

A Pertinent Analytic Method to Correctly Measure Contributions to Growth in Gross Domestic Product

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Summary: In this paper, Antoine Brunet questions the OECD method in calculating contributions to GDP growth. He tries to show this method induces the users to seriously misjudge the contribution of external trade balance to GDP growth. He shows there is an alternative method, i.e. the AB method which is mathematically as correct as the OECD one. And this method is much more pertinent and allows the users to distinguish between two kinds of countries: on the one hand, the mercantilist countries and on the other hand, the non-mercantilist countries.

Key words: Growth contribution, External trade balance, Borrowing, Growth strategy, Mercantilism.

JEL: E01, E29, F43, F53.

Introduction: The OECD method is too simplistic

While no one today will deny that demand fuels production, at least in the short term, it is important to differentiate between the two principal categories of demand that are beneficial to a country: domestic demand and net foreign demand.

In many debates, and particularly in a period of global crisis, it is decisive to know, country by country, the relative contribution of domestic demand to GDP growth and that of net foreign demand.

Sixty years ago, in 1949, during the period of reconstruction, the economists at the OECD (*Organization for Economic Co-operation and Development*) hastily invented a rather simplistic method to establish these contributions. Sixty years later, this method remains widely used, and until now has not raised any real objections.

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Over the years, this method has gained quasi-official status: the two major international financial press agencies, Reuters and Bloomberg, have used it systematically whenever commenting on the latest quarterly GDP figures as countries publish them; other international bodies, such as the International Monetary Fund (I.M.F) and World Bank, consider that the OECD method not only poses no particular problem but in fact has become the method of reference that is used, or should be used, by everyone; leading financial institutions, from Goldman Sachs to Deutsche Bank to JP Morgan, have all approved the OECD method and used it systematically.

This method raises serious questions, however.

First, we will remind the reader of how this method has been constructed and submit it to a critical examination.

Second, we shall present our own AB method (as in Antoine Brunet), and describe how this method avoids the problems in the OECD approach.

Third, we shall seek to show the consequences this has on the main current economic debates.

Fourth, we will conclude there are two different strategies towards GDP growth, the mercantilist one and the non-mercantilist one.

1. The OECD method for calculating contributions to GDP growth

This begins with identifying production and total demand over the course of two successive quarters:

$$GDP_n = TDD_n + ETB_n$$

$$GDP_{n-1} = TDD_{n-1} + ETB_{n-1}$$

In which TDD is the Total Domestic Demand and ETB is the External Trade Balance.

From there, the following is very naturally deduced:

$$GDP_n - GDP_{n-1} = (TDD_n - TDD_{n-1}) + (ETB_n - ETB_{n-1})$$

and:

$$\frac{GDP_n - GDP_{n-1}}{GDP_{n-1}} = \frac{(TDD_n - TDD_{n-1})}{GDP_{n-1}} + \frac{(ETB_n - ETB_{n-1})}{GDP_{n-1}}$$

By assuming that GDP_n often differs little from TDD_n, they arrive at the following formula:

$$\boxed{\frac{\Delta GDP}{GDP_{n-1}} = \frac{\Delta TDD}{TDD_{n-1}} + \frac{\Delta ETB}{GDP_{n-1}}} \quad (\text{OECD formula})$$

In sum, according to the OECD approach, the relative variation in GDP is therefore equal to the sum of the relative variation in Total Domestic Demand TDD and a special variable, which is the ratio between the change in the External Trade Balance and the initial GDP (GDP_{n-1}). So far, so good.

However, things go awry when the OECD method sets up some very arbitrary terminology by designating this special variable as “the contribution from the External Trade Balance to the growth of GDP”. This premise skews the result: the OECD method imposes upon the user this definition of the special variable.

In our opinion, however, it is the ratio between the External Trade Balance and the initial GDP that correctly measures the contribution of the External Trade Balance to growth:

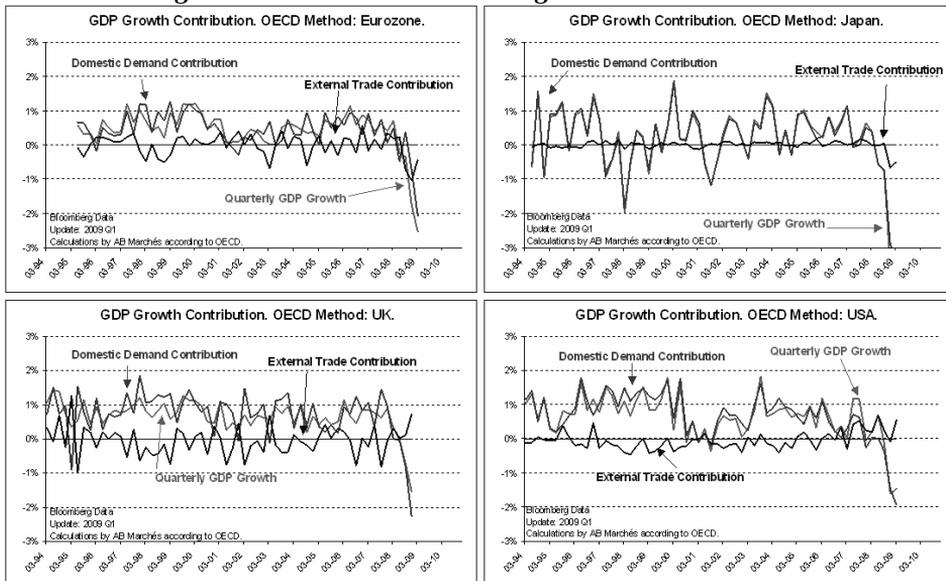
- If a country exports more than it imports, this will introduce a positive added value which is equal to its external trade surplus
- If a country imports more than it exports, this will introduce a negative added value which is equal to its external trade deficit.

This is a generally accepting accounting practice worldwide. Hence there is no ground here to equivocate: it is indeed the ratio of the External Trade Balance to the initial GDP that correctly measures the contribution to GDP growth due to external demand.

Let us immediately point out another major particularity of this “OECD relationship”: by construction, the variable $\Delta\text{ETB}/\text{GDP}_{n-1}$ represents a relatively insignificant value. From one country to another, the *variation* of the external balance as a percentage of initial GDP is very low as is shown by the charts below. In general, applying the OECD formula tends to result in the same diagnosis: “the relative variation of GDP in country C over the course of quarter *n* is essentially explained by the relative variation of its domestic demand”.

We could say we are looking at a barometer that constantly reads “Changeable weather”, whatever the weather conditions might actually be.

Figure 1: Contribution to GDP growth. OECD method



Source: AB Marchés.

In any case, it is rare indeed that applying the OECD formula will allow us to designate an External Trade Surplus as a sustainable force driving the economy, or an External Trade Deficit as a sustainable roadblock to the evolution of GDP in a given country. Even countries that are widely known for successfully practicing the mercantilist strategy of External Trade Surpluses – such as Japan, Germany, Switzerland, Sweden, etc. – are told under the OECD method that GDP growth is not reliant on their External Trade Surplus, but on the contrary rests solely on their domestic demand.

Consequently, the OECD formula should be rejected by practitioners because it fails to take into account the appropriate mechanisms for calculating GDP growth and also fails to distinguish between countries according to the growth strategy that they have adopted.

2. The AB method for calculating contributions to GDP growth

First, we should clearly state that the AB approach is as mathematically sound as the OECD method.

We identify production and domestic and net foreign demand.

$$GDP_n = TDD_n + ETB_n$$

We next subtract the initial level of GDP from both sides:

$$(GDP_n - GDP_{n-1}) = (TDD_n - GDP_{n-1}) + ETB_n$$

We then divide by GDP_{n-1} :

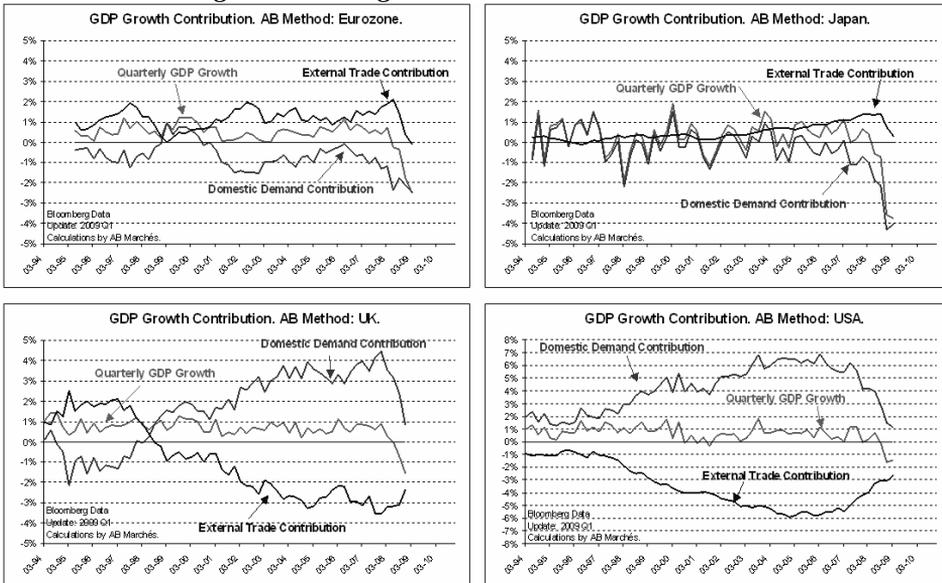
$$\frac{GDP_n - GDP_{n-1}}{GDP_{n-1}} = \frac{(TDD_n - GDP_{n-1})}{GDP_{n-1}} + \frac{ETB_n}{GDP_{n-1}}$$

$$\frac{\Delta GDP}{GDP_{n-1}} = \frac{TDD_n - GDP_{n-1}}{GDP_{n-1}} + \frac{ETB_n}{GDP_{n-1}} \quad (\text{AB formula})$$

This clearly shows that the relative variation of GDP is the exact sum of two major significant quantities, one quantity that we have just mentioned above, “the External Trade Balance in relation to the initial GDP”, and another special variable, $(TDD_n - GDP_{n-1}) / GDP_{n-1}$.

We propose to refer to this special variable as “the degree of modulation in domestic spending”. This variable is a quantity that can be negative or positive. If it is negative, one can speak of the degree of *restriction* on domestic spending. If it is positive, one can speak of the degree of *stimulation* in domestic spending.

Figure 2: GDP growth contribution. AB method



Source: AB Marchés.

2.1 The first case (the example of Japan and the Euro Zone in our charts)

A country's domestic spending during quarter n turns out to be *sustainably lower* than its GDP in quarter $n-1$. In truth, there is nothing surprising here.

According to the adage, a country cannot live beyond its means; it can only spend what it has previously earned. A certain number of countries therefore oblige themselves not to spend more than was earned in the preceding quarter.

We could argue that these countries are only behaving “perfectly normally”. However, global macroeconomics presents us with a paradox: if most big countries behaved this way all the time, i.e. “perfectly normally”, it wouldn't take long for the global economy to go into depression. To enjoy sustainable growth, the global economy, as we might intuit, needs at least certain big countries to behave “abnormally”.

Be that as it may, when this special variable $(TDD-GDP_{n-1})/GDP_{n-1}$ is negative, it is both natural and legitimate to call it “the degree of restriction on domestic demand”.

2.2 The second case (the example of the United States and the United Kingdom in our charts)

A country's total domestic spending from quarter to quarter does not turn out to be sustainably higher than its GDP in the previous quarter. This case is more surprising. How, then, can a country position itself sustainably in such a configuration? For us, there are two conditions:

2.2.1 Both the country and its citizens must show an appetite and a facility for indebtedness (domestic and/or foreign)

If quarterly spending does turn out to be higher than GDP in quarter $n-1$, it is because the net amount of borrowing exceeds the amount of savings over the course of quarter n . Consequently, those domestic agents that are net borrowers (from domestic or foreign lenders) go more deeply into debt than the amount that gets saved by those among them that are net creditors.

Historically, the element that made it easier for certain countries to subscribe to this very peculiar configuration was the decoupling of bank funds from gold, which occurred in a two-step process.

- 1946: Bretton-Woods. The convertibility of national currencies into gold was definitively dropped for private individuals. The only exception: foreign central banks could present their dollars to the US Federal Reserve to convert them into gold at the fixed rate of \$35 an ounce.

- 1971: Nixon Decision. The above exception was suddenly and definitively abolished. Dollars accumulated as assets by foreign central banks were no longer convertible into gold.

Since 1946, and even more so after 1971, credit creation ex nihilo became possible on a very grand scale. This allowed banks to lend massively and to massively solicit potential borrowers. This behavior became commonplace in the developed countries and took on a considerable magnitude, most particularly in the United States, which considered itself, doubtlessly wrongly so, safe from any problem of external financing.

2.2.2 The country must be able repeatedly to withstand a trade deficit

The available data show that those countries that spend more than they have earned expose themselves to repeated heavy trade deficits. A question then arises with regard to how long these economies can sustain that.

Their ability to “stomach” successive trade deficits can either rest upon initially strong foreign exchange reserves, or on a strong international credit rating that allows them to take on major external indebtedness.

The countries that take the risk of maintaining domestic spending that is chronically higher than GDP for the previous quarter, and that do not enjoy this ability to “stomach” repeated trade deficits, quite quickly find their external finances in a crisis position: e.g., Mexico (1995), South Korea, South-East Asia, Russia and South America (1997-2001) and some Eastern European countries (2008).

Be as it may, when the special variable $(TDD-GDP_{n-1})/GDP_{n-1}$ is positive, it is both legitimate and natural to define it as “the degree of stimulation in domestic spending”.

Moreover, country by country, it can be verified that when monetary and budgetary policy becomes more stimulating, the degree of stimulation to domestic spending (as we measure it) is strengthened (or in the alternative, the degree of restriction is reduced). In the same manner, when stock and real estate markets are rising, borrowing behavior is strengthened and savings behavior is diminished, and that phenomenon very naturally leads to a reinforcement of the degree of stimulation of domestic spending (or, in the alternative, in a reduction of the degree of restriction on domestic spending).

To conclude, let us return to the AB relationship. It is stated thus: for each country and for each quarter, the relative variation in GDP is the sum of the “degree of modulation of domestic spending” and the “ratio of the External Trade Balance” (ETB/GDP_{n-1}) .

2.3 To give an idea of the advantage of the AB method versus the OECD method, we shall put forward two examples

The first example: while the OECD formula inevitably concludes that for every country and every quarter, it is the relative variation in domestic demand that explains the relative variation in GDP, our formula turns out to be highly discriminating and presents the advantage of distinguishing between two kinds of countries:

1. Countries benefiting from a highly positive trade surplus and which, thanks to this, can afford a restriction of their domestic spending without its hindering the growth of their GDP. These include Japan and the whole of the Euro Zone (see our graphs). Most particularly, in the heart of the Euro Zone, we also find Germany, the Netherlands, Belgium and Finland. Switzerland and Sweden. In Asia, we find Japan, Taiwan, Singapore and South Korea. The lack of quarterly figures does not allow us to make the calculation for China, but it would appear that China is among the leaders of this club. These countries have successfully adopted a mercantilist strategy; they have succeeded in basing their growth on recurrent trade surpluses.
2. Countries affected by a very negative trade deficit, and which nonetheless achieve GDP growth because they have significantly stimulated their domestic spending. These include the United States, the United Kingdom (see our graphs). In the heart of the Euro Zone, Spain, Italy and France are in this category. These countries are non-mercantilist; they have based their growth solely on stimulating their domestic spending and are resigned in advance to a trade deficit.

The second example: our method (we successfully used it since the end of the 1970's) very naturally makes clear the genesis and onset of the current crisis at the end of 2007.

1. The genesis of the crisis: The External Trade Balance of the United States, and to a lesser degree, that of the other G7 countries, began degrading as of the end of 2001. There is a common foreign factor contributing to this development: China's entrance in the World Trade Organization, endowed with an outrageously advantageous fixed exchange rate. The United States, under the leadership of Fed Chairman Alan Greenspan, gave up opposing the shock of a growing trade deficit with China and decided instead to adapt to it. How? By compensating for it by stimulating domestic spending every quarter. During 13 consecutive quarters, domestic spending was on average at 6,5% above the previous quarter's GDP; that allowed the US to rise above its average trade deficit of 5.75% of the previous quarter's GDP; in total, its GDP was to stabilize at a quarterly

+0.75% each quarter, at +3.0% on an annualized basis. However, to attain this result, it was of course necessary to massively encourage borrowing by American citizens and discourage their savings, thereby dangerously mortgaging the American economy.

2. The onset of the crisis: In every country, there is a maximum limit, difficult to quantify a priori, to the degree of indebtedness that solvent households can bear. When that limit was for all purposes reached, the American banks and para-banks ventured into subprime credit, that is to say credit for insolvent households. As we know, this was harbinger of the banking crisis in the summer of 2007.

After the banking crisis had suddenly wiped out interbank confidence, the banks became paralyzed with fear and brutally interrupted all financing activities. As for the households, worried by the successive crises in real estate, banking and the stock market, then by the consequent sudden rise in unemployment, they in turn brutally increased their rate of saving. It is not astonishing that, after the summer of 2007, as soon as the degree of stimulation in domestic spending in the USA had reached its extremes, it suddenly collapsed and fell from 6.5% to only 1% of GDP. Simultaneously, external trade deficit remained largely intact and stable at around 2.5% of GDP (this is a confirmation that the deficit came principally from the massive under-valuation of the Yuan). Henceforth, early 2008 was ripe for the outbreak of an outright recession, the worst since World War II and one that unfortunately will have lasted much longer than expected.

In the quarters to come, stimulating domestic spending will rely purely on borrowing by the Federal state. Meanwhile, China's intransigence since July 2008, notably by pegging the dollar again - at 6.83 Yuan to 1\$ -, makes it nearly impossible to foresee any US return to a foreign trade surplus in the near future. Because of this, getting out of a declared recession will be problematic and mediocre at best.

3. Return to the sources of GDP growth

In the final analysis, the OECD method presents itself as "the simple, common sense method", "the method that goes without saying". What goes without saying is that it is a formula that fails to take into consideration the complexities of the current economic situation.

Our method, the AB method, tries on the contrary to record formally the findings of Knut Wicksell and John Maynard Keynes, which have clearly shown their superiority to those of Jean-Baptiste Say, as much on the level of ideas as on the level of facts. It is henceforth widely recognized that production does not

create demand, that it is demand that fuels production, and that it is therefore demand that limits production.

We must therefore draw all the logical consequences from this conclusion. If it is overall demand that limits the growth of production, then it is logical to concentrate our attention on the factors that are likely to stimulate overall demand.

Put simply, in an economy that would be both closed and deprived of any financial system, demand in quarter n would be equal at best to the GDP of quarter $n-1$, and the GDP of quarter n would therefore be equal at best to the GDP of quarter $n-1$; zero growth would be the best one could hope for.

To escape from such perpetual economic stagnation, *two levers (and only two)* are now available to stimulate overall demand of a country and allow it to post a higher level of GDP than that of the previous quarter:

- As soon as there is foreign trade, each country *can capture demand elsewhere*. How? By selling abroad in quarter n more than the country buys from its trading partners. When this happens, its best measure is what we called “the ratio of External Trade Surplus to the previous quarter’s GDP”.
- As soon as there is a minimum of financial engineering, each country *can capture demand from the future*. How? By immediately speeding up demand from its citizens, which otherwise would have taken longer. By what device can this be done? By encouraging its citizens to borrow overall more than they save, so that they buy during quarter n more than they produced and earned during quarter $(n-1)$. When this happens, its best measure is what we called “the degree of stimulation of domestic spending”.

In a manner of speaking, when some households, some businesses and some municipalities or states borrow more than they save, *they anticipate* their future capacity to produce and purchase and, without knowing it, they contribute to the growth of GDP.

4. Two distinct kinds of growth strategies coexist: The mercantilist and the non-mercantilist strategies

What strikes the observer is the absence of rotation between countries with regard to foreign trade. For decades, certain countries have made consistent foreign trade surpluses (Germany, the Netherlands, Belgium, Sweden, Switzerland, Japan, South Korea, Taiwan, Singapore, etc.) whereas other countries have fallen prey to consistent foreign trade deficits (the United States, of course, but also the United Kingdom, Australia, Spain, and to a lesser degree, Italy and France). And when a country like China decides after 1989 (Tiananmen) to make its mark

on the international level, it unhesitatingly takes the option of joining a particular side, in this case the club of countries with a consistent External Trade Surplus, as previously had Japan done.

Obviously, as everyone can deduce, the situation of the former group of countries is much more comfortable than that of the latter countries. In any case, this absence of rotation proves that certain countries, whatever the political stripe of their successive administrations might be, have definitively opted to maintain, most often successfully, repeated foreign trade surpluses, while other countries, whatever the political stripe of their successive administrations might be, have resigned themselves to repeated foreign deficits.

Such consistency in firm choices calls for a very peculiar terminology: it seems natural to designate *the former countries as mercantilist countries*: these countries behave in effect in line with the traditional mercantilist authors who argued that success in economic politics derived from recurrent foreign trade surpluses. *As for the others, for lack of a better word, we shall call them non-mercantilist countries.*

In reality, it is extremely rare that a country enjoys growth with both levers at the same time, that of foreign surpluses and that of domestic indebtedness greater than savings. *Mercantilist countries* generally do well with the first lever, but score in the negative for the second. *Non-mercantilist countries*, by contrast, do poorly with the first lever, but generally compensate with a positive score in the second.

The growth equation thereby takes two distinct forms according to the type of country:

For the mercantilist countries: will the net savings behavior of their citizens stay limited enough in relation to the foreign trade surplus for overall quarterly demand to be really greater than the GDP of the previous quarter?

For the non-mercantilist countries: will the net borrowing behavior of their citizens be strong enough in relation to the foreign trade deficit for the quarterly total demand to be really greater than the GDP of the previous quarter?

One must keep in mind that on the global level, foreign trade is a zero sum game. Thus it is impossible that all countries can simultaneously succeed in their mercantilist strategies. In this context, it takes a strong strategic will among the leadership of mercantilist states to maintain sustainable success. In general, countries that successfully maintain mercantilist strategies over the years have enjoyed certain advantages to which none of their competitors have access (customs barriers, monetary protectionism, advantages in export financing, etc.).

Conclusion

Either the OECD method or the AB method? The OECD method is a source of confusion and offers no interpretation. The AB method proves itself far more discriminatory and pertinent. It leads to a more consistent and reliable interpretation.

Along the way, it has been seen that the AB method, in a manner of speaking, permits us to quantify the updated message of the traditional mercantilist authors, William Petty and Friedrich List, in particular, who explained to their contemporaries that prosperity and power belonged to countries that settled comfortably into repeated foreign trade surpluses to the detriment of their partners.

Everything indicates that tomorrow's economic debates are going to turn around two axes: the prolongation of the global economic crisis due to the chronic insufficiency in global demand; the confrontation between China and the United States for world hegemony.

When it comes to quantifying the observed trends that fuel these two major debates, we are convinced that the AB method will reveal itself to be much more productive and fertile than the OECD method.

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