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HOW TRADE OPENNESS INFLUENCES

BUDGET DEFICITS?

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Abstract

The influence of trade openness on economic growth *via* budget balance is surprisingly neglected in the literature, particularly since the theoretical and empirical studies have provided a positive and robust relationship between budget balance and economic growth. In this paper, we provide theoretical and empirical explanations about the way that trade openness influences budget balance by distinguishing the effects of natural openness from those of trade policy. The panel data analysis focuses on 66 developing countries for which we have the required data. We find that, theoretically and empirically, the effects of trade openness on budget balance through its effect on the instability of government revenue is quite clear: trade openness increases a country's exposure to external shocks (whether it is due to natural openness or to trade policy). This enforces the negative impacts of the instability of term of trade on budget balance. We also find that trade openness affects budget balance through many others channels (corruption, inequalities, etc). In this case, the additional effects on budget position of natural openness and trade policy are opposed: trade policy seems enhance budget surpluses, on the contrary, natural openness seems deteriorate budget deficits.

Keywords : trade openness, outward-looking policy, natural openness, budget deficits, Instability of term of trade, developing countries, panel data analysis.

Résumé

Les effets de l'ouverture commerciale sur la croissance économique au travers de ses effets sur le solde budgétaire ont été particulièrement négligés dans la littérature. Surtout, depuis que des études théoriques et empiriques ont établi une relation positive et solide entre le taux de croissance économique et l'équilibre budgétaire. Dans cet article, nous fournissons des explications théoriques et empiriques sur les effets de l'ouverture sur le solde budgétaire, en distinguant les effets d'une ouverture naturelle de ceux d'une politique d'ouverture. L'analyse économétrique de panel couvre 66 pays en développement pour lesquels nous disposons les données nécessaires. Nous avons trouvé que, théoriquement et empiriquement, l'effets de l'ouverture sur le solde budgétaire *via* l'instabilité des recettes publiques, est très clair: l'ouverture augmente l'exposition d'un pays aux chocs extérieurs (que cette exposition soit due à une ouverture naturelle ou à une politique d'ouverture). Cela renforce les effets négatifs de l'instabilité des termes de l'échange sur le solde budgétaire. Nous avons également montré que l'ouverture commerciale influence le solde budgétaire au travers de nombreux autres canaux de transmission (la corruption, les inégalités, etc.). Ici, les effets additionnels sur le solde budgétaire de l'ouverture naturelle et de la politique d'ouverture sont opposés: la politique d'ouverture semble améliorer le surplus budgétaire alors que l'ouverture naturelle semble détériorer le déficit budgétaire.

Mots-clef : ouverture commerciale, politique d'ouverture, ouverture naturelle, déficits budgétaires, instabilité des terme d'échange, pays en développement, analyse de données de Panel.

INTRODUCTION

Since several decades, there has been a great debate on the macroeconomic consequences of trade openness in developing countries. This debate has particularly focused on the impact of trade openness on economic growth. The dominant message seems emphasize its positive effect (Edwards 1998, and Rodrik 1999).

There exists a large literature on the channels of transmission of trade openness to economic growth (Guillaumont 1994, Combes and al., 2000). Very few studies, however, have discussed the influence of trade openness on economic growth *via* budget balance. This mechanism is surprisingly neglected in the literature, particularly since the theoretical and empirical studies have provided a positive and robust relationship between budget balance and economic growth (Fischer, 1993; Easterly, Rodriguez and Schmidt-Hebbel, 1994, among many others).

However, some authors have introduced trade openness as a control variable of budget balance. For example, Edwards and Tabellini (1991), in their study on the effects of political instability on fiscal policies and inflation in developing countries, have introduced a variable reflecting trade openness. In some regressions, the openness has a positive sign and in others has a negative sign, but in all regressions the variable is not significant. Schuknecht (1999) analyzed the fiscal policies cycles and exchange rate regime around elections in 25 developing countries. The variable of trade openness (the sum of imports and exports over GDP), in his study, has the expected positive effect on the overall fiscal balance, but it is not significant at conventional level[1]. Alesina, Hausmann, Hommes and Stein (1999), introduced, in their analysis about the impacts of budget institutions on fiscal performance in 20 Latin American countries, an interacted variable reflecting trade openness. They used the rate of change of term of trade times the degree of openness[2]. The variable has the expected negative impact on budget deficit but is not significant in many regressions at conventional level[3].

In these empirical studies, trade openness seems not to be a significant variable of budget surplus and its effect, in some studies, is contradictory. However, the non robustness of the variables reflecting trade openness, in these empirical studies, is not surprising since they don't distinguish "natural openness" from "trade policy". In such studies, it is proper to distinguish "natural openness" from "trade policy" or "outward-looking policy" (Guillaumont P. and S. Guillaumont Jeanneney, 1988). Indeed, these two components of trade openness could have opposed effects on budget balance. The natural openness is based on structural determinants of trade openness: the country's size, its level of development, its natural resources, its geographic characteristics, etc. The outward-looking policy is determined by trade policies.

In analyzing the effects of trade openness on budget position, one should distinguish trade policy from natural openness and study the effects of these two components of observed trade openness on budget balance. To distinguish natural openness from trade policy, different measures have been used in the literature: the average level of tariffs, level of export taxes, percentage of importation submitted to non tariff restrictions, etc. Each of these measures are partial, since a trade policy results from the way that all policy instruments are used (Combes and Guillaumont, 2002). That is why some authors tried to classify countries into open and closed countries by combining some of these partial instruments (Sachs and Warner, 1995, for example). In this study, we use a revealed measure of trade policy or of outward-looking policy. We decompose the conventional measure of openness (exports plus imports of goods and services, as a percentage of GDP) into natural openness and outward-looking policy or trade policy. We compute natural openness by estimating what level of openness a country should have based on its structural factors (its size, its geographic characteristics, etc). The residual of this regression is labeled trade policy. This indicator of outward-looking policy allows to capture revealed trade policy by results rather than by simple instruments. This avoid the use

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[1] T-statistics in different regressions are between 1,51 and 1,57.

[2] The degree of openness of a economy is defined as the sum of exports and imports of goods and services, in local currency, as a share of GDP.

[3] T-statistics in different regressions are between -1,23 and -2,28.

of subjective weights. In addition, it is an indicator of relative trade openness, since the mean of residuals is equal to zero.

Our purpose in this paper is to provide theoretical and empirical explanations about the way that trade openness influences budget balance by distinguishing the effects of natural openness from those of trade policy. Firstly, we analyze the effect of trade openness on budget position *via* its effect on the instability of government revenue. In developing countries, the term of trade's instability is a key determinant of a country's macroeconomic performances (Cashin and Pattillo, 2000). Trade openness increases the country's exposure to external shocks. Then, trade openness enhances the effect of term of trade's instability on the instability of government revenue. This could affect budget balance. Indeed, more open countries have more volatile economies and would tend to have higher budget deficits (section 2). Secondly, we analyze several other mechanisms of influence of trade openness on budget position. More open countries tend to have a lower level of corruption (Ades and Di Tella, 199 and Wei, 2000). This could improve budget balance. In addition, trade openness increases income inequalities. This increases the demand of public goods and reduces the ability of government to collect taxes (section 3). The remainder of the paper is organized as flows. In section 4, we discuss the motivations and the construction of our measure of term of trade's instability. In section 5, we develop and compute our indicator of outward looking strategy. In section 6, we describe the data and the econometric analysis. Finally, in section 7 we discuss the policy's implications of our results and conclude.

How trade openness influences budget position via *its effect on the instability of government revenue?*

The benchmark analysis

According to the tax smoothing theory of Barro (1979, 1995 and 1999), Lucas and Stockey (1983) and Bohn (1990), deficits and surpluses are used to smooth tax. In the same way, the permanent income hypothesis implies that the government should run surpluses and deficits to smooth its consumption. Thus, according to these two theories, the optimal fiscal policy implies that budget deficits and surpluses should be countercyclical and budget, in average and during a sufficient long period, should be balanced. Therefore, the effect of trade openness on budget balance *via* the instability of government revenue is, in average, equal to zero. As normative theories, the tax-smoothing model and permanent income hypothesis are extremely valuable[4]. Any positive approach of fiscal policy has to take these theories as benchmarks. As positive theories, they could hardly explain any effect of trade openness on budget position *via* its effect on the instability of government revenue. And they are not sufficient to explain the high budget deficits since the early seventies. One explanation for the deviations from the predictions of these theories is that there are asymmetries between the consequences on public finance of positive and negative external shocks. In other words there is a ratchet effect in public spending. This ratchet effect could be explained either by the theory of Dutch Disease (Collier and Gunning, 1999) or/and by political economy models (Alesina and Perotti, 1994).

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[4] Even if, Barro (1985 and 1986) views this theory not only as "normative" but also as "positive", that is description of actual fiscal policy. Barro has tested the tax smoothing model on 200 years of American and British data. Both the American and British experiences are, broadly speaking, consistent with the basic principles of tax smoothing: the debt to GNP ratios increase during wars, decrease in peacetime, and fluctuate with the business cycle. The problem with this theory is that "any fiscal policy can be rationalized from a tax smoothing perspective, if expectations are a "free variable" (Alesina and Perotti, 1994). The tax smoothing model could explain even the high deficit in the 1980's in the United States. Indeed, suppose that in the early 1980's it became known that, with a temporary increase in military spending, the "cold war" could have been won and, by the 1990's military spending could be cut below the initial level in 1980. The optimal policy in this case is to cut taxes and increase military spending in 1980's and run deficits in the 1980's and surplus in the 1990's.

Theory of Dutch Disease

Many developing countries are prone to temporary term of trade shocks. These shocks could lure government into huge fiscal errors. In fact, some price shocks are clearly temporary, such as the coffee booms induced by Brazilian frosts. If government saves most of the windfall from a positive external shock, in which case the Dutch Disease theory based on the change in government spending is misplaced. However, most price shocks, do not occur in a context in which the duration of the shocks can be readily discerned. Given the high degree of uncertainty about the persistence of a price shock, the response then depends in part upon whether there are asymmetries between the consequences of errors of optimism and pessimism (Collier and Gunning, 1999). For example, if the cost of errors of optimism exceed those of pessimism then trade shocks could deteriorate budget position[5]. Therefore, according to the Dutch Disease hypothesis, government do not have high saving rates in response to positive external shocks because temporary shocks are believed to be permanent and because of uncertainty coupled with asymmetric costs of errors. Even if, there is no uncertainty about the duration of shocks, that is to say, there is perfect foresight of duration of shocks, public spending could increase in response to a positive shock. Why public spending increase during a temporary positive shocks? We could find an answer in the political economic literature, as we will show below.

Political pressures

Fluctuations in tax base are large in developing countries. Under these circumstances, full tax smoothing or full consumption smoothing would imply running large budget surpluses in good times and large budget deficits in bad times. However, the ability to run large budget surpluses in good time is hampered by political pressures which, although always present, get exacerbate in times of plenty (Alesina and Perotti, 1994).

Indeed, suppose that a country face a temporary positive external chock implying temporary higher government revenue. If the government wants to save all the windfall, it needs to abstain from current spending. This requires high resistance to spending pressures and requires coordination among spending ministries[6]. Each spending ministry may face a free-rider problem: its own decision to transfer spending to the future might be frustrated by the increased spending of other ministries (Collier and Gunning, 1999). Thus, during a positive external shock, each ministry has high incentives to increase its own current spending. More generally, the political pressures during shocks imply a "procyclical" fiscal policy, that is to say a positive shock involves both decreasing tax rates and increasing spending (Talvi and Végh, 2000)[7]. But the opposite could not be true with a perfect symmetry. We suppose that there have asymmetries between the consequences of positive and negative external shocks. During a positive shock government increases both current and capital expenditures. But during a negative shock, government could hardly reduce current expenditures. This imply a reduction in public investment and/or increasing in budget deficit.

Therefore, if fluctuations in tax base are small, spending pressures will not play much of a role and full tax smoothing or full consumption smoothing will hold as approximations. In contrast, when fluctuations in the tax base (and hence in the budget surplus) are large, as it is the case in developing countries, political pressures will become harder to resist and will have a major impact on fiscal policy. This implies, the larger the variability of the tax base, the higher the variability of public

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[5] We can argue that there is a ratchet effect in public spending, this explain the asymmetry of costs of errors. If there is symmetry of costs of errors, the uncertainty on the duration of shocks, in average have no impacts on budget deficits.

[6] There is a widespread practice in volatile economies to systematically underestimate fiscal revenues in order to prevent overspending (Talvi and Végh, 2000).

[7] However, procyclical fiscal policies could be explained by borrowing constraints. And potentially dissavings rates out of negative shocks might be lower than savings rates out of positive shocks of the same duration because of the asymmetry created by borrowing constraints, particularly in developing countries. Thus, the imperfections of the market imply that during a positive shock saving rates are lower than those predicted by optimal policies and during a negative shock dissaving rates are lower too. This could explain why during a positive (negative) shock both public spending increase (decrease) and tax rates decrease (increase).

spending, and, if we admit the ratchet effect hypothesis, the higher the budget deficit. Therefore, we can argue that more open countries have higher exposure to shocks, this enforcing the negative relationship between the term of trade's instability and the budget balance.

Possibly, in this case the distinction between natural openness and trade policy is not very useful. What is important is the exposition of an economy to external shocks, whether the exposition is due to natural openness or to trade policy. However, we can argue that countries with an outward-looking policy may have better ability to face shocks: the resilience (see Combes and Guillaumont, 2002), then have higher ability to discipline budget. Thus the natural openness enforce the negative impact of the term of trade's instability on budget balance, even when trade policies, on the contrary, reduce its negative impact.

Others channels through which trade openness influences budget deficits

Several effects (direct or indirect) of trade openness on public spending and on government revenue, thereby on budget position could be analyzed.

Firstly, more open countries tend to have a lower level of corruption (Ades and Di Tella, 1999 and Wei, 2000). In the belief that higher openness signify more competition in product markets, lower rents and thereby lower bribe-taking. The argument is that bribes are harder to sustain where perfect competition prevails. Less competition means firms enjoy higher rents, so that bureaucrats with control over them, have higher incentives to engage in malfeasant behavior. The point is related to the more general idea that rents may foster slack (Ades and Di Tella, 1999). Less corruption could improve budget position. Indeed, we can argue that less corruption imply more efficient fiscal systems, thus increasing the ability of government to collect tax revenue and avoiding useless public spending, thus enhancing budget balance.

Here, we suppose that natural openness and trade policy could have different effects on corruption, therefore on budget balance. For example, oil and mines producing countries are naturally more open economies. They are also more corrupted countries, because they have more rents[8]. But, countries with an outward looking strategy have higher level of competition, thus they are less corrupted and have higher budget balance.

Then, trade openness increases income inequalities (Savvides, 1998). This increases the demand of public goods and reduces the ability of government to collect taxes. On the other hand, more openness (by reducing tariffs) could reduce, at the short run, government revenue. So at least, in the short run, openness could have a negative impact on surpluses (Bevan, 1999). But, for a given level of tariffs, government revenue is an increasing function of trade openness. So even if, in the short run, trade policy could deteriorate budget balance, n the long run an outward looking policy could improve budget position.

Finally, openness is expected to be correlated with an improvement of fiscal balance, as the leakage of demand abroad and resulting cost from external payment difficulties make high fiscal deficits less attractive than in less trade oriented countries.

Therefore, the effects of trade openness on public spending and government revenue are in some cases "contradictories". In addition, natural openness and trade policy could have opposed effects on budget balance. Thereby, the relationship between openness and budget surpluses are numerous and all these relationships could be inter-connected. Only an empirical analyze could show us which effect is greater.

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[8] The case of Nigeria in 1970's is a good example. Nigeria provides what is almost a natural experiment for hypothesis that rents causes corruption. After the oil shock, observers noted that Nigeria oil income created extraordinary opportunities for corruption (Ades and Di Tella, 1999).

The measure of the instability of the term of trade

We use the instability of term of trade because we are interested in the impacts of exogenous trade shocks on budget balance. This allow us to avoid the problem of endogeneity of variables reflecting the instability of quantities such as the instability of real value of exports. In addition, the instability of quantities is often due to climatic factors, and we suppose that they are fixe or change slowly over time. Therefore, they will be captured by fixed effects in empirical analysis.

To measure the instability of term of trade, we estimate a mixed function, combining a deterministic element and a stochastic element of the trend. The variance of the residuals is then considered to be a convenient measure of instability:

$TOT_t = \alpha + \beta TOT_{t-1} + \delta t + \lambda t^2 + \varepsilon_t$

TOT: Term Of Trade

t : time

ε_t: the random component.

α: the intercept.

We use the more general way of estimating the trend. Indeed, if there is non deterministic trend in the series, δ and λ will be equal to zero. If there is non unit root in the series, the absolute value of β will be less than one. We compute the instability of term of trade, defined as the square of residuals of the regression showed upper by three ways:

(a): Firstly, we estimate the equation on the whole sample for each country. We compute the square of residuals of this regression as a measure of instability of term of trade. The problem with this way of computing the instability is that in real world we do not have the information on the whole period. For example, in 1974, we do not now what will happen in 1979. We have to take into account the availability of information at a given point of time.

(b): Secondly, we estimate the equation on "moving ten years" and we keep the square of residual for the last year, as a measure of instability of term of trade. For example, we do the regression for the period 1965-1974, we keep only the residual for 1974, and then for the period 1966-1975, we keep the residual for 1975, and so on. The problem with this way of computing the instability, is that we suppose there is non memory in the series. This is a restrictive hypothesis, we should take into account the fact that the series could have memory.

(c): Lastly, we estimate the same equation by supposing that the series have memory. For example, we do the regression for the period 1965-1974, we keep the residual for 1974, then we do the regression for the period 1965-1975, we keep the residual for the period 1975, and so on. The beginning of the period is always 1965. The different measures of instability are highly correlated.

Table 1: Simple correlation between different measures of instability with different way of measuring the equation showed upper.

	(a)	(b)	(c)
(a)	1		
(b)	0,4613	1	
(c)	0,7549	0,5927	1

Note: we compute the instability of term of trade only for developing countries on the period 1965-1998.

Table 2: same as table 1, but the instability is four year average.

	(a)	(b)	(c)
(a)	1		
(b)	0,6608	1	
(c)	0,7909	0,8073	1

Note: we compute the instability of term of trade only for developing countries on the period 1965-1998. The sub-periods are: 1975-1978, 1979-1982, 1983-1986, 1987-1990, 1991-994 and 1995-1998.

Measuring revealed trade policy

How to measure the observed trade openness

Observed trade is measured as the ratio of trade to a domestic aggregate. Trade openness usually measured by imports plus exports of good and services as percentage of GDP (X+M/Y) or as percentage of all available resources (X+M/Y+M). It could be better to measure trade openness by only the ratio of exports to GDP (X/Y) or all available resources (X/M+Y). Indeed, the ratio of imports to GDP (M/Y) is difficult to be interpreted. This ratio could be reduced either by a greater competitiveness or by an "inward looking" policy, it could increase by aid inflows or by trade liberalization. The ratio of exports to GDP, itself is hard to be interpreted: it is the ratio of a turnover to a value added , that is why for some countries this ratio is greater than 100 (Singapore, for example). Hence, in this study we use the conventional measure of observed trade openness. We measure observed trade openness as exports plus imports of goods and services as percentage of GDP.

Measuring natural openness and trade policies

After having selected the measure of observed trade openness. We compute natural openness by estimating what level of openness a country should have, based on its structural factors. The residual of this regression is labeled trade policy.

There are two main hypotheses behind this indicator of trade policy. The first is that all structural factors are well identified and introduced in the regression. The second is that trade policies are independent of structural factors. If we do not meet the second hypothesis, we measure the autonomous component of trade policies. The measure of trade policy is still pertinent. In addition, this measure of trade policy is an indicator of relative trade openness, since the mean of residuals is equal to zero. Therefore, it is sensitive to sample selection. If we change the sample, a relatively more open country in the first sample could become relatively more closed in the second and *vice versa*.

Keeping in mind these problems, we try to explain observed trade openness by a series of structural variables. The dependent variable is the four years average observed trade. The structural factors of trade openness are as follows. Firstly, the country's size, measured by the logarithm of its population. Bigger countries are less specialized, then have small openness. Secondly, more developed countries are probably more competitive in a large scale of products. Therefore, countries with higher GDP per capita are expected to have higher level of trade openness. Thirdly, another important variable of openness is the costs of transports and geographic characteristics. Every things being equal, if a country is landlocked, it would be less opened. We compute the fitted value of openness (natural openness) by estimating observed trade openness as percentage of GDP by simple OLS (Table 4).

Table 3: measuring natural openness and outward looking strategy.

The dependent variable is Openness: (X+M)/GDP in percentage	1 OPENNESS	2 OPENNESS	3 OPENNESS	4 OPENNESS	5 OPENNESS	6 OPENNESS	7 OPENNESS
Intercept	256,5789 (13,65)***	294,7668 (11,45)***	270,5386 (10,73)***	267,9513 (10,85)***	233,5067 (9,40)***	272.3359 (9.07)***	289.4914 (10.78)***
Lag of GDP per capita	4,5357 (2,63)***	2,5531 (1,38)	4,3482 (2,50)***	3,7583 (1,69)*	1,1128 (0,57)	3.436538 (1.67)*	2.542901 (1.37)
Population in log	-14,0116 (-19,90)***	-14,9932 (-16,88)***	-14,5193 (-16,14)***	-14,2956 (-16,20)***	-11,1492 (-11,47)***	-14.50301 (-13.94)***	-15.00063 (-16.90)***
Landlocked dummy	-4,0359 (-1,06)	-7,5107 (-2,26)***		-5,21 (-1,31)	-11,2184 (-2,77)***	-5.762588 (-1.50)	-7.51564*** (-2.26)
Mines					0,4504 (2,93)***		
Dummy for Tropical Countries		-9,7868 (-2,58)***	-7,7882 (-2,03)**			-9.614816 (-2.36)***	-9.796856 (-2.58)***
Latitude in log				-3,5999 (-1,48)			
Squared latitude in log				1,138 (1,31)			
Rate of change of term of trade (in log)						11.4047 (1.11)	
Average growth of "OECD" countries						3.019664 (1.13)	2.10124 (1.13)
Number of observations	376	376	376	370	261	335	376
Adjusted R2	0,4965	0,5084	0,5032	0,4959	0,4178	0,452	0,5095

Note: OLS corrected for heteroskedasticity.
T-statistics are in bracket.
*** : coefficient significant at 1% level, **: coefficient significant at 5% level, * : coefficient significant at 10% level.
All variables are four year average. The sub-periods are: 1975-1978, 1979-1982, 1983-1986, 1987-1990, 1991-994 and 1995-1998

We first compute natural openness by regressing observed trade openness on only the three right hand variables discussed upper (Column 1). All variables have the expected sign and are significant at 1% level. Exception of the dummy for landlocked countries, it is not significant but it has the expected sign and T-statistics is more than one. The fitted power is close to 50%, that is to say, these three variables explain nearly half of the variability of observed trade openness. Then, we add to the regressions other dependent variables that could potentially be important to explain natural openness (Columns 2-7). Adding these additional independent variables do not enhance the fitted value of the regression. When we add the exports of mine and fuel (mines) we lose a huge number of observations (column 5). The rate of change of term of trade and the variable reflecting the current world situation (computed as the average rate of growth of OECD countries) as dependent variables of openness have positive effect on trade openness but are not significant at conventional level (Columns 6 and 7).

In column 3, all variable have the expected sign and are significant at 1% level. In this regression we introduced a dummy for tropical countries. This variable is significant and has a negative sing. In the subsequent empirical tests, we will use Column 3 in this table as the benchmark. We will define the fitted values from this regression as a measure of natural openness and label the residuals as trade policy or outward-looking policy. As a robustness check, we have constructed a measure of trade policy and natural openness based on another the regression (column 7): the results do not change.

Econometrics strategy

To estimate the influence of trade openness on the fiscal behavior we used a pooled panel data analysis. Our sample of observations includes all developing countries for which we have the required data. The period analyzed is 1975-1998[9]. We pooled the data into six sub-periods of four years[10]. We have, in theory, six observations by country. The model could be summarized as flows:

$$S_{it} = \alpha_2' X_{it} + U_{it}$$

With:
$U_{it} = \alpha_i + e_{it}$
$i = 1,\dots n$ (index of country)
$t = 1,\dots T_i$ (index of time), we use T_i instead of T because we have a unbalanced panel data.
S_{it} = budget surplus
X_{it} = vector of independent variables including openness times instability and the measure of outward looking strategy.

The data:

Data on government budget surpluses are those from IFS (International Financial Statistics), GFS (Government Financial Statistics) and WDI (World Development Indicators). The dependent variable is the conventional overall budget surplus, without grants as percentage of GDP. This measure is more appropriate, for developing countries, than the conventional overall budget surplus with grants. Indeed, grants represent a high proportion in government revenue in developing countries. Grants are discretionary financing by donors and can vary significantly from year to year and they not depend on government willingness. Their inclusion as regular revenue has been said to give an inappropriate confidence in their permanence, though they have to be replaced by government borrowing at any time (Blejer and Cheasty, 1991).

We have three variables reflecting trade openness as we sow upper: the observed trade openness (imports plus exports of goods and services) as percentage of GDP, the natural openness and the outward looking strategy (based on the equation 3, table 3). We have three interactive variables (one of these three measures of trade openness times instability of term of trade).

The others variables of control are as follows. Lagged dependent variable with an expected positive coefficient. Indeed, government administrations are constrained by budgets and the current budget largely determines the next period's budget position. This "inertia" provides stability and predetermines fiscal deficit pattern (Schuknecht, 1999). The degree of urbanization has an undetermined effect on fiscal surplus. On the one hand, it is relatively easier to tax urban population than rural population (Edwards and Tabellini, 1991). On the other hand, urbanization enhances underground and informal activities, which are hard to tax. The GDP per capita's sign is expected to be positive. Indeed, more developed countries, have probably more the ability to design more efficient fiscal systems. Inflation rate could have many effects on public finances then on budget balance. As some of these effects clearly offset each other, it is often difficult to predict the net effect of inflation on budget deficit (Catâo and Terrones, 2001).

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[9] The data are not available for all countries on the whole period, so we used an unbalanced panel
[10] The sub-periods are: 1975-1978, 1979-1982, 1983-1986, 1987-1990, 1991-994 and 1995-1998.

The results:

We run the "Breusch and Pagan Lagrangian multiplier test for random effects", the test reject the hypothesis that the within variance is equal to zero. Then, Hausman specification test was performed. The results of this test reject the hypothesis that the country specific terms are random.

The results are reported in **Table 4 below**. The variable (openness*instability), defined as observed trade openness times the instability of term of trade has the expected sign and is significant (column 2). Suggesting that more open countries tend to have higher exposure to external shocks and then have lower budget surpluses. For a given level of term of trade's instability, more open economies tend to have higher budget deficits. The effect of trade openness *via* the instability of government revenue on public surpluses is negative.

Tableau 4: explaining budget surplus

The dependent variable is SURPLUS**	Random-effects 1	Fixed-effects 2	Fixed-effects 3	Fixed-effects 4	Fixed-effects 5	Fixed-effects 6	Fixed-effects 7	Fixed-effects 8	Fixed-effects (Within) IV
Intercept	-7.5106 (-6.42)	-6.862516 (-2.01)	-6.780287 (-1.99)	-7.099765 (-2.15)	-7.944486 (-2.55)	-5.856769 (-10.73)	-8.372793 (-23.03)	8.112223 (1.03)	-.2352042 (-0.04)
SURPLUS-1	0.5461 (11.83)	.2812938 (5.05)	.280043 (5.02)	.2796839 (5.14)	.2656473 (5.18)	.2696284 (5.30)		.2827513 (5.53)	.6160764 (2.59)
Urban population	0.1035 (4.31)	.0454084 (0.63)	.0417091 (0.58)	.0474331 (0.67)	.04815 (0.68)				.008713 (0.10)
GDP per capita-1	0-.00013 (-0.47)	-.0002942 (-0.83)	-.0002835 (-0.80)	-.0002698 (-0.79)					-.001116 (-1.54)
Inflation-1	-0.0001696 (-0.37)	.0000224 (0.05)	.00000935 (0.04)						.0003888 (0.66)
Openness*Instability	-0.0000577 (-2.51)	-.0000583 (-2.26)		-.0000576 (-2.28)	-.0000597 (-2.38)	-.0000572 (-2.31)	-.0000555 (-1.92)	-.0000582 (-2.36)	-.0000572 (-1.72)
Natural openess*Instability			-.0000556 (-2.12)						
Trade policy*Instability			-.0000935 (-1.62)						
Trade policy	0.0379112 (2.70)	.0529175 (2.22)	.058902 (2.31)	.0531222 (2.26)	.0545242 (2.33)	.0606495 (2.81)	.039399 (1.67)	.0399448 (1.64)	.0540682 (1.84)
Natural Openness							-.2143678 (-1.78)		
Number of observations	268	268	268	273	273	273	313	273	230
R2 (within)	Overall 0,60	0,165	0,17	0,1645	0,1619	0,16	0,02	0,1729	
Fixed-effects F-Test	Chi2=253 (0,000)	F(6,19)=6,5 (0,000)	F(65,2)=3,2 (0,000)	F(65,2)=3,2 (0,000)	F(65,2)=3,2 (0,000)	F(65,2)=3,8 (0,000)	F(65,2)=9,6 (0,000)	F(65,2)=9,9 (0,000)	F(61,2)=1,6 (0,0111)
F-Test		F(65,2)=3,3 (0,000)	F(8,19)=7,3 (0,000)	F(5,2)=7,9 (0,000)	F(4,2)=9,81 (0,000)	F(3,2)=12,9 (0,000)	F(2,2)=2,82 (0,0618)	F(4,2)=10,6 (0,000)	W. chi2(6)= 781,25 (0,000)
T-statistics are in brackets. **Surplus is measured as conventional surplus without grants.									

When, we add the variable trade policy beside the interactive variable of openness, its sign is positive and it is significant. Suggesting that trade policy have others effects on budget balance than those through its effects on the instability of government revenue. An outward looking strategy exerts a disciplining effect on government budget.

The variable natural openness times instability and trade policy times instability both have a negative effect on budget surplus (column 3). Suggesting that what is important is an economy's exposure to external chocks, whether the exposition is due to natural openness or to trade policy.

When we drop the three non significant variables of control one by one (Lag of GDP per capita, Lag of Inflation and urban population), these results do not change (column 4-6), and when we introduce only the two variables reflecting trade openness (Column 7): the results are still the same.

When the variable reflecting natural openness is introduced beside the variable trade policy and observed trade openness times Instability, it has a negative effect on budget surplus, the other results do not change significantly (column 8). This negative effect of natural openness could be explained either by its effect on corruption or by the fact that a more naturally open country (an oil and mines producing countries) could have a smaller borrowing constraints, that is to say higher access to foreign capital.

We have introduced the lagged depend variable as a right hand variable. With a fixed-effects estimation this variable by construction is correlated with the error term and then is endogenous. Theoretically, this is an important problem. One way to deal with this problem is to use the Arellano Bond (1991) solution. But in this case, we need a balanced panel. Another way to deal with this problem of endogeneity is to use an Instrumental Variable (IV) method. We run the same regression as column 2, but we consider lagged dependent variable as endogenous. We use the "two lags" of dependent variable and the dependent age structure as instruments. The results is shown in last column of table 4. Comparing these result to those from column 2, we note that they are, broadly speaking, the same. Suggesting that even if this problem is theoretically important, empirically it has not a significant influence on the results.

CONCLUSION

Theoretically and empirically, the effects of trade openness on budget balance *via* the instability of government revenue is quite clear: trade openness increase a country's exposure to external shocks (even if it is due to natural openness or to trade policy). This enforce the negative impacts of the instability of term of trade on budget balance. In addition, trade openness affects budget balance through many others channels. In this case, the additional effects on budget position of natural openness and trade policy are opposed. Trade policy seems enhance budget surpluses. In the contrary, natural openness seems deteriorate budget deficits.

Developing country governments are often resistant to liberalize theirs trade regimes. One argument often invoked is that budget situation is already difficult in developing countries, a liberalization program will lead to larger budget deficits. We showed in this study that even if trade openness increase a country's exposure to external shocks, and then deteriorate its budget balance, an outward looking strategy enhance its budget balance.

To reduce the negative effects of trade openness on budget balance, a country should design sound budget institutions and efficient fiscal administrations. The latter could reduce the effects of Dutch Disease and prevent public spending from political pressures. In this case, optimal fiscal policies could hold as approximations.

An outward looking strategy exerts a disciplining influence on political deciders to improve macroeconomic policies, source of greater competitiveness, especially by preventing them from the pressure of particular interest groups. In addition, an outward looking strategy could be a source of designing sound budget system and more efficient fiscal administrations, by reducing the corruption. Therefore, even if an outward looking strategy increase a country exposure to external shocks, then at short term has a negative effect on budget balance. At long term, by reducing the corruption, an outward looking strategy could improve the budget balance source of higher rate of growth.

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