Patterns of Economic Growth of the Brazilian Economy 1970-2006: demand led growth under balance of payments constraint

An outline of the paper

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Abstract

The paper analyses the patterns of economic growth that characterized the huge decline of the Brazilian trend GDP growth rate in the period between 1970 and 2006. The analysis is based on an analytical framework that combines the classical supermultiplier demand led growth model with the hypothesis that the balance of payments is the main potential (and often the effective) constraint to the expansion of the Brazilian economy in the period under consideration. From this perspective, the *proximate causes* of the decline of the GDP growth trend are the following. First, we have the relatively low growth rate of the domestic components of final demand which combined, with its high weight in total final demand explains the low contribution of this type of expenditure to the GDP growth rate since the 1980s. Secondly, the external sector contribution to GDP growth was both very unstable and, whenever its contribution was relatively high, it could not sustain the relatively high GDP growth rates of 1970s. These patterns of demand led growth are quantitatively investigated with the application of a demand led growth accounting methodology which allows us to analyze the expansion patterns of a set of periods between 1970 and 2006. In what concerns the more *fundamental causes*, the paper points out to the relevance of: (a) the changing patterns of commercial and financial external insertion of the Brazilian economy; (b) the worsening of the income distribution conditions associated with the trend decline in the wage share, the high percentage of the population still below the poverty line and the high inequality in personal income distribution; and (c) the macroeconomic policy regimes, in particular from 1999 on with the adoption of the policy mix combining inflation targeting, large primary government budget surplus and floating (but very much managed) exchange rates.

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1. Introduction

2. The Brazilian Economic Growth Experience in Perspective

The Brazilian economy was one of the fastest growing economies in the 20th century. From the early 1900's until the end of the 2nd world war it experimented a relatively high average growth rate (3,8% per year approximately), but was also confronted by a huge instability, an important feature of the primary export pattern of development that characterized the period. The Brazilian economy has performed particularly well from the start of the State led industrialization process after the end of the 2nd world war until the Latin America crises in the 1980's. Indeed, as can be seen in Figure 1 below, in this period the Brazilian economy has grown at an average rate of 6,8% per year, with the higher growth rates registered in the second half of the 1950s and in the 1970s as a whole.

**Figure 1 – Brazilian long term real growth rates**
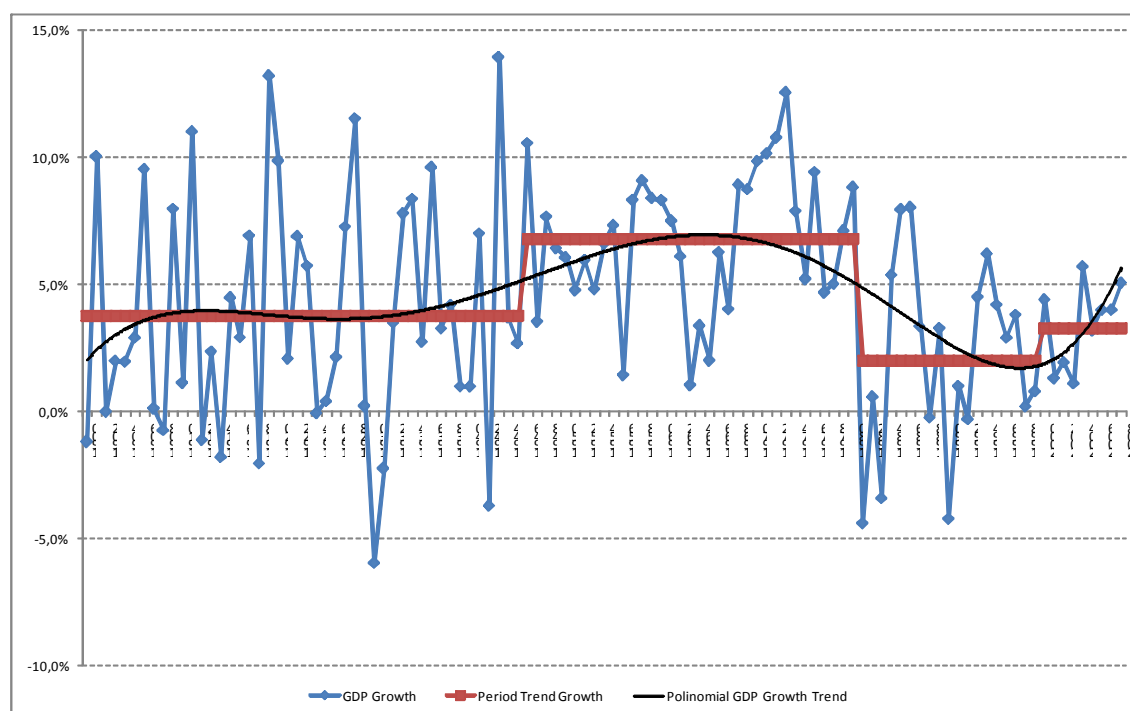
Source: Author's calculations based on data available in Maddison (2010).

The worst period in terms of growth performance was the prolonged stagnation of the 1980's and 1990's (with an average growth rate of 2% per year). It started in the beginning of the 1980's with the Latin America crises and was maintained in the period of intensive liberal reforms of the 1990's. In the new millennium, the Brazilian economy has presented higher growth rates (with an average rate of growth of 3,3% per year), in line with the better performance of the world economy (see **Errore. L'origine riferimento non è stata trovata.** below). However, it should be remarked that the growth acceleration has not been able to

recover even the average growth rates that prevailed in the primary export period in the beginning of the last century.

We can also compare the Brazilian growth performance with that of other reference countries. First, let us make a comparison of the levels of Per Capita GDP of Brazil, Republic of Korea (South Korea) and the United States of America. The US economy is our benchmark country for the convergence analysis. We also include South Korea in our analysis in order to make a contrast between Brazil and a successful economy of the Asian periphery.

Figure 2 - Per capita GDP levels (logarithmic scale)
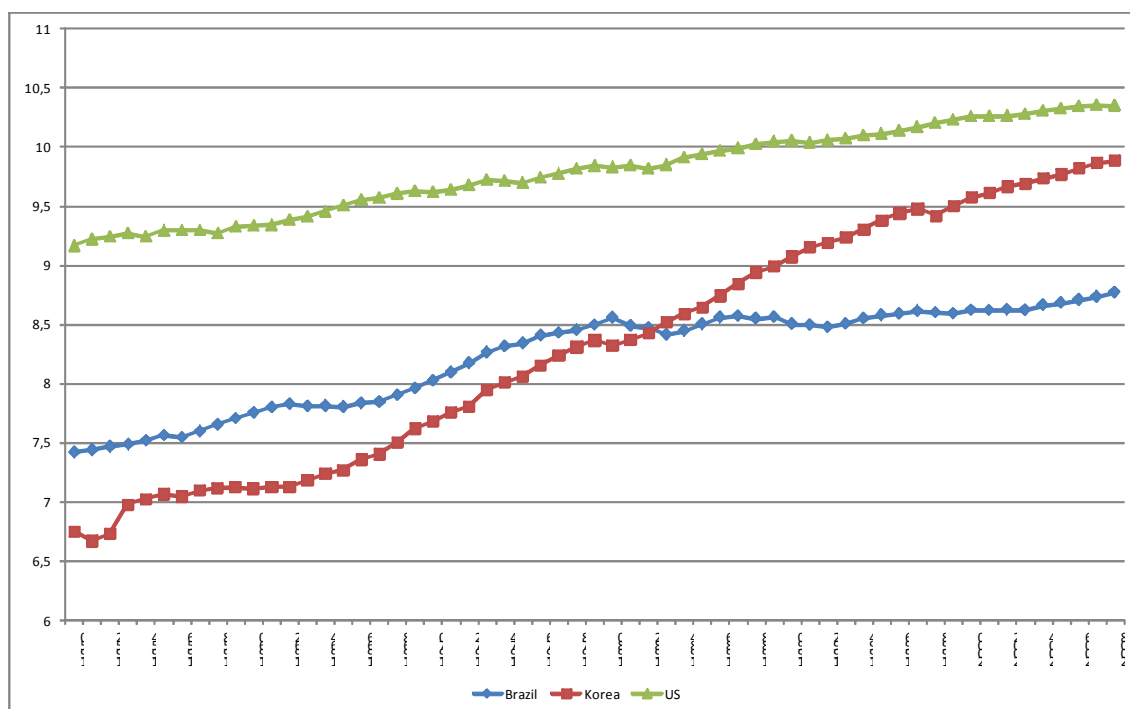
Source: Author's calculations based on data available in Maddison, A. (2010).

Table 1 - Relative per capita GDP (% of US per capita GDP

Year	Brazil	South Korea
1950	17,5	8,9
1980	28,0	22,1
2000	19,4	50,5
2008	20,6	62,9

Source: Author's calculations based on data available in Maddison (2010).

From Figure 2 and **Errore. L'origine riferimento non è stata trovata.** we can observe that both, Brazil and South Korea, engaged in a process of catching-up with the US economy until

the 1980's. Starting from relative shares of US per capita GDP of, respectively, 17,5% and 8,9% in 1950, Brazil and South Korea achieved relative shares of respectively 28,0% and 22,1% in 1980. From then on the Brazilian convergence process was interrupted by the Latin America crises and Brazil has lagged behind until the beginning of the new millennium. Indeed, after two decades of stagnation the Brazilian economy ended the 1990's with a relative share of 19,4% and after thatit presented only a slight recover, achieving 20,6% of US per capita GDP in 2008. In contrast, South Korea managed to continue its convergence process only briefly interrupted by the Asian Crisis, reaching a relative share of 62,9% in 2008.

Table 2 - Average Real GDP Growth Rates (% per year)

Periods	Brazil	South Korea	US	World
1950-1980	6,8	7,5	3,6	4,5
1980-2000	2,0	7,5	3,2	3,0
2000-2008	3,3	4,4	2,1	4,2

Source: Author's calculations based on data available in Maddison (2010).

Another revealing comparison can be done between the economic growth experience of Brazil, South Korea, United Sates of America and the World economy. Indeed, we can observe in **Errore. L'origine riferimento non è stata trovata.** the same pattern of convergence and divergence discussed above in terms of per capita GDP levels. Additionally, we can see that the Brazilian economy only attained a higher growth rate than the world economy in the State led development period between 1950 and 1980, while South Korea was able to maintain its expansion rate higher than the world economy for the whole period (i.e., 1950-2008).

The above discussion gives us the background subjacent to our main subject of analysis. It shows that in the period covered by our paper the Brazilian economy experienced its highest growth rates in the 1970's, from which it followed a lasting stagnation period in the 1980's and 1990's, and, finally, a slight acceleration of GDP growth rates in the end of the whole period. Hence, two important background questions drive our investigation. First, and more important, is to understand what caused the decline in the trend growth rates of the Brazilian economy observed in the 1980's and 1990's. Second, relates to what are the factors behind the later increase of the Brazilian economy expansion rates. In what follows we will try to answer these questions. It should be highlighted that our answer to the last question will be admittedly more tentative, since it refers to a shorter and very recent period, which hampers the evaluation.

3. The Analytical Framework

The above questions, in particular, the first one have been the subject of important debates concerning the interpretation of the Brazilian growth experience. More recently, the literature explaining the huge decline in the Brazilian growth rates has been influenced by the neoclassical economic theory. According to this standpoint, the price system is supposed to convey information on the relative scarcity of resources that is transmitted to consumers and

producers and govern their choices in the direction of the full utilization of the available resources. Hence, the long term economic growth should be characterized as a supply-constrained process, whose rate of expansion would depend on the growth of capital and labor inputs available to the economy and also on the growth of the efficiency on the utilization of these inputs. Therefore, according to this interpretative literature, the causes of the decline of the trend GDP growth rate of the Brazilian economy would be: the low domestic savings rate, the low investment in human capital, and the low (or even negative) growth rate of total factor productivity. These proximate causes have been evaluated quantitatively by the use of a growth accounting supply-side empirical methodology, inspired by neoclassical growth theory. Furthermore, the referred literature also tries to indentify the more fundamental causes responsible for the decline of the Brazilian GDP growth trend. In this aspect, it has been suggested that the poor growth performance of the Brazilian economy since the 1980s is explained by the "market-unfriendly" institutions and the pervasive market (and government) imperfections inherited from the post war State that induced an inward oriented development strategy.

Nevertheless, contrary to the usual neoclassical viewpoint, the Brazilian economy has not been normally constrained by the availability of resources in general and labor in particular. As occurs in many developing economies, the Brazilian economy is characterized by a high degree of structural heterogeneity and by the existence of significant labor surplus. One type of quantitative expression of this kind of heterogeneity is the great disparity in the observed levels of labor productivity between economic activities.

Table 3 - Relative Productivity, Employment Structure and Labor Productivity Growth by sector

Variable	Sector	Agriculture, Forestry, and Fishing	Mining and Quarrying	Manufacturing	Public Utilities	Construction	Wholesale and Retail Trade, Hotels and Restaurants	Transport, Storage, and Communication	Finance, Insurance, and Real Estate	Community, Social and Personal Services (including Government Services)	Sectoral Sum
Relative Sectoral Labor Productivity levels	1970	19	269	180	133	142	83	99	460	164	100
	1980	17	205	190	250	138	69	141	357	110	100
	1990	28	372	143	470	135	41	132	377	95	100
	2000	37	646	166	1010	141	36	122	267	92	100
	2005	45	620	167	888	134	33	119	251	88	100
Sectoral Employment Structure	1970	48%	1%	14%	1%	6%	10%	3%	4%	13%	100%
	1980	37%	1%	14%	1%	9%	11%	3%	6%	19%	100%
	1990	25%	1%	16%	1%	7%	17%	4%	7%	24%	100%
	2000	21%	0%	13%	0%	6%	20%	4%	7%	29%	100%
	2005	19%	0%	13%	0%	6%	21%	4%	7%	29%	100%
Sectoral Labor Productivity growth	1970-1980	3,4%	2,0%	5,4%	11,7%	4,5%	2,9%	8,6%	2,2%	0,7%	4,8%
	1980-1990	3,0%	4,1%	-4,7%	4,4%	-2,1%	-6,9%	-2,6%	-1,4%	-3,3%	-1,9%
	1990-2000	4,0%	6,7%	2,5%	9,0%	1,4%	-0,4%	0,2%	-2,5%	0,6%	1,0%
	2000-2005	4,1%	-0,7%	0,2%	-2,4%	-0,9%	-1,8%	-0,5%	-1,0%	-0,6%	0,1%

Source: Author's calculations based on data available in Groningen Growth and Development Centre 10-sector database, June 2007, http://www.ggdc.net/, de Vries and Timmer (2007)

From **Errore. L'origine riferimento non è stata trovata.**, we can see that the sectoral labor productivity levels show a high degree of divergence in the whole period. In the 1970's the low relative productivity of the sector "agriculture, forestry and fishing" is an indicator of the existence of a labor surplus in this sector. As the growth and development process occurred,

the labor productivity in the sector under discussion increased at a rate above the average rate of growth of productivity in the economy and, concomitantly, the employment share of the sector has declined. Yet, in the same period, due to the fast urbanization, the employment share of the sectors "wholesale and retail trade, hotels and restaurants" and "community, social and personal services" has increased and their labor productivity has grown at a rate lower than the average rate of growth of productivity in the economy. Note that, in contrast with the former movement, this second movement has contributed to the increase in the structural heterogeneity. So the process of industrialization *cum* urbanization of the Brazilian economy has been characterized by the reduction of the labor surplus in primary activities alongside to its increase in the low productive and low paid service activities localized in the urban centers, most of it in an informal situation. In sum, the industrialization process was not capable to produce a decline in the degree of structural heterogeneity and to eliminate the existence of surplus labor in the Brazilian economy. Hence, the idea that the Brazilian economy can be characterized by generalized labor force constraint in its growth trajectory seems to be very implausible one.

Figure 3 –Labor Productivity and GDP Growth Rates
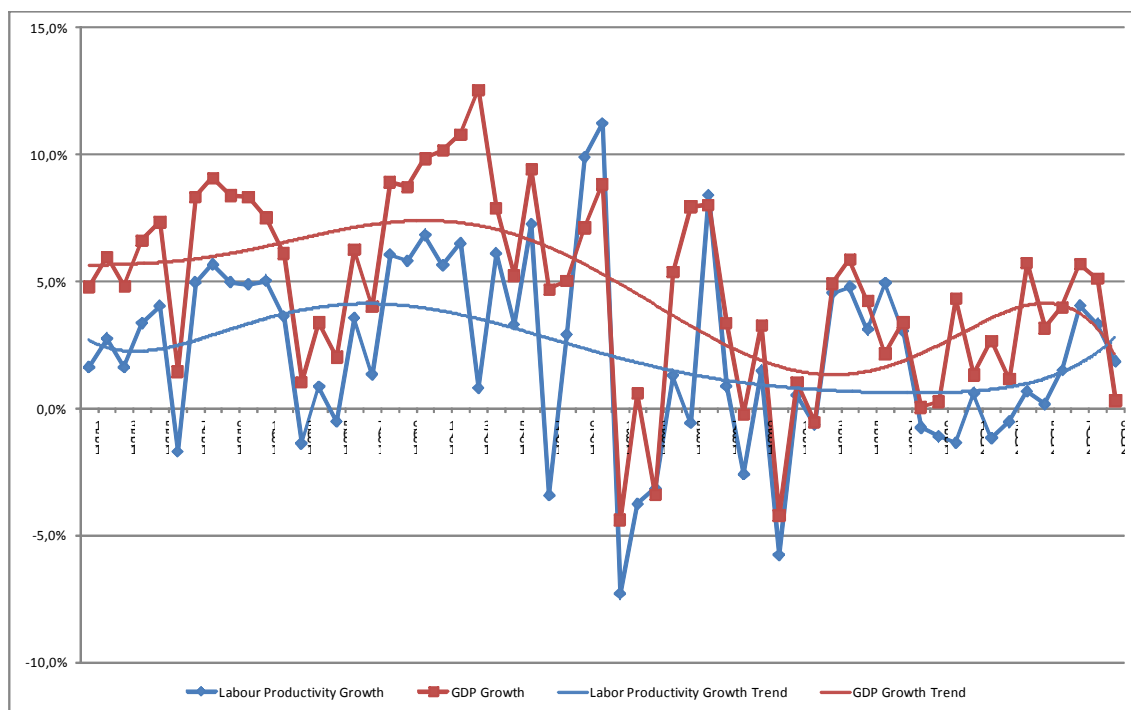
The conclusion reached above is also reinforced by the observed behavior of labor productivity growth in relation to the GDP growth path. In fact, as we can see in Figure 3 above, the two economic series present a similar behavior and move normally in the same direction. According to neoclassical standpoint this observation could be explained by supposing that the behavior of the labor productivity growth rate would govern the behavior of the GDP growth rate. Certainly, assuming almost continuous full employment, movements

in the former would generate movements in the same direction of the latter. But once we admit that the labor constraint is not effective, this type of explanation completely loses itspower . Therefore, an alternative explanation should be offered. A possible candidate is provided by the type of hypothesis subjacent to the so called "Kaldor-Verdoorn Law" literature. The latter empirical regularity suggests that it is the behavior of the GDP growth that would cause the labor productivity growth movements. This would be the case because of the existence of static and dynamic economies of scale associated to the process of economic growth.

Consequently, conceiving economic expansion as a demand led process, an acceleration of the demand induced growth rate would trigger an acceleration of the labor productivity growth, attenuating the impact of the faster growth pace on labor requirements and *vice-versa*. Normally, the inducement under analysis is not strong enough to prevent the GDP growth rate to be positively related with the employment growth rate. It only implies that the output-elasticity of employment assumes values in the interval between zero and one. So the conclusion that emerges from our discussion is that the availability of labor force has not been an effective constraint for the long term expansion of the Brazilian economy.

3.1.   **Theoretical background**

The main interpretative hypothesis subjacent to this paper is that the economic expansion of the Brazilian economy in the period analyzed can be conceived as a demand led growth process subject to a balance of payments constraint. From the theoretical standpoint our analytical framework is based on the classical (or sraffian) supermultiplier demand led growth model proposed by Serrano (1995 and 1996). We use a simplified small open economy version of the model as our reference (see the appendix for a presentation of the basic equations and variables involved in the model). Here we will briefly discuss the main hypothesis and implications of the model.

Let us start from the equilibrium condition between aggregate supply and demand. With the maximum number of components of the demand side allowed by our database we obtain.[3]

$$Y + M = C_{HND} + C_{HD} + I_H + C_G + I_G + I_{SE} + I_{PE} + X$$

Now, assume that imports are related to total aggregate demand as expressed by the equation below

$$M = (1 - \mu)(C_{HND} + C_{HD} + I_H + C_G + I_G + I_{SE} + I_{PE} + X)$$

Next, let us further assume that non-durable household consumption and private enterprise investment are induced:

$$C_{HND} = cY$$

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[3] In the appendix it can be found a list of symbols and its respective meanings.

$$I_{PE} = hY$$

and that the remaining aggregate demand components are autonomous:

$$Z = C_{HD} + I_H + C_G + I_G + I_{SE} + X$$

According to the supemultiplier model the induced component of aggregate consumption is related to the purchasing power introduced in the economy by production decisions, normally associated with the wage bill generated by such decisions. So, one of the main determinants of the propensity to consume (c) is the wage share in aggregate income. In what concerns investments, the above equations captures the influence of the level of activity on investment expenditures realized by private enterprises. The propensity to invest (h) is considered an endogenous variable in the classical supermultiplier model. According to latter, the behavior of h would be explained by the deviations between the realized capacity output utilization rate and the normal capacity utilization rate. The process of capitalist competition would induce an increase of h whenever we have a positive deviation and *vice-versa*. This would produce a tendency for the adjustment of productive capacity in relation to aggregate demand. As a result the model predicts a tendency to gravitate around a position of normal capacity utilization. Furthermore, the model predicts also that h would be positively related to the GDP growth rate.

Yet, substituting the above relations on the first two equations we obtain

$$Y = \mu cY + \mu hY + \mu Z$$

Solving the equation for the equilibrium level of the GDP we reach the following result

$$Y^* = \left(\frac{\mu}{1 - \mu(c + h)}\right) Z = \alpha Z$$

Hence according to the supermultiplier the behavior of the GDP would be explained by the behavior of the supermultiplier (α) and of the total autonomous expenditures (Z). In fact, the model predicts that the GDP trend rate of growth is governed by the pace o the expansion of the autonomous expenditures. This is so because although the variables involved in the supermultiplier formula can change, they are limited in their range of variation.

3.2.   Empirical methodology

4. Results

4.1.   An assessment of the whole period

From the theoretical background discussed above we pointed out the main variables that influence the performance of the GDP. The way each one of them contributes to the total growth may change through time, and it is possible to identify different patterns of growth associated to difference in the importance of each component. In order to identify these patterns one can isolate the behavior of each component indicating which of them was more important at each period, by a method of decomposition analysis.

Before discussing each period separately, it is interesting to analyze the entire period as whole, in order to capture the main drivers of growth. In the following sections, we will discuss each period trying to indicate the causes of the main changes in the patterns and, therefore, addressing the two questions presented above.

As can be seen in Table 4, the annual average growth rate of the Brazilian economy during the period of 1970 to 2006 was around 4%, mainly driven by the autonomous expenditures, whose contribution to the average growth as more than 100%. The supermutiplier, on the other hand, had a negative impact due to a decrease in its 3 components, the domestic content coefficient, the propensity to consume and the propensity to invest. Among the autonomous expenditures, government consumption was the main driver, contributing to almost 45% of its total contribution.

Before going further it is important to explain in a little bit more details how to read Table 4, since the main will be shown in tables like this one in the following sections. On the first column we have each of the demand components described above. The result for each of them is presented in the sixth column and they can be added up to the total growth rate, shown in the last cell of this column. These components can be aggregated in two different forms. First, as shown by columns 2nd-5th, we can aggregate them among domestic or external sector components, separating the domestic sector on public and private contributions. In the last line of these columns we can see that the domestic public sector was the main driver, followed by the external sector. The small contribution of the private sector is related to the nature of most of its components. As can be seen in the second form of aggregation, columns 7th-9th, both private sector investment and non-durable consumption affect GDP growth only through their impact on the supermultiplier. On the other hand, all of the public sector components affect directly the GDP, since they are autonomous expenditures.

Table 4 – Decomposition of the annual average rate of growth (1970 – 2006)

Expenditures	Domestic Sector		External Sector	Inventory change	Total	Autonomous Expenditures	Supermultiplier	Inventory change
	Public	Private						
Gov Consumption	1.81%				1.81%	1.81%		
Gov Investment	0.15%				0.15%	0.15%		
SOE Investment	-0.01%				-0.01%	-0.01%		
HH Res Investment		0.36%			0.36%	0.36%		
HH Durables Cons.		0.46%			0.46%	0.46%		
HH Non-Durables Cons.		-0.14%			-0.14%		-0.14%	
PE Investment		-0.03%			-0.03%		-0.03%	
Domestic Content Coeff.			-0.10%		-0.10%		-0.10%	
Exports			1.37%		1.37%	1.37%		
Inventory change				0.18%	0.18%			0.18%
Total	1.95%	0.65%	1.26%	0.18%	4.04%	4.13%	-0.27%	0.18%

4.2.   Abundant international liquidity and high growth: 1970-1980

The golden age of the Brazilian economy culminated with a very fast growth in the late 1960s and beginning of the 70s. The period from 1968-1973 is called the Brazilian miracle with an average growth rate higher than 10%. After the first Oil shock there was a slowdown on growth, but even so, the average growth rate of the 1970s was more than 8%. This last boom of the economy consolidated the structural transformation that started after the second World War and ended at the beginning of the 1980s.

We divided the 1970s in two periods, from 1970 – 1975, shown in Table 5, and 1976-1980, in Table 6. This division is due to data availability and is not the best one for the period, ideally the breaking point should be in 1973, however, the only data source for dividing the household consumption into durable and non-durable were the input-output matrices that were available for every five years since 1970.

Contrasting with the average of the whole period, in the 1970s the private sector had a much greater influence, and in the second half of the decade was the most important component. Household durable consumption had a major role, however, it is important to highlight that both propensity to consume and investment rate also had an important role increasing the multiplier. In the first half, their impact was more than compensated by an decrease on the domestic content coefficient. As highlighted by Tavares (1972), the decrease in the domestic content coefficient is an important by-product of the process of import substitution, by which the country changes its imports structure. Usually there is a change

from importing simple consumption goods to more sophisticated intermediate and capital goods.

After the First oil shock the Brazilian government decided to implement a large industrialization plan (Second National Develpoment Plan) that started in 1974 focusing on these more sophisticated sectors and, specially, energy. Most of these

Table 5 - Decomposition of the annual average rate of growth (1970 – 1975)

Expenditures	Domestic Sector		External Sector	Inventory change	Total	Autonomous Expenditures	Supermultiplier	Inventory change
	Public	Private						
Gov Consumption	2.1%				2.1%	2.1%		
Gov Investment	1.0%				1.0%	1.0%		
SOE Investment	1.8%				1.8%	1.8%		
HH Res Invest		0.7%			0.7%	0.7%		
HH Durables Cons.		1.7%			1.7%	1.7%		
HH Non-Durables Cons.		0.1%			0.1%		0.1%	
PE Investment		1.1%			1.1%		1.1%	
Domestic Content Coeff.			-1.5%		-1.5%		-1.5%	
Exports			1.9%		1.9%	1.9%		
Inventory change				1.1%	1.1%			1.1%
Total	4.9%	3.6%	0.4%	1.1%	10.1%	9.2%	-0.3%	1.1%

Table 6- Decomposition of the annual average rate of growth (1976 – 1980)

Expenditures	Domestic Sector		External Sector	Inventory change	Total	Autonomous Expenditures	Supermultiplier	Inventory change
	Public	Private						
Gov Consumption	1.3%				1.3%	1.3%		
Gov Investment	-0.1%				-0.1%	-0.1%		
SOE Investment	0.7%				0.7%	0.7%		
HH Res Invest		1.3%			1.3%	1.3%		
HH Durables Cons.		1.3%			1.3%	1.3%		
HH Non-Durables Cons.		0.7%			0.7%		0.7%	
PE Investment		0.3%			0.3%		0.3%	
Domestic Content Coeff.			-0.1%		-0.1%		-0.1%	
Exports			2.5%		2.5%	2.5%		
Inventory change				-0.7%	-0.7%			-0.7%
Total	1.8%	3.7%	2.5%	-0.7%	7.2%	7.0%	1.0%	-0.7%

Figure 1 – Balance o Payments Accounts as a percentage of Exports
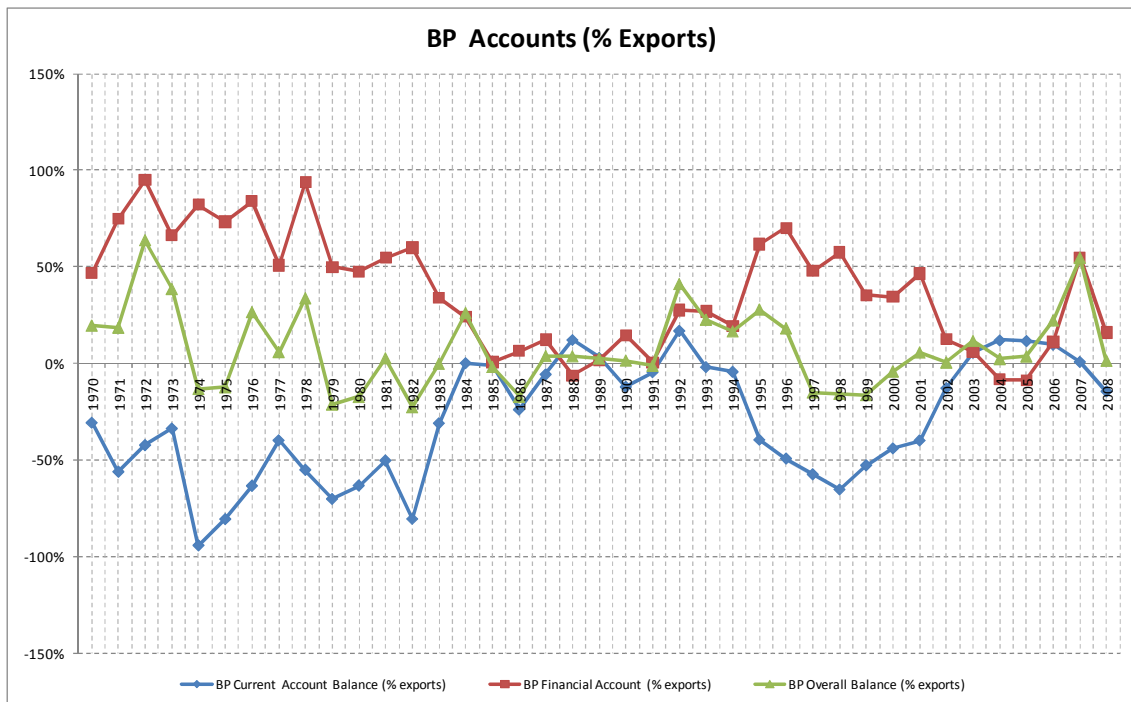
4.3. "Hard landing", high inflation and low growth: 1981-1993

The 1980s in Brazil started with the aftermath of second oil shock that were shot up by the Mexican default in 1982. The debt crises that followed were caused by a complete stop of the capital inflows. As a result of the huge balance of payments constraint faced by the brazilian economy in the period we have the relatively low growth rate of the domestic components of final demand which combined, with its high weight in total final demand explains the low contribution of this type of expenditure to the GDP growth rate since the 1980s. In particular the low contribution of domestic demand is explained by the relatively low trend growth of government expenditures since the 1980s. On the other hand, we have the external sector becoming the major contributor to economic growth in the period under analysis. This occurs both, by the relatively higher contribution of exports and by the increase in the domestic content coefficient. The pattern of economic growth in the period is dominated by the necessity of adjustment of the Brazilian economy to the external situation.

Table 7 - Decomposition of the annual average rate of growth (1981 – 1985)

Expenditures	Domestic Sector		External Sector	Inventory change	Total	Autonomous Expenditures	Supermultiplier	Inventory change
	Public	Private						
Gov Consumption	1.1%				1.1%	1.1%		
Gov Investment	0.2%				0.2%	0.2%		
SOE Investment	-0.8%				-0.8%	-0.8%		
HH Res Invest		-0.1%			-0.1%	-0.1%		
HH Durables Cons.		0.4%			0.4%	0.4%		
HH Non-Durables Cons.		-3.2%			-3.2%		-3.2%	
PE Investment		-2.1%			-2.1%		-2.1%	
Domestic Content Coeff.			2.1%		2.1%		2.1%	
Exports			2.8%		2.8%	2.8%		
Inventory change				1.1%	1.1%			1.1%
Total	0.6%	-4.9%	4.9%	1.1%	1.6%	3.7%	-3.1%	1.1%

Table 8 - Decomposition of the annual average rate of growth (1986 – 1993)

Expenditures	Domestic Sector		External Sector	Inventory change	Total	Autonomous Expenditures	Supermultiplier	Inventory change
	Public	Private						
Gov Consumption	4.1%				4.1%	4.1%		
Gov Investment	0.3%				0.3%	0.3%		
SOE Investment	-0.2%				-0.2%	-0.2%		
HH Res Invest		0.3%			0.3%	0.3%		
HH Durables Cons.		-0.4%			-0.4%	-0.4%		
HH Non-Durables Cons.		-0.7%			-0.7%		-0.7%	
PE Investment		-0.2%			-0.2%		-0.2%	
Domestic Content Coeff.			-0.6%		-0.6%		-0.6%	
Exports			-0.3%		-0.3%	-0.3%		
Inventory change				0.8%	0.8%			0.8%
Total	4.1%	-0.9%	-1.0%	0.8%	3.0%	3.7%	-1.5%	0.8%

4.4. Price stabilization and continued stagnation: 1994-1998

Table 9 - Decomposition of the annual average rate of growth (1994 – 1998)

Expenditures	Domestic Sector		External Sector	Inventory change	Total	Autonomous Expenditures	Supermultiplier	Inventory change
	Public	Private						
Gov Consumption	1.5%				1.5%	1.5%		
Gov Investment	-0.2%				-0.2%	-0.2%		
SOE Investment	-0.3%				-0.3%	-0.3%		
HH Res Invest		0.0%			0.0%	0.0%		
HH Durables Cons.		0.3%			0.3%	0.3%		
HH Non-Durables Cons.		0.9%			0.9%		0.9%	
PE Investment		-0.1%			-0.1%		-0.1%	
Domestic Content Coeff.			0.0%		0.0%		0.0%	
Exports			-0.6%		-0.6%	-0.6%		
Inventory change				0.0%	0.0%			0.0%
Total	1.0%	1.2%	-0.6%	0.0%	1.7%	0.8%	0.9%	0.0%

4.5. Lagging behind with inflation targeting and the fiscal policy conservative consensus: 1999-2006

Table 10 - Decomposition of the annual average rate of growth (1999 – 2006)

Expenditures	Domestic Sector		External Sector	Inventory change	Total	Autonomous Expenditures	Supermultiplier	Inventory change
	Public	Private						
Gov Consumption	0.9%				0.9%	0.9%		
Gov Investment	0.3%				0.3%	0.3%		
SOE Investment	0.1%				0.1%	0.1%		
HH Res Invest		0.4%			0.4%	0.4%		
HH Durables Cons.		0.4%			0.4%	0.4%		
HH Non-Durables Cons.		-0.9%			-0.9%		-0.9%	
PE Investment		0.0%			0.0%		0.0%	
Domestic Content Coeff.			-0.6%		-0.6%		-0.6%	
Exports			2.5%		2.5%	2.5%		
Inventory change				-0.2%	-0.2%			-0.2%
Total	1.2%	0.0%	1.9%	-0.2%	3.0%	4.5%	-1.4%	-0.2%

5. Some final remarks

The paper analyses the patterns of economic growth of the Brazilian economy from 1970 to 2007. In this period the Brazilian economy experienced a huge decline in its trend GDP growth rate, from an average rate of almost 8.5% per year in 1970s to an average growth rate of approximately 2.5% per year for the whole period since the 1980s. The more recent literature analyzing the period under discussion has been dominated by a neoclassical standpoint. The present paper adopts a completely different perspective. It is based on a different theoretical framework that combines the classical supermultiplier demand led growth model with the hypothesis that the balance of payments is the main potential (and often the effective) constraint to the expansion of the Brazilian economy in the period under consideration.

From this perspective the proximate causes of the decline of the GDP growth trend are the following. First, we have the relatively low growth rate of the domestic components of final demand which combined, with its high weight in total final demand explains the low contribution of this type of expenditure to the GDP growth rate since the 1980s. In particular the low contribution of domestic demand is explained by the relatively low trend growth of government expenditures since the 1980s. Secondly, the external sector contribution to GDP growth (which combines the contributions of exports and of the coefficient of domestic content of output) were both very unstable and, whenever its contribution was relatively high, it could not sustain the same GDP growth rates of 1970s. This occurred both because of the inward oriented state led development process experimented by the Brazilian economy in the post war period and the continental size of Brazil, which together explains the low weight of the external sector had (and even today has) in the Brazilian economy. This also explains why for some periods the Brazilian economy did experiment, as suggested by Medeiros & Serrano, an export led stagnation pattern.

These patterns of demand led growth are quantitatively investigated in the paper with the application of a demand led growth accounting methodology which allows us to analyze the expansion patterns of a set of periods between 1970 and 2006. In what concerns the more fundamental causes, the paper points out to the relevance of the changing patterns of commercial and financial external insertion of the Brazilian economy and its influence on the expansion process of the economy through two channels. First, it exerts a direct influence through its effect on the contribution of the external sector to the GDP growth. Secondly, by means of an indirect channel, through its influence on the balance of payments constraint that, from time to time, has been an effective financial obstacle for the expansion of the Brazilian economy. The performance of the balance of payments depended crucially on the behavior of exports along the whole period. This occurred because, besides being the most important source of foreign currency, the rate of growth of exports exerted an important influence on the sustainability of the financial flows that were necessary to support the external current account imbalances that characterized some sub periods of the period under consideration. This result confirms the point raised by Medeiros and Serrano (2001) in their analysis of the Brazilian economy, export growth is very important even for an economy, like the Brazilian one, in which the role of exports as a demand component is clearly secondary.

Besides the patterns of external trade, the other fundamental causes underlying the Brazilian growth experience in the period under analysis are: changes in income distribution and macroeconomic policy regimes. Income distribution exerted its influence on the growth path of the Brazilian economy mainly through its effects on the behavior of household's consumption and residential investment expenditures. The trend decline in the wage share, the high percentage of the population still below the poverty line and the high inequality in personal income distribution all contributed to explain the low contribution of household's expenditures to the growth performance of the country; especially since the 1980s, when the effect of these factors were aggravated by the very high inflation rates (until the middle of 1990s) and the relatively high rates of unemployment. Finally, the influence of the macroeconomic policy regimes is obviously an important element for the interpretation of the growth process throughout the whole period under analysis. It is particularly relevant for the understanding of the more recent period because external conditions were much more favorable to higher rate of growth. However, the Brazilian economy lagged behind in terms of its growth performance when compared to others developing countries and even to some of the more developed countries. This is the result of the adoption by Brazil's governments since 1999 of a combination of an inflation targeting monetary policy, a large primary budget surplus target for fiscal policy and a policy of floating (but very much managed) exchange rates with a marked tendency to real exchange appreciation.

6. References (very incomplete)

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7. Appendix

List of variables

Y - Gross Domestic Product

M - Imports

C_{HND} – Households non-durables consumption

C_{HD} - Households durable consumption

I_H – Households (Residential) Investment

C_G – Government Consumption

I_G - Government Investment

I_{SE} - State Enterprises Investment

I_{PE} - Private Enterprises Investment

X - Exports

E - Inventory Change

μ - Domestic Content Coefficient

c – Propensity to Consume

h - Propensity to Invest

Z - Total Autonomous Expenditures

α - The Supermulplier

g – GDP Growth Rate

g_i - Growth Rate of the Variable i

The Decomposition methodology

Let us start from the national account identity between aggregate supply and demand. With the maximum number of components of the demand side allowed by our database we obtain.

$$Y + M = C_{HND} + C_{HD} + I_H + C_G + I_G + I_{SE} + I_{PE} + X + E$$

Now, assume that imports are related to total aggregate demand as expressed by the equation below

$$M = (1 - \mu)(C_{HND} + C_{HD} + I_H + C_G + I_G + I_{SE} + I_{PE} + X + E)$$

Next, let us further assume that

$$C_{HND} = cY$$

$$I_{PE} = hY$$

$$Z = C_{HD} + I_H + C_G + I_G + I_{SE} + X$$

Then, substituting the above relations on the first two equations we obtain

$$Y = \mu cY + \mu hY + \mu(Z + E)$$

This equation will serve as the starting point of our subsequent GDP growth decomposition analysis. So let us take the GDP change as described by the above equation.

$$Y(1) - Y(0) = \mu(1)c(1)Y(1) - \mu(0)c(0)Y(0) + \mu(1)h(1)Y(1) - \mu(0)h(0)Y(0)$$
$$+ \mu(1)[Z(1) + E(1)] - \mu(0)[Z(0) + E(0)]$$

Summing and subtracting the terms $\mu(1)c(1)Y(0)$ and $\mu(1)h(1)Y(0)$ on the RHS of the equation and using the fact that $\Delta Y = gY(0)$ we have

$$gY(0) = \mu(1)c(1)gY(0) + \mu(1)h(1)gY(0) + [\mu(1)c(1) - \mu(0)c(0)]Y(0)$$
$$+ [\mu(1)h(1) - \mu(0)h(0)]Y(0) + \mu(1)[\Delta Z + \Delta E] + \Delta\mu[Z(0) + E(0)]$$

Dividing both sides of the equation by $Y(0)$, we arrive at the following equation

$$g = \mu(1)c(1)g + \mu(1)h(1)g + \mu(1)c(1) - \mu(0)c(0) + \mu(1)h(1) - \mu(0)h(0) + \mu(1)\left[\frac{\Delta Z}{Y(0)}\right]$$
$$+ \mu(1)\left[\frac{\Delta E}{Y(0)}\right] + \Delta\mu\left[\frac{Z(0) + E(0)}{Y(0)}\right]$$

Next, by summing and subtracting $\mu(1)c(0)$ and $\mu(1)h(0)$ on the RHS we obtain

$$g = \mu(1)c(1)g + \mu(1)h(1)g + \mu(1)\Delta c + \Delta\mu c(0) + \mu(1)\Delta h + \Delta\mu h(0) + \mu(1)\left[\frac{\Delta Z}{Y(0)}\right]$$
$$+ \mu(1)\left[\frac{\Delta E}{Y(0)}\right] + \Delta\mu\left[\frac{Z(0) + E(0)}{Y(0)}\right]$$

Solving the above equation for the growth rate we have

$$g = \alpha(1)\Delta c + \frac{\alpha(1)}{\mu(1)}\Delta\mu c(0) + \alpha(1)\Delta h + \frac{\alpha(1)}{\mu(1)}\Delta\mu h(0) + \alpha(1)\left[\frac{\Delta Z}{Y(0)}\right] + \alpha(1)\left[\frac{\Delta E}{Y(0)}\right]$$
$$+ \frac{\alpha(1)}{\mu(1)}\Delta\mu\left[\frac{Z(0)+E(0)}{Y(0)}\right]$$

Now let us first collect all the terms in that $\Delta\mu$ appears. Then putting $\frac{\alpha(1)}{\mu(1)}\Delta\mu$ in evidence and using the fact that $\Delta\mu = g_{\mu}\mu(0)$ we arrive at the fourth term on the RHS of the equation below. Besides this we can use the fact that $\Delta Z = \Delta C_{HD} + \Delta I_H + \Delta C_G + \Delta I_G + \Delta I_{SE} + \Delta X$ to obtain the third term on the RHS.

$$g = \alpha(1)\Delta c + \alpha(1)\Delta h + \alpha(1)\left[\frac{\Delta C_{HD} + \Delta I_H + \Delta C_G + \Delta I_G + \Delta I_{SE} + \Delta X}{Y(0)}\right]$$
$$+ \frac{\alpha(1)}{\mu(1)}g_{\mu}\left[\frac{\mu(0)\{c(0)Y(0) + h(0)Y(0) + Z(0) + E(0)\}}{Y(0)}\right] + \alpha(1)\left[\frac{\Delta E}{Y(0)}\right]$$

But we know that $Y(0) = \mu(0)c(0)Y(0) + \mu(0)h(0)Y(0) + \mu(0)\big(Z(0) + E(0)\big)$, so the fourth term on the RHS is equal to $\frac{\alpha(1)}{\mu(1)}g_{\mu}$. Further the third term on the RHS can be dismembered in order to isolate the individual contribution of each type of expenditure involved. As a consequence we arrive at the equation that appears in the text, that is:

$$g = \alpha(1)\left|\frac{C_{HND}(0)}{Y(0)}\right|g_c + \alpha(1)\left|\frac{I_{PE}(0)}{Y(0)}\right|g_h + \alpha(1)\left|\frac{C_{HD}(0)}{Y(0)}\right|g_{C_{HD}} + \alpha(1)\left|\frac{I_H(0)}{Y(0)}\right|g_{I_H}$$
$$+ \alpha(1)\left[\frac{C_G(0)}{Y(0)}\right]g_{C_G} + \alpha(1)\left[\frac{I_G(0)}{Y(0)}\right]g_{I_G} + \alpha(1)\left[\frac{I_{SE}(0)}{Y(0)}\right]g_{I_{SE}} + \frac{\alpha(1)}{\mu(1)}g_{\mu}$$
$$+ \alpha(1)\left[\frac{\Delta E}{Y(0)}\right]$$