External Financial Dependence) × (Government Investment to GDP Pro-Cyclicality) | **21.39**<br>*(33.38)* | **21.02**<br>*(32.02)* | **-26.59**<br>*(30.75)* | **-17.25**<br>*(33.29)* | **61.87***<br>*(32.47)* | **46.20**<br>*(36.32)* |
| Observations | 540 | 540 | 540 | 540 | 553 | 553 |
| R-squared | 0.423 | 0.381 | 0.444 | 0.402 | 0.421 | 0.390 |

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 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 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. **; *).

| Table 12a: Real Value Added Growth and Government Consumption to GDP Counter-Cyclicality | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (vi)<br>1990-2000 |
| Log of Initial Share in Manufacturing Value Added | **-1.212*** **<br>*(0.243)* | **-1.191*** **<br>*(0.324)* | **-0.761** **<br>*(0.318)* | **-0.682* **<br>*(0.372)* | **-1.059* **<br>*(0.509)* | **-1.586** **<br>*(0.555)* |
| (Positive External Financial Dependence) × (Government Consumption to GDP Pro-Cyclicality) | **-19.98*** **<br>*(5.354)* | **-19.02*** **<br>*(4.567)* | **-19.20*** **<br>*(6.167)* | **-15.44** **<br>*(6.764)* | **-21.70*** **<br>*(5.969)* | **-31.77*** **<br>*(5.854)* |
| (Negative External Financial Dependence) × (Government Consumption to GDP Pro-Cyclicality) | **13.75**<br>*(11.86)* | **7.092**<br>*(12.27)* | **14.89**<br>*(13.65)* | **-2.531**<br>*(16.14)* | **25.71**<br>*(20.30)* | **37.20**<br>*(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. **; *).

| Table 12b: Labor Productivity Growth and Government Consumption to GDP Counter-Cyclicality | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (vi)<br>1990-2000 |
| Log of Initial Relative Labor Productivity | **-1.989*** ** | **-2.132*** ** | **-1.893*** ** | **-2.176** ** | **-2.459*** ** | **-3.512*** ** |
| | *(0.585)* | *(0.607)* | *(0.600)* | *(0.844)* | *(0.485)* | *(0.697)* |
| (Positive External Financial Dependence) × (Government Consumption to GDP Pro-Cyclicality) | **-11.87** ** | **-13.82*** ** | **-16.16*** | **-8.892** | **-18.90*** ** | **-20.59*** ** |
| | *(4.050)* | *(4.207)* | *(8.646)* | *(6.145)* | *(3.051)* | *(4.127)* |
| (Negative External Financial Dependence) × (Government Consumption to GDP Pro-Cyclicality) | **24.90** ** | **22.44** | **28.53** | **4.595** | **29.27** | **34.39** |
| | *(9.517)* | *(12.97)* | *(17.33)* | *(10.41)* | *(22.33)* | *(33.99)* |
| Observations | 513 | 513 | 513 | 513 | 526 | 526 |
| R-squared | 0.431 | 0.390 | 0.458 | 0.412 | 0.451 | 0.423 |

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 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. **; *).

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

| 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 | **-1.053*** ** *(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-Cyclicality) | **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-Cyclicality) | **-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-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 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. **; *).

**Table 13b: Labor Productivity Growth, Total Fiscal Balance Counter-Cyclicality and Current Account Balance**

| Estimation Period | (i) 1980-2005 | (ii) 1980-2000 | (iii) 1985-2005 | (iv) 1985-2000 | (v) 1990-2005 | (iv) 1990-2000 |
|---|---|---|---|---|---|---|
| Log of Initial Relative Labor Productivity | **-2.097*** ** | **-2.277*** ** | **-2.076*** ** | **-2.378*** ** | **-2.493*** ** | **-3.516*** ** |
| | *(0.528)* | *(0.548)* | *(0.491)* | *(0.718)* | *(0.390)* | *(0.664)* |
| (Positive External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicality) | **7.503*** ** | **7.337*** ** | **7.990*** ** | **7.664*** ** | **7.281*** ** | **7.591*** ** |
| | *(1.585)* | *(1.407)* | *(1.914)* | *(1.648)* | *(1.767)* | *(1.369)* |
| (Negative External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicality) | **-16.13*** ** | **-12.69*** ** | **-25.21*** ** | **-18.41** ** | **-23.48*** ** | **-23.30*** ** |
| | *(5.369)* | *(3.795)* | *(4.973)* | *(6.847)* | *(4.045)* | *(4.074)* |
| (Positive External Financial Dependence) × (Average Current Account Balance to GDP) | **-0.007** | **-0.194** | **0.448** | **0.354** | **0.615** | **0.343** |
| | *(0.328)* | *(0.318)* | *(0.510)* | *(0.743)* | *(0.356)* | *(0.450)* |
| (Negative External Financial Dependence) × (Average Current Account Balance to GDP) | **0.225** | **1.186** | **0.511** | **1.795** | **-0.687** | **1.835** |
| | *(0.807)* | *(1.222)* | *(1.070)* | *(1.892)* | *(0.931)* | *(1.579)* |
| Observations | 573 | 573 | 573 | 573 | 586 | 586 |
| R-squared | 0.453 | 0.420 | 0.476 | 0.448 | 0.452 | 0.430 |

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-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 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 sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **; *).

| Table 14a: Real Value Added Growth, Total Fiscal Balance Counter-Cyclicality and Inflation | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (iv)<br>1990-2000 |
| Log of Initial Share in Manufacturing Value Added | **-1.155*****<br>*(0.197)* | **-1.167*****<br>*(0.218)* | **-0.917****<br>*(0.336)* | **-0.949****<br>*(0.387)* | **-1.105****<br>*(0.486)* | **-1.425****<br>*(0.540)* |
| (Positive External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicality) | **7.877*****<br>*(2.050)* | **6.937*****<br>*(1.963)* | **6.176****<br>*(2.154)* | **6.276*****<br>*(1.916)* | **5.889****<br>*(2.576)* | **6.506*****<br>*(2.212)* |
| (Negative External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicality) | **-9.646***<br>*(4.607)* | **-5.951**<br>*(4.749)* | **-17.27*****<br>*(5.705)* | **-10.43**<br>*(5.988)* | **-17.40*****<br>*(4.812)* | **-17.27****<br>*(5.987)* |
| (Overall External Financial Dependence) × (Average CPI Inflation) | **-0.890****<br>*(0.307)* | **-0.841*****<br>*(0.267)* | **-1.555*****<br>*(0.453)* | **-1.309*****<br>*(0.397)* | **-1.984*****<br>*(0.602)* | **-1.633*****<br>*(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. **; *).

| Table 14b: Labor Productivity Growth, Total Fiscal Balance Counter-Cyclicality and Inflation | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (iv)<br>1990-2000 |
| Log of Initial Relative Labor Productivity | **-2.079*****<br>*(0.517)* | **-2.271*****<br>*(0.518)* | **-1.960*****<br>*(0.507)* | **-2.272*****<br>*(0.719)* | **-2.377*****<br>*(0.396)* | **-3.466*****<br>*(0.652)* |
| (Positive External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicality) | **7.212*****<br>*(1.507)* | **6.905*****<br>*(1.254)* | **6.809*****<br>*(2.305)* | **5.815*****<br>*(1.927)* | **6.318****<br>*(2.277)* | **6.003*****<br>*(1.721)* |
| (Negative External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicality) | **-16.38*****<br>*(5.545)* | **-13.11*****<br>*(3.890)* | **-27.22*****<br>*(5.994)* | **-19.71*****<br>*(6.703)* | **-25.71*****<br>*(5.189)* | **-25.10*****<br>*(4.433)* |
| (Overall External Financial Dependence) × (Average CPI Inflation) | **-0.169**<br>*(0.238)* | **-0.217**<br>*(0.166)* | **-0.950***<br>*(0.516)* | **-0.897***<br>*(0.459)* | **-1.277****<br>*(0.517)* | **-1.164****<br>*(0.469)* |
| Observations | 573 | 573 | 573 | 573 | 586 | 586 |
| R-squared | 0.453 | 0.420 | 0.480 | 0.451 | 0.453 | 0.432 |

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-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 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. **; *).

| Table 15a: Real Value Added Growth, Total Fiscal Balance Counter-Cyclicality and Private Credit | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (iv)<br>1990-2000 |
| Log of Initial Share in Manufacturing Value Added | **-1.094*****<br>*(0.215)* | **-1.153*****<br>*(0.216)* | **-0.862****<br>*(0.323)* | **-1.005****<br>*(0.348)* | **-0.856***<br>*(0.468)* | **-1.255****<br>*(0.567)* |
| (Positive External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicality) | **9.079*****<br>*(2.429)* | **8.716*****<br>*(2.571)* | **8.102*****<br>*(2.699)* | **8.681*****<br>*(2.368)* | **7.337****<br>*(2.619)* | **8.248*****<br>*(1.904)* |
| (Negative External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicality) | **-7.015**<br>*(4.458)* | **-2.263**<br>*(4.948)* | **-12.57****<br>*(4.987)* | **-5.210**<br>*(5.828)* | **-14.46*****<br>*(4.253)* | **-13.35***<br>*(6.736)* |
| (External Financial Dependence) × (Average Private Credit to GDP) | **5.191***<br>*(2.571)* | **5.745****<br>*(2.167)* | **6.001**<br>*(3.472)* | **6.629****<br>*(2.370)* | **1.217**<br>*(3.455)* | **1.243**<br>*(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. **; *).

| Table 15b: Labor Productivity Growth, Total Fiscal Balance Counter-Cyclicality and Private Credit | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (iv)<br>1990-2000 |
| Log of Initial Relative Labor Productivity | **-2.115*****<br>*(0.502)* | **-2.318*****<br>*(0.516)* | **-2.071*****<br>*(0.539)* | **-2.361*****<br>*(0.742)* | **-2.462*****<br>*(0.398)* | **-3.541*****<br>*(0.648)* |
| (Positive External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicality) | **7.520*****<br>*(1.476)* | **7.302*****<br>*(1.398)* | **7.913*****<br>*(1.961)* | **7.333*****<br>*(1.577)* | **7.216*****<br>*(2.153)* | **6.678*****<br>*(1.468)* |
| (Negative External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicality) | **-15.91*****<br>*(5.176)* | **-12.40*****<br>*(3.992)* | **-24.60*****<br>*(5.142)* | **-16.32****<br>*(6.605)* | **-24.31*****<br>*(4.586)* | **-23.29*****<br>*(4.769)* |
| (External Financial Dependence) × (Average Private Credit to GDP) | **-0.630**<br>*(1.596)* | **-0.0125**<br>*(1.196)* | **4.165**<br>*(2.994)* | **5.161****<br>*(2.249)* | **2.010**<br>*(2.590)* | **3.505*****<br>*(0.949)* |
| Observations | 573 | 573 | 573 | 573 | 586 | 586 |
| R-squared | 0.453 | 0.419 | 0.476 | 0.452 | 0.446 | 0.429 |

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 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-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 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. **; *).

**Table 16a: Real Value Added Growth, Total Fiscal Balance Counter-Cyclicality and Average Total Fiscal Balance**

| 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 | **-0.945*** ** | **-1.009*** ** | **-0.681*** | **-0.816*** | **-0.882*** | **-1.300** ** |
| | *(0.236)* | *(0.253)* | *(0.365)* | *(0.416)* | *(0.449)* | *(0.514)* |
| Interaction (Positive External Financial Dependence × Total Fiscal Balance to GDP Counter-Cyclicality) | **6.845** ** | **7.221** ** | **5.810** | **6.404** | **7.102** ** | **7.750** ** |
| | *(2.809)* | *(3.068)* | *(3.536)* | *(3.881)* | *(2.816)* | *(2.913)* |
| Interaction (Negative External Financial Dependence × Total Fiscal Balance to GDP Counter-Cyclicality) | **-9.688** | **-7.879** | **-17.62** ** | **-12.96** | **-15.33*** ** | **-18.77*** ** |
| | *(5.751)* | *(6.446)* | *(6.842)* | *(11.19)* | *(4.140)* | *(6.423)* |
| Interaction (Positive External Financial Dependence × Average Total Fiscal Balance to GDP) | **0.960*** | **0.598** | **1.237*** | **1.139** | **0.862** | **0.987** |
| | *(0.526)* | *(0.606)* | *(0.664)* | *(0.937)* | *(0.846)* | *(1.449)* |
| Interaction (Negative External Financial Dependence × Average Total Fiscal Balance to GDP) | **1.254** | **1.876** | **2.520** | **2.799** | **0.945** | **3.804** |
| | *(1.599)* | *(1.638)* | *(1.699)* | *(2.709)* | *(1.358)* | *(3.003)* |
| Observations | 574 | 575 | 576 | 577 | 594 | 595 |
| R-squared | 0.534 | 0.516 | 0.524 | 0.515 | 0.489 | 0.467 |

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 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 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. **; *).

**Table 16b: Labor Productivity Growth, Total Fiscal Balance Counter-Cyclicality and Average Total Fiscal Balance**

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

| Table 17a: Real Value Added Growth, Total Fiscal Balance Counter-Cyclicality and Private Credit | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (iv)<br>1990-2000 |
| Log of Initial Share in Manufacturing Value Added | **-0.995*****<br>*(0.206)* | **-1.073*****<br>*(0.221)* | **-0.761****<br>*(0.329)* | **-0.896****<br>*(0.349)* | **-0.768**<br>*(0.451)* | **-1.176****<br>*(0.544)* |
| Interaction (External Financial Dependence × Total Fiscal Balance to GDP Counter-Cyclicality) | **14.43*****<br>*(4.286)* | **11.98****<br>*(4.109)* | **10.47****<br>*(4.833)* | **14.64*****<br>*(2.619)* | **7.722**<br>*(5.729)* | **9.154*****<br>*(2.911)* |
| Interaction (External Financial Dependence × Average Private Credit to GDP) | **10.98****<br>*(4.666)* | **10.06*****<br>*(3.233)* | **9.312***<br>*(5.141)* | **12.97*****<br>*(2.695)* | **3.064**<br>*(5.994)* | **5.039**<br>*(3.233)* |
| Interaction (External Financial Dependence × Total Fiscal Balance to GDP Counter-Cyclicality × Average Private Credit to GDP) | **-9.993***<br>*(5.224)* | **-7.641**<br>*(4.847)* | **-6.088**<br>*(6.864)* | **-11.78*****<br>*(3.946)* | **-3.099**<br>*(6.010)* | **-4.267**<br>*(2.935)* |
| Observations | 574 | 575 | 576 | 577 | 594 | 595 |
| R-squared | 0.530 | 0.517 | 0.515 | 0.518 | 0.475 | 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 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 of 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. **; *).

| Table 17b: Labor Productivity Growth, Total Fiscal Balance Counter-Cyclicality and Private Credit | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (iv)<br>1990-2000 |
| Log of Initial Relative Labor Productivity | **-2.075*****<br>*(0.536)* | **-2.321*****<br>*(0.502)* | **-1.982*****<br>*(0.574)* | **-2.182*****<br>*(0.727)* | **-2.179*****<br>*(0.512)* | **-3.212*****<br>*(0.762)* |
| Interaction (External Financial Dependence × Total Fiscal Balance to GDP Counter-Cyclicality) | **6.892*****<br>*(3.676)* | **5.327****<br>*(1.962)* | **3.165**<br>*(3.461)* | **8.454*****<br>*(2.742)* | **4.066**<br>*(4.270)* | **5.663*****<br>*(1.759)* |
| Interaction (External Financial Dependence × Average Private Credit to GDP) | **1.528**<br>*(3.869)* | **0.620**<br>*(1.973)* | **3.733**<br>*(4.777)* | **8.691****<br>*(3.225)* | **2.384**<br>*(4.746)* | **6.410****<br>*(2.742)* |
| Interaction (External Financial Dependence × Total Fiscal Balance to GDP Counter-Cyclicality × Average Private Credit to GDP) | **-3.211**<br>*(5.788)* | **-0.936**<br>*(2.339)* | **0.839**<br>*(5.650)* | **-6.171**<br>*(4.485)* | **-0.685**<br>*(4.482)* | **-3.126**<br>*(2.136)* |
| Observations | 573 | 573 | 573 | 573 | 586 | 586 |
| R-squared | 0.443 | 0.412 | 0.456 | 0.443 | 0.415 | 0.403 |

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 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-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 of 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. **; *).

| Table 18a: Real Value Added Growth and Total Fiscal Balance Counter-cyclicality | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (vi)<br>1990-2000 |
| Log of Initial Share in Manufacturing Value Added | **-0.935*****<br>*(0.308)* | **-1.062*****<br>*(0.329)* | **-0.713***<br>*(0.411)* | **-0.823***<br>*(0.453)* | **-0.683**<br>*(0.472)* | **-1.305****<br>*(0.541)* |
| (External Financial Dependence) × (Total Fiscal Balance to GDP Counter-Cyclicality) | **10.54****<br>*(4.245)* | **9.732***<br>*(5.739)* | **11.10*****<br>*(1.418)* | **10.04*****<br>*(1.838)* | **5.594*****<br>*(2.138)* | **7.099*****<br>*(1.801)* |
| Hansen J-Stat<br>*p. value* | **6.320**<br>*(0.276)* | **5.592**<br>*(0.348)* | **4.495**<br>*(0.481)* | **4.060**<br>*(0.541)* | **7.549**<br>*(0.183)* | **5.860**<br>*(0.320)* |
| Observations | 522 | 523 | 524 | 525 | 542 | 543 |
| R-squared | 0.041 | 0.036 | 0.015 | 0.039 | 0.030 | 0.038 |

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-Cyclicality* 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-cyclicality. All regressions are carried out with IV estimations. List of instruments: log of GDP per worker, imports to GDP, current account balance to GDP, long term interest rate, CPI inflation and private credit to GDP. All instruments are beginning of period values. The Hansen J-Stat represents the value of the test statistics associated with the null hypothesis that instruments are all valid. The p. value indicates the probability that rejecting the null hypothesis is wrong. All estimated coefficient are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. The R-squared indicates the percentage of variance explained by non dummy variables. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **; *).

| Table 18b: Labor Productivity Growth and Total Fiscal Balance Counter-cyclicality | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (vi)<br>1990-2000 |
| Log of Initial Relative Labor Productivity | **-2.158*****<br>*(0.511)* | **-2.494*****<br>*(0.423)* | **-2.230*****<br>*(0.459)* | **-2.846*****<br>*(0.529)* | **-2.290*****<br>*(0.446)* | **-3.479*****<br>*(0.661)* |
| (External Financial Dependence) × (Net Total Fiscal Balance to GDP Counter-Cyclicality) | **6.666*****<br>*(2.066)* | **6.691*****<br>*(1.980)* | **6.117*****<br>*(1.190)* | **4.968*****<br>*(1.181)* | **3.910****<br>*(1.756)* | **4.195*****<br>*(1.477)* |
| Hansen J-Stat<br>*p. value* | **4.489**<br>*0.481* | **5.100**<br>*0.404* | **3.980**<br>*0.552* | **3.228**<br>*0.665* | **8.561**<br>*0.128* | **8.568**<br>*0.128* |
| Observations | 525 | 525 | 525 | 525 | 538 | 538 |
| R-squared | 0.091 | 0.093 | 0.087 | 0.106 | 0.089 | 0.138 |

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. *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. The interaction variable is the product of external financial dependence and total fiscal balance to GDP counter-cyclicality. All regressions are carried out with IV estimations. List of instruments: log of GDP per worker, imports to GDP, current account balance to GDP, long term interest rate, CPI inflation and private credit to GDP. All instruments are beginning of period values. The Hansen J-Stat represents the value of the test statistics associated with the null hypothesis that instruments are all valid. The p. value indicates the probability that rejecting the null hypothesis is wrong. All estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. The R-squared indicates the percentage of variance explained by non dummy variables. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **; *).

| Table 19a: Real Value Added Growth and Total Fiscal Balance Counter-cyclicality | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (vi)<br>1990-2000 |
| Log of Initial Share in Manufacturing Value Added | **-1.059*****<br>*(0.349)* | **-1.149*****<br>*(0.371)* | **-0.813****<br>*(0.410)* | **-0.880***<br>*(0.469)* | **-0.795***<br>*(0.482)* | **-1.439*****<br>*(0.542)* |
| Interaction (Positive External Financial Dependence × Total Fiscal Balance to GDP Counter-Cyclicality) | **14.34*****<br>*(4.948)* | **12.70****<br>*(6.467)* | **14.22*****<br>*(1.927)* | **12.08*****<br>*(2.208)* | **8.552*****<br>*(2.766)* | **10.28*****<br>*(1.669)* |
| Interaction (Negative External Financial Dependence × Total Fiscal Balance to GDP Counter-Cyclicality) | **-7.526**<br>*(5.761)* | **-4.876**<br>*(8.175)* | **-8.163****<br>*(3.317)* | **-2.447**<br>*(4.345)* | **-14.89*****<br>*(4.475)* | **-13.40***<br>*(7.186)* |
| Hansen J-Stat<br>*p. value* | **10.86**<br>*0.368* | **9.081**<br>*0.524* | **9.579**<br>*0.478* | **12.97**<br>*0.225* | **10.97**<br>*0.360* | **12.68**<br>*0.242* |
| Observations | 522 | 523 | 524 | 525 | 542 | 543 |
| R-squared | 0.038 | 0.033 | 0.020 | 0.041 | 0.049 | 0.053 |

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. *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. The interaction variable is the product of positive or negative external financial dependence and total fiscal balance to GDP counter-cyclicality. All regressions are carried out with IV estimations. List of instruments: log of GDP per worker, imports to GDP, current account balance to GDP, long term interest rate, CPI inflation and private credit to GDP. All instruments are beginning of period values. The Hansen J-Stat represents the value of the test statistics associated with the null hypothesis that instruments are all valid. The p. value indicates the probability that rejecting the null hypothesis is wrong. All estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. The R-squared indicates the percentage of variance explained by non dummy variables. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **; *).

| Table 19b: Labor Productivity Growth and Total Fiscal Balance Counter-cyclicality | | | | | | |
|---|---|---|---|---|---|---|
| Estimation Period | (i)<br>1980-2005 | (ii)<br>1980-2000 | (iii)<br>1985-2005 | (iv)<br>1985-2000 | (v)<br>1990-2005 | (vi)<br>1990-2000 |
| Log of Initial Relative Labor Productivity | **-2.122*****<br>*(0.496)* | **-2.449*****<br>*(0.437)* | **-2.288*****<br>*(0.439)* | **-2.857*****<br>*(0.541)* | **-2.582*****<br>*(0.351)* | **-3.762*****<br>*(0.576)* |
| Interaction (Positive External Financial Dependence × Total Fiscal Balance to GDP Counter-Cyclicality) | **11.94*****<br>*(2.312)* | **10.35*****<br>*(1.901)* | **10.51*****<br>*(1.251)* | **7.623*****<br>*(1.065)* | **7.868*****<br>*(2.262)* | **7.760*****<br>*(1.421)* |
| Interaction (Negative External Financial Dependence × Total Fiscal Balance to GDP Counter-Cyclicality) | **-19.92*****<br>*(6.076)* | **-13.80****<br>*(6.748)* | **-20.61*****<br>*(2.320)* | **-11.39*****<br>*(3.852)* | **-24.64*****<br>*(3.728)* | **-20.59*****<br>*(4.441)* |
| Hansen J-Stat<br>*p. value* | **9.883**<br>*0.451* | **9.699**<br>*0.467* | **11.31**<br>*0.334* | **9.561**<br>*0.480* | **12.60**<br>*0.247* | **11.23**<br>*0.340* |
| Observations | 525 | 525 | 525 | 525 | 538 | 538 |
| R-squared | 0.098 | 0.097 | 0.119 | 0.121 | 0.140 | 0.178 |

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 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-Cyclicality* 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 positive or negative external financial dependence and total fiscal balance to GDP counter-cyclicality. All regressions are carried out with IV estimations. List of instruments: log of GDP per worker, imports to GDP, current account balance to GDP, long term interest rate, CPI inflation and private credit to GDP. All instruments are beginning of period values. The Hansen J-Stat represents the value of the test statistics associated with the null hypothesis that instruments are all valid. The p. value indicates the probability that rejecting the null hypothesis is wrong. All estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. The R-squared indicates the percentage of variance explained by non dummy variables. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **; *).