RESEARCH PROPOSAL

International Product Fragmentation and the Insertion of LAC in Global Production Networks

Brief overview of Brazilian economic development

Prior to its industrialization, economic activity in Brazil revolved principally around agriculture. Agricultural activity has ranged from the farming by Portuguese settlers for subsistence,[1] to the rubber boom in the mid-19th century,[2] as well as coffee production by the beginning of the 20th century,[3] and has always been the key contributor to the production of wealth in Brazil.

While some industry was developed in Brazil by the 19th century, the more substantial industrialization of the economy did not begin until the 1930s. This coincided with the greater participation by the government in economic decision-making, especially through trade related measures (such as import controls and quotas, for example).[4]

In this period, the driving force of Brazilian economic expansion was coffee production, which had been significantly negatively affected by the Great Depression, leading to a decrease on export earnings of up to 50% between September 1929 and January 1930.[5] The economy would begin to recover only after the beginning of World War II, however such recovery was based on more intense use of installed capacity, rather than through further industrialization.[6]

During World War II, Brazil entered into a number of agreements with the United States, to establish prices and quantities for a wide range of exported products, leading to the Washington agreements of 1942.[7] These agreements reflected the growing dependency of Brazil on the US economy, which was at the expense of European nations that were losing their importance as markets for Brazilian exports.[8]

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[1] Meade 2010, p. 34.
[2] Id. p, 89.
[3] Edwards 2008, p. 101.
[4] Edwards 2008, p. 84-85.
[5] Id., p. 104.
[6] Id., p. 105.
[7] Abreu 2008, p. 307
[8] Id., p. 317.

Following the War and the deposition of Getúlio Vargas, the administration of the new President, General Eurico Dutra,[9] focused on investing in infrastructure and controlling inflation. In this period, the seeds of a central bank were created with the SUMOC (Superintendência da Moeda e do Crédito).[10]

By the 1950s further industrialization was seen as an important factor in the development of the country, in part based on analyses showing that longer-term prospects for commodities and raw materials were not favourable.[11] A key development in this period was the development program launched by the administration of Juscelino Kubitschek, based on various projects in infrastructure and energy.[12] In the post-War period, and until 1962 Brazil grew at an average rate of 6%.[13] In 1964 the military took over the government and prepared the Government Program of Economic Action.[14] While the this initial program focused on monetary stabilization,[15] due to a number of erroneous decisions[16] and external factors,[17] the military government left Brazil with a high inflation rate and a serious foreign debt problem.[18] It took three presidents and eight stabilization programs[19] for Brazil to begin to reverse this situation and to stabilize the economy.

As a result, Brazil today has stable macroeconomic indicators, and is an economy with a substantial growth potential. The specialization of production and targeted exports are the potential engines to realize this potential.

The brazilian economy – a snapshot

Brazil's GDP for 2009 was US$1,573 trillion,[20] equivalent to a per capita figure of US$ 8121.50,[21] with 6,1% of GDP falling to agriculture, 25,4% to industry

[9] id, p 319.
[10] Ibid, p. 320.
[11] Edwards 2008, p. 107.
[12] Id.
[13] id.
[14] Abreu 2008, p. 360.
[15] Id.
[16] Abreu points to the "lack of commitment to a fast improvement of educational standards, the persistent use of discretionary policies, the consequent lack of a reform of the State geared to a less centralised decision-making process and the failure to create an entrepreneurial tradition"(2008, p. 391).
[17] These include the 1973 oil shock and the Brazilian dependency on foreign oil and the 1982 Mexico moratorium (Edwards 2008, p. 114-115).
[18] Luna and Klein 2006, p. 55
[19] Just for a glimpse of the Brazilian situation, in 1993 inflation was at 2,489 percent a year (Edwards 2008, p. 118). It was not uncommon for prices on products in supermarkets to be relabeled several times a day.
[20] The figure is in current US Dollars. World Bank.

and the remaining 68,5% to services.[22] This makes Brazil the ninth biggest economy in the world, behind France but in front of Italy.[23]

The largest proportion of GDP and of employment comes from the services sector of the economy. Yet, notwithstanding the small proportion of the GDP that comes from agriculture, this sector employs almost as many people as the Industry sector (17,608,357 jobs against 18,996,218 jobs).[24]

With respect to foreign trade, in 2010 Brazil had a trade flow of US$ 383.6 billion, a growth of 36.6% from 2009, this being the highest figure in its history.[25] With a US$ 201.9 billion in exports and US$ 181.6 billion in imports, it had a surplus of US$ 25.3 billion, which was 19.3% lower than 2009, as a consequence of a higher growth in imports compared to exports.

Sectors of the Brazilian economy in which global production networks have been relevant

During our preliminary research, we have identified a few different sectors of the Brazilian economy in which global production networks have been relevant. Based on this preliminary research, two relevant sectors to investigate, given the aim of the project, include the aerospace industry of components and services and the coffee sector.

a) The aerospace sector

According to the Brazilian Ministry of Science and Technology the global trade of components for the aerospace industry is around US$ 35 billion per year. This figure also includes the value of the services provided in that sector, such as those related to the manufacturing of components, assembling, surface treatment and machining.[26] The dominance of American companies in this industry is clear, representing 8 out of the 10 biggest in the sector regarding sales volume, with the exceptions being the European EADS/CASA and the British BAE Systems.[27] In 2006

[21] World Bank.
[22] Anuário Estatístico 2010.
[23] World Development Indicators database, World Bank.
[24] Anuário Estatístico 2010.
[25] Brazilian Foreign Trade Overview 2010.
[26] http://www.mct.gov.br/
[27] Information for the year of 2006, ABDI 2009, p. 5.

Embraer was only on the 24th place with sales revenue of US$3.8 billion,[28] even though it was the fourth in the specific sector of aircraft integrators.[29]

In the last few decades the sector has been through a restructuration process. Due to the deregulation of the air industry in the US in the 70s' and the diminished funds available for air defense programs after the end of the Cold War, mergers and acquisitions were made to adapt the sector to this new scenario, but they were not sufficient. [30] Since the 80s' the aircraft industries have been focusing on an outsourcing strategy to diminish and rationalize costs.[31]

Another important trend that has been identified is the internationalization of the supply chains. Airplane manufacturers have a growing interest in countries where lower production costs are available.[32]

These two trends are an opportunity for the further development of high-technology aerospace industries in developing countries. These trends are important for small and mediums companies in the aerospace sector in Brazil since they represent a chance for insertion in Global Value Chains (GVC). Client diversification will soften the dependence on Embraer, increase technological transfer and reduce the overall risk in the sector.

i) The Brazilian Aerospace Sector

In Brazil, the aerospace sector has grown significantly in the last two decades. Although the sector is still principally connected to the main Brazilian aeronautic producer Embraer (Empresa Brasileira de Aeronáutica S.A.), in recent years there has been significant growth also among new small and medium firms specialized in the supply of high technology components and services. With the recent introduction of such components and services into different GVCs, Brazil is becoming part of this global market, raising the exports of new niche products and services. [33]

The roots of the aerospace sector in Brazil started in the 40s', with the creation

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[28] Id.
[29] Lima et. al 2005, p. 49.
[30] Nyose & Zeghu 2010, p. 114-118.
[31] According to the doctrine, the strategy consists mainly of three steps: firstly the company identifies its core competence and lays off businesses not related to it;[31] secondly they diminish the number of suppliers to rationalize the supply chain, what entails a push to the same rationalization process for their suppliers;[31] finally they engage in high-dependency relationships with the remaining ones, forcing a need of investment in the quality and efficiency of the supply chain. Id., p. 118.
[32] Id., p. 122.
[33] For a more substantial overview see Dagnino 1993; ABDI 2009; Bernardes and Pinho 2002.

of technology institutions (specifically the Aeronautic Technology Center – CTA and the Aeronautics Technological Institute – ITA) to train high quality engineers. The final objective of the government was to build an aircraft national industry at a later date.[34] The plan continued with the creation of Embraer in 1969. As a mixed capital company under government control, its objective was to assemble airplanes and acquire "technological autonomy".[35]

A key development in the Brazilian aerospace sector was the privatization of Embraer in 1994, which was acquired by a consortium of local enterprises and pension funds led by the Bozano Simonsen Group. Until this moment the support of the Brazilian government and the policies aimed at the sector were essential for its development and for technological learning that was built until then.[36] Following the privatization there was a restructuring of both the organization and of production, resulting in Embraer becoming one of the biggest aircraft manufacturers in the world (the fourth largest western aeronautics firm, behind Boeing, Airbus and Bombardier).[37]

Embraer's strategy became based on the added value principle and therefore the focus was not on being able to produce a whole aircraft from scratch, but on the capacity of combining and adapting subsystems according to the necessities of the projects.[38] To do so, Embraer divided its suppliers in three categories: risk partners, suppliers and subcontractors.[39]

Risk partners assume the financial risk of success of the product and are involved in its development, with the remuneration dependent on the amount of sales that the product achieves, being in fact partners of Embraer on specific products.[40] They are usually in the category of engine manufacturers and aircraft subsystem suppliers, being mainly foreign, but sometimes creating subsidiaries in Brazil to better attend Embraer's needs.[41]

On the other hand, the supplier group, which is also predominantly foreign, doesn't share any kind of direct product risk with Embraer and does not participate in

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[34] UNCTAD 2003, p. 33.
[35] Id..
[36] Id., p. 80.
[37] Id., p.6.
[38] Id., p. 50.
[39] Lima et. al 2005, p. 45.
[40] Id.
[41] ABDI 2009, p. 34.

the development of the products. Its role is restricted to the sales of different products and services that can attend to Embraer's specifications.[42] Embraer's policy is to reduce the number of different firms in this group, as it can be seen from the reduction of 350 suppliers for the 145 family to 22 suppliers on the 170/190 family.[43]

Finally, the subcontractors are paid on an hourly rate for their services, with the raw material and product design being provided by Embraer.[44]

Even though many of the important partners and suppliers of Embraer were foreign, its development has also fostered the establishment of a large number of small and medium national enterprises (SME) in the aeronautics sector in Brazil. Many of them were organized by former Embraer's employees, and even though they started in the category of subcontractors some are already reorganizing themselves to become suppliers.[45]

These firms were created with the direct support of Embraer as well as of some government agencies[46] for the supply of high technology services (like engineering, software, management, thermal treatment etc.), avionics and other intermediate inputs to Embraer. They are mainly located in the proximity of the city of São José dos Campos, where Embraer and the Brazilian Aeronautics Technological Institute (ITA) were also established.

Nowadays the Brazilian Aerospace Industry is the largest in the Southern Hemisphere with more than 70 SMEs (based on 2007 data). They offer a variety of products, including airplanes, helicopters, structural segments, engines, aircraft/engines components, on board systems and equipment, and air traffic control systems. Maintenance, repair and overhaul (MRO) services are provided to civil and military aircraft of all sizes including major checks, structural modifications, as well as engine and components overhaul. In addition, some Brazilian firms are FAA

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[42] Lima et. al 2005, p. 46.
[43] Id.
[44] Id.
[45] Id.
[46] As described in the UNCTAD report "For decades support institutions have played a key role in the creation of Embraer, as well as in the development of the São José dos Campos aircraft innovation system. These have included several municipal, state and federal agencies, especially those at the Ministry of Aeronautics, the Brazilian Socio-economic Development Bank and FINEP, the agency for technological development of the Ministry of Science and Technology. UNCTAD, 2009 p. 71

Approved Repair Stations and EASA Approved Maintenance Organizations (AMO).[47]

Initially these firms participated almost exclusively within Embraer's production chain, through subcontracts in captive model of GVC governance. As described in UNCTAD's 2003 case study of Embraer, titled "Transfer of Technology for Successful Integration into the Global Economy"

> "Most local suppliers are locally owned and were set up by Embraer's former employees and fostered by Embraer itself. These local SMEs … depend on local R&D centres and participate in the aircraft production chain through a direct subcontracting system with Embraer."[48]

However this situation has been evolving significantly and Brazil has started to take the first steps toward the emancipation of its industry of aerospace components. Several of the SMEs in this sector have started to either join up with foreign companies interested in setting up a Brazilian subsidiary or to associate in consortia for the purpose of increasing production and export focus, enlarging their portfolio of clients and inserting themselves into new global production chains.[49]

One significant landmark for the sector was the creation in 2000 of the consortium HTA (High Technology Aeronautics) by eleven aeronautics SMEs. With the support of ApexBrasil (Brazilian Trade and Investment Promotion Agency) and the Ministry of Development, Industry and Foreign Trade, their main goal was to expand their foreign market and provide services and intermediate inputs to other firms abroad.[50] Given the segmentation of production that traditionally characterized this sector, firms have sought to participate in the global trade of components for the aerospace industry, providing high technology services and manufactured intermediate inputs worldwide through different kinds of inter-firm relationships.

In the case of HTA, for example, the participants began to export in 2003 and by 2006 their exports amounted to US$ 5 million, increasing approximately threefold

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[47] Brazilian Aerospace Industry, http://www.aiab.org.br/english/index.php?option=com_content&task=view&id=13&Itemid=26

[48] The report further adds that "There are also some important firms that are part of the productive chain, supplying parts, component and technical services, that are located in other Brazilian regions, such as GE/Celma (Petrópolis – RJ), Aeronaut and Aeroeletrônica (Porto Alegre – Rio Grande do Sul), Rolls Royce (São Bernardo do Campo-SP), and NEIVA which belongs to Embraer (Botucatu – SP)." UNCTAD 2009 p. 68.

[49] Bernardes and Pinho 2002.

[50] High Technologic Aeronautics (HTA), http://www.hta.com.br/.

(US$ 14,9 million) by 2009. They have consolidated partnerships with international market leaders such as Pratt & Whitney (with a 10 year –Long Term Agreement ("LTA"), for the supply of parts for P&W turbines assembled in Canada) and EADS/CASA - (also with a 10-year-LTA for the supplying of parts).[51] The contract with EADS/CASA is part of the offset program with the Brazilian army that bought 12 airplanes from EADS/CASA, which in turn agreed to contract with Brazilian firms for at least the same amount (US$ 700 millions).

The expectations for the growth of this sector in Brazil were high. According to the President of the AIAB (Aerospace Industries Association of Brazil) Walter Bartels, with the support of the BNDES (National Bank of Development)[52] the exports of components for the aerospace industry from these Brazilian SMEs could reach US$25 million by 2011, resulting in a decrease on their dependence on Embraer.[53]

However the recent global financial crisis initiated a strong negative impact for the Brazilian SMEs of the aeronautic sector. One of the main reasons was the set of adjustments realized by Embraer due to the deterioration of market conditions, which led to a drastic production cut, and consequently in the amount of contracts made with suppliers and subcontractors.

The dependency that these companies have in relation to Embraer and their debts to capital goods producers heavily affected the supply chain, generating deactivation (at least temporally) of production activities and putting many of them in a crisis situation, although the government support to the sector through specific programs (e.g., the Financiamento às Empresas da Cadeia Produtiva Aeronáutica Brasileira – BNDES Pró-Aeronáutica).[54]

This crisis puts even more in the discussion the question about the insertion of SMEs of the aeronautic sector in GVCs, the necessity to diminish the sector's dependency on Embraer and the role of government policy.

In fact, the diversification of products and clients and the insertion in other GVC seems to be the way found by the SMEs for recuperation, as it might be the case of Alltec Indústria de Componentes em Materiais Compostos Ltda., a company member of the HTA Consortium that was able to reduce from 70% to 50% its

[51] Id.
[52] BNDES is supporting the firms in the sector since 2004.
[53] Gomes, 2006.
[54] Lins and De Francisco, 2008.

dependency on Embraer.

The success of this sector of the aeronautics industry also depends on its capacity to absorb and retain technology, which translates in the ability to offer higher quality products to foreign clients. Therefore, it is crucial to understand the channels where technology is acquired and the relationship of local firms with Multi National Corporations, which can be either more or less beneficial depending on the set up of the Global Value Chain in the sector.[55]

Given this background, it is our view that the case study of one firm in this sector would be of great value for the aim of the project. The study would be able to provide valuable insights in the strategies that have helped such firms to become part of international production networks. In selecting the case study target, it would be appropriate to choose from among any of the 15 firms who are members of HTA, including:

- Lanmar Indústria Metalúrgica Ltda.
- Fastwork Program Systems Ltda.
- Bodycote Brasimet Processamento Térmico S/A
- Villares Metals S/A
- CAL – Componende Aeronáutica Ltda
- ThyssenKrupp Autômata Indústria de Peças Ltda.
- Alltec Indústria de Componentes em Materiais Compostos Ltda.
- Indústria Mecânica Marcatto Ltda.
- Grauna Aerospace S.A
- A.S. Avionics Services Ltda.
- Toyo Matic Comércio e Indústria de Máquinas Ltda
- UFT – Usinagem e Ferramentaria Tonini Ltda.
- Giovanni Passarella & Cia. Ltda.
- Solutions Design & Engineering
- Astra Indústria Aeronáutica Ltda.

Among them, our first choice would be Grauna Aerospace S.A. ("Grauna") followed by ThyssenKrupp Autômata Indústria de Peças Ltda ("ThyssenKrupp").

[55] *See* Nyose & Zeghu 2010, p. 111.

Grauna is a Brazilian company formed in 1990, which specialized in assembling and CNC machining services for the aerospace sector. It is one of the main companies in the sector. With two plants, it offers 5,000 different items with a total production of 14,000 pieces per month.

From among the HTA group, Grauna was the main firm to benefit from the contract with EADS/CASA and has also a significant one with Pratt & Whitney, participating in the global production chain of both producers. Grauna supplies aircraft production parts for EADS/CASA and manufactures highly complex parts of turbines' engines for Pratt & Whitney. Other firms among their international customers and partners include Eleb, Neiva and Elbit.

The expansion of exports and participation in global production chains has had a significant impact on this firm. Apart from allowing it to partially decrease its dependence on Embraer, it has also resulted in an initial significant growth in its revenues. [56] Moreover, another positive result has been the opening of new investment opportunities. In 2006 Graúna merged with Stratus (a venture capital group) and two other companies (Bronzeana and SPU) that had a significant investment plan (US$14 million over three years) to expand technical knowledge to meet market demands and to increase export capacity.[57]

In 2008, the BNDES Participações S.A (BNDESPar) became shareholder of Graúna, buying around 40% of its stocks through a plan to support the company in its capacitation project to develop turbine components to be supplied to Pratt & Whitney.

Despite its significant growth and its insertion in other supply chains, Graúna is one of the Brazilian companies that has been strongly affected by Embraer's crisis, due mainly to its high dependency on Embraer's business.

ThyssenKrüpp is another of the leading suppliers of the aerospace industry in Brazil. It was founded in 1993 and by 2005 they established a joint venture with the German ThyssenKrüpp, which actually owns 80% of its shares. The company provides complex engineering supply chain solutions to the aerospace, power & energy, as well as to the oil & gas industries, including component assembly and kitting. Their expertise lies in the precision manufacturing and supply of 3-, 4- and 5-axis machined parts.[58]

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[56] Morrison 2007.
[57] Cfr. Grauna's website - http://www.graunaaerospace.com.br/#
[58] Id.

ThyssenKrüpp is another company from the HTA consortium that benefited from the contract with EADS/CASA, making it part of EADS' international production chain. As in the case of Grauna, the participation in international production chains allowed ThyssenKrup to increase revenues, decrease their dependence on Embraer and attract significant investments. Their aerospace customers, other than Embraer and EADS/CASA include Eleb and Eaton, among other firms.

b) The coffee sector

Apart from the high technology sectors such as aeronautics, in more traditional production sectors the insertion of national firms in global production networks also has significant consequences for the firms themselves and potential benefits to the local economy.

The agrifood sector generally encompasses the activities of food production and transformation. The agrifood sector in Brazil is especially significant, both as a source of employment and because of its weight in Brazil's balance of trade.[59] The food transformation industry employed 2,268,627 people in 2007,[60] and when considered together with employment in agricultural activities (17,608,357), it becomes clear that this sector is of great importance to the Brazilian economy, especially since it employs almost 20% of the total workforce.

Focusing on foreign trade of agricultural commodities, among the most exported products are soy products (US$ 17,115 million), meat (US$ 13,242 million) and coffee (US$ 5,739 million), together representing 18% of the total Brazilian exports in 2010,[61] with the food sector contributing US$16,5 billion dollars in the trade surplus.[62]

The coffee sector is therefore important in the Brazilian economy because it is a traditional and a large source of export revenue.[63] Moreover, in worldwide terms Brazil is a significant coffee exporter. Thus, in 2009 Brazil was responsible for 32%

[59] For 2009 the trade surplus of food products was US$16,500 million. Anuário Estatístico 2010.
[60] Anuário Estatístico 2010.
[61] Balança Comercial Brasileira – Dados Consolidados 2010.
[62] Anuário Estatístico 2010.
[63] For a larger overview of the development of coffee production in Brazil see Vegro 1997; Bacha 1992 and Prado Jr. 1945.

of total world coffee exports, amounting to 30.3 million bags, which represented an increase of 2.81% over the previous year.[64]

Whereas initially the export of coffee was restricted largely to green beans, focused more on the quantity of beans shipped, rather than their quality, nowadays coffee production in Brazil has evolved substantially. The range of production has increased, and a much higher value is added to the exported product within the production chain.

One significant landmark in Brazilian coffee production was the deregulation of the national coffee market in the 1990s. This was achieved through a number of measures including (i) the breaking-up of the International Coffee Agreements (AICs) in 1989, which regulated the offer of coffee in international markets; (ii) the abolition of the Brazilian Coffee Institute (IBC) in 1990, which was the national agency that defined sectorial policy, such as guiding and coordinating strategies all the way from agricultural production to commercialization of the product; and (iii) the end of the price-fixing policy in 1992.[65]

These organizational and institutional changes yielded major transformations to the sector (such as price liberalization, elimination of the control of entry of new firms and control of product flow, and dislocation in the areas of public research and provision of information).

As a result, within a few years, a sector that was once focused only on the export of coffee of low quality, and on roasting coffee for domestic consumption, began to export coffee with certificates of origin (estate coffees) and to toast coffee with blends (combining different types of green coffee beans) of high quality, stimulating domestic consumption and enabling the incipient growth of exports of roasted and ground coffee.[66]

By 2009, besides the exportation of green beans, Brazil also counted revenues of US$475,64 million from the export of instant coffee and US$29,6 million of industrialized coffee (roasted beans and roasted and ground coffee with a Brazilian brand). These exports are supported as part of the PSI (Integrated Sectorial Project for export of roasted and ground coffee) that since 2002 relies on ApexBrasil (the Brazilian Trade and Investment Promotion Agency) - the same Agency that supports

[64] ABIC, http:// www.abic.com.br/.
[65] Saes and Nunes 2001, p. 3.
[66] Votta,Vian and Pitelli 2002, p.2.

the HTA in the aerospace sector - and ABIC (the Brazilian Association of Coffee Industry).

Another factor contributing towards both the restructuring of the sector and the expansion into higher value added exports has been the participation by local producers and manufacturers in international production networks.

As in the aerospace sector, we have identified two firms where the participation in an international production chain has been particularly relevant and beneficial.

Our first example is Daterra atividades rurais Ltda ("Daterra"). This is a firm specialized in the production and export of high quality coffees that has total production of approximately 70.000 bags (of 60kg each) of coffee per year.

Daterra exports almost 92% of its production and its principal partner is Illycaffè Spa ("Illy"), one of the biggest international coffee companies that exports coffee products in around 140 countries. Not only does Daterra participate in Illy's production chain, supplying 20% of its Brazilian coffee, but they do so through a partnership that includes close cooperation with Illy. In fact, Illy is significantly involved in Daterra's production processes, working closely with its plantation managers and supporting and guiding them on planting and processing techniques. It was exactly trough the cooperation with Illy, as well as the support of IAC (Agronomic Institute of Campinas), that Daterra has conducted in-depth ongoing research to select the varieties of coffee to produce, or, in their own words, "to select the varieties yielding the best cup."[67]

Furthermore, Daterra, unlike many other coffee farms in Brazil, not only grows coffee beans for export trough intermediates, but also counts on high technology and research into performing successive steps in the production process. One example is the Penta System®, a set of technological procedures developed by Daterra engineers to ensure quality consistency, from the planting, harvesting, drying, processing and sorting until the warehouse and packing.

Daterra has developed a large number of its own blends that they successfully export worldwide. In fact, the company is internationally renowned for the high quality of its products, and it has also been awarded several international prizes.[68] From this summary, it is apparent that the inter-firm network relationship with Illy,

[67] Cfr. Daterra website: http://www.daterracoffee.com.br/#/ids-home.
[68] Id.

going further than a traditional arm's length commodity sale, may be a contributor to Daterra's success.

Another instructive case study in the coffee sector would be Ipanema Agrícola S.A. and Ipanema Comercial e Exportadora S.A. ("Ipanema"), which is a company specialized in the production and trading of green and processed high quality coffees, having a production capacity of around 120.000 bags of coffee/year.

Ipanema describes its principal activity as the "Provider of Solutions in Specialty Coffee", offering a large number of products and specialty services, such as the "Ipanema Coffee Academy" and the service of development of tailor-made blends. Through this service Ipanema's customers can use thirteen coffee labels produced by Ipanema to create customized blends with the aid of a specialized team of the company.

Ipanema has a very strong international presence. Their focus is described on their web-site as being on "long-term relationships, consistent quality in the products delivered and customized solutions for each client."[69] One of their main partners is Starbucks, the largest retail coffee chain in the world.

In 1997 Ipanema signed an exclusive worldwide supply contract with Starbucks for its label coffee Bourbon. Today they have a 5 years contract that commits the entirety of Ipanema's Bourbon label production to the chain. In total, they currently supply 20% of Starbucks' coffees and "Brazil Ipanema Bourbon" is one of the four exclusive pure coffees offered by Starbucks.[70]

There are a number of significant consequences of Ipanema's participation in Starbucks' international production chain. "Starbucks opened new markets for us (…) we ascended to an international-class of suppliers" said Washington Luiz Alves Rodrigues, director of Ipanema in an interview in 2008.[71] In addition to Starbucks, Ipanema is also the supplier of the German Tchibo Gmbh and of the French supermarket chain Intermarche.

With coffee consumption in Brazil growing significantly (it is the second-largest coffee-drinking nation in the world, behind only the US, with a coffee consumption that doubled in the past decade) both Illy and Starbucks have recently

[69] Cfr. Ipanema Coffees website: http://www.ipanemacoffees.com.br/
[70] Id.
[71] Brazilian growers learn to produce world-class coffees in http://www.daterracoffee.com.br/#/ids-media-clipping

opened subsidiaries in Brazil to sell their final product, which is manufactured mainly in Italy and Switzerland.

On the basis of the foregoing preliminary analysis, in our view two appropriate cases to be selected for the study include Gruana and Deterra, since they:

- are the main producers on their sector;
- reached out successfully to become part of a global value chain ;
- have the main global players in the sector cooperating with them; and
- it appears to be clear and significant benefits from their participation in the global value chains.

In summary, we believe that these two firms would be excellent examples that could provide valuable insights on the elements that have helped them to become part of a global value chain. In addition, the shape of the supply chain in which they are involved may be very interesting for studying organizational models of networking which may be replicate in other Latin America countries.

Weighing costs and benefits of accessing Global value chain (GVC).

Accessing the GVC for SMEs in developing countries is often an opportunity for growth. However it does not come for free and an accurate cost- benefit analysis has to be carried on concerning why, how and where access can be beneficial. This analysis has to incorporate the expectations of the MNC leader in the supply chain.

Obstacles to access are both dependent on the supply chain structure and choices made by the leading enterprise and/or correlated to the market structure. Barriers to access range from institutional and social to economic and technical ones. Ever more access to GVC is made conditional upon meeting quality requirements, often associated to technical or private standards set above those mandated by public domestic or international legislation. Meeting regulatory requirements often calls for relevant financial and organizational investments, given that especially technical standards may require significant changes in the production process and certification of compliance by private bodies. Costs are often prohibitive for small enterprises, driving SMEs away from international markets. Government, as it is clearly the case for Brazil, often intervenes with policies aimed at supporting firms to meet these requirements in order to foster internationalization.

Why. Access to the GVC might beneficial for at least three reasons: it increases market opportunities, access to new technologies, it enhances regulatory capabilities.

Becoming part of a GVC not only increases the volume of trade but it also provides business opportunities even outside the chain. Clearly these opportunities can be fully exploited when no exclusivity clauses are deployed in the relationships among participants to the supply chain.

GVCs produce internal knowledge which often constitutes the driver for competitive advantages. The leading enterprise transfers knowledge to suppliers which in turn transfer whole or part of it to the subcontractors. The extent to which knowledge is transferred along the chain and how freely can be used depends upon the degree of co-making and it is regulated by different contractual arrangements. The boundaries between inner circulation of knowledge and its availability for developing new entrepreneurial skills on the side of the supplier contribute to identifying the potential benefits of accessing the GVC.

Ever more process and products are subject to different regulatory regimes, operating both at international and domestic level. Compliance with these regulations often requires high investments not only in knowledge but also in physical capital. The leading enterprise transfers regulatory capabilities to the participants of the chain in order to meet regulatory requirements which the upstream firms can use even outside the relationship with the MNC. Access to GVC becomes an instrument to increase the skills to comply with international regulations

How. Access may be beneficial only at certain conditions concerning the legal instruments deployed, in particular the type of contract with MNCs. Empirical research shows that there are different modes of entering GVC. Firms can become individual subcontractor or supplier of other firms engaged into contractual relationships with MNCs. Second they can create collaborative ventures to generate economies of scale, scope and specialization in order to meet the threshold often designed by MNCs to start a contractual relationship. These networks are created to facilitate the relationship with the MNCs which has an interest to delegate to the network both tasks and compliance control associated with them. Thirdly firms can merge in order to meet MNC's requirements. Often firms engage into multiple strategies and may try to access GVC both individually and via networks. We would

like to explore what are the strategic variables that induce firms to developing each strategy.

In particular we will investigate the use of contractual network as a way to access the GVC distinguishing between formal and informal network. Formal networks can take different forms ranging from consortia agreements, to joint ventures, strategic alliances. In this case the MNC concludes a contract directly with the network, which then distributes tasks among the participants, ensuring compliance. Informal networks are teams of firms often created by the multinational for the purpose of sharing information, enhancing coordination among different stages of the production process, facilitating technology transfers. Suppliers or subcontractors operating in the team do not have any legally meaningful ties but for clauses in each contract which impose duties to cooperate loyally with other participants. At the end of the empirical research we want to test the adequacy of the Brazilian legal framework and to verify whether legislation in contract law and particularly commercial contracts provides a sufficient rich menu from which parties can select the best options to profitably access GVC.

Where. The length of the supply chain varies across and within sectors. To determine at which point of the GVC entry should occur is relevant to quantify the potential expected benefits. The supply chain in the aeronautics suggests that there are at least three levels, each one characterized by a series of contractual arrangements. The first, closest to the MNC, is that of risk sharing where partner of the MNC bears some risks concerning the commercial success of the final product (the airplane). Risk sharing is often associated with co-making and a strong involvement of the firm into the production design. The second is that of supplier where risk is allocated ex ante between the two parties, there is little or none risk sharing and some degree of co-design. The third is that of subcontractor. Often in this case there is no direct contractual relationship with the MNC. The relationship is mediated by the supplier and the benefits of accessing the GVC are 'filtered' by the intermediaries. The entry location in the supply chain may determine the degree of expected benefits which tend to diminish the further the firm is from the MNC.

Research strategy and data sources

To conduct and complete the research project successfully, the research strategies have to be designed and selected to be appropriate to the ultimate aims of the project. The principal aims of the study would be to analyze the entire supply chain of two selected sectors – coffee and aerospace – including the structure of the supply chain, its potentials and possible failures. Such a study can also provide guidance as to the policies that can be implemented to deal with some of the problems and the lack of competition. The key factors of success as well as unsatisfactory outcomes may be (and usually are) due to the exclusion of firms from international supply chains, organizational slack or coordination failures along the supply chain which in turn undermine the development of capabilities of the suppliers, hinder the access to the advantages of the global production and distribution or create some disparities between suppliers and final contractors.

Accordingly, the call opts for the deeper study of two case studies rather than for gathering standardized information about macro-economic indicators. In such a case, the research strategy has to face a number of complexities, including those related to:

1) The different sources of information required for completing the case study. This poses further concerns on how to relate the information stemming from one source to that collected from another one. Furthermore, firm interviews are crucial in such a study since through them it would be possible not only to analyze firm-specific information, but also to get a general overview of the shape and organization of the entire supply chain and the firm's role and contribution within the chain.

2) The quality of information collected (qualitative more than quantitative). One collateral problem relates to the low extent of standardization of qualitative information. The strategy has to aim to select and refine the evidence in order to achieve a minimum level of standardization and coherence of the information collected from the different case studies for deriving clear policy guidelines.

In this proposal, we have gathered some preliminary information with respect to (i) the general background both to the Brazilian economy and the sectors considered for study as well as (ii) the firms to be involved in the project and their preliminary interest into it.

The research project will be driven by examining various sources of information including:

- Government regulatory, sectorial and trade agencies
- Firms
- Key actors

Governmental and regulatory agencies are a good source of statics and general information for framing the two case studies more thoroughly. In dealing with such institutions the main strategy is to identify all relevant information that may enable us to pursue the following targets: (i) refining the research hypotheses concerning the structure of the supply chains (i.e. level of vertical integration), the features of the relationships (i.e. hierarchical vs collaborative, long-term vs short-term, with high/low level of commitment); and (ii) to provide us with macro-level but objective information for testing the preliminary results of the interviews with firms.

The main agencies that should be included include at the very least ApexBrasil (the Brazilian Trade and Investment Promotion Agency) and ABDI (the Brazilian Agency of Industrial Development).

As outlined earlier, at this stage we propose to interview the following firms:

- Daterra atividades rurais Ltda (coffee sector)
- Grauna Aerospace S.A. (aerospace sector)

In the case of coffee, Daterra may provide information concerning the Illy supply chain. Then, it would be beneficial to attempt to integrate this information with further interviews with representatives of Illy in order to get a complementary perspective from the purchaser and to verify the information provided by its supplier. We also propose that further and selected interviews should be carried out with Ipanema Coffee and Cooxupe (one of the biggest coffee cooperatives in Brazil). Such interviews would be conducted with two principal aims: to verify the information gathered and compare it to wider sectorial trends and to analyze different models of the supply chain. This would help us identify to what extent the Daterra-Illy supply chain model is idiosyncratic or diffused and to understand the organizational factors affecting the success / failure of different models.

In the case of the aerospace sector Grauna Aerospace may provide information on both the supply chain (with EADS/CASA) as well as the consortium HTA of which Grauna is part. As with the coffee sector, we propose to also interview ThyssenKrüpp at a further stage for completing and comparing the evidence.

The interviews of firms will be carried out by the use of a grid of open questions. The choice is straightforward, as a multiple-choice questionnaire would be

considered largely ineffective in this context. A standardized multiple-choice questionnaire is suitable for a study involving a high number of subjects to be interviewed/surveyed, which is not the case for the present research project. In addition, a standardized questionnaire is useful for gathering standardized information while the crucial information here is qualitative and may well differ in different organizations.

The open grid will be focused on the following basic issues/sections:

- The firm background in detail (foundation, economic performance in time, activity)
- The features of its relationships with local firms (at the upper level of the supply chain) as well as with international contractors downstream
- The structure of the supply chain
- The shortcomings of the relationships with the contractors and the success keys
- The strategies just carried out for overcoming the potential failures and the organizational devices which boost this process / or jeopardize it
- The possible shortcoming in the policy tools and detrimental factors at the country level hindering the development and functioning of global value chains

Finally a set of final interviews should be carried out to specific and selected actors belonging to private and public local or national institutions (such as chambers of commerce, consortia, regulatory bodies, etc.). Such interviews will be conducted on the basis of another open grid that would include the following issues/sections:

- The general structure of the supply chain and the main organizational problems identified
- The general sectorial role of the institution within each of the sectors (coffee / aerospace) and the local policy actions undertaken for improving the competitiveness of the global supply chains in the sector and/or the level of competitiveness of the single supplier within the global supply chain
- Detrimental factors at the country level hindering the development and functioning of global supply chains

Such interviews have the principal purpose of integrating the information collected elsewhere and verifying or comparing the information gathered at firm level.

ABIC (Brazilian Association of Coffee Industry); AIAB (Aerospace Industries Association of Brazil), and the Consortium HTA are among the organizations that could be interviewed for this purpose.

Finally two final methodological keynotes are worth noting:

1) As the information is collected across few selected sources some bias may emerge. Thus, the main effort will be to crossing the information, so as to improve both the objectivity and the clarity of the final results.

2) As the project will provide the researchers with unknown and probably unexpected evidence even during the empirical phase, even open grids will need to be revised on the basis of the information just collected and the research hypotheses refined accordingly even in the course of undertaking the empirical phase.

Researche Team

Prof. Fabrizio Cafaggi (coordinator) - Italian
European University Institute (EUI)
Via Boccaccio 121
50133 Firenze - Italy
Tel. [+39] 055 4685 516 / 241
fabrizio.cafaggi@eui.eu

Prof. Ronaldo Porto Macedo Junior - Brazilian
Law Faculty of the *Fundação Getúlio Vargas*
Rua Escócia, 178
01450-000 São Paulo (SP) - Brazil
Tel. [+55] 11 3281 3319
ronaldo.macedo@fgv.br

Luana F. Joppert Swensson – Brazilian/Italian
PhD candidate – University of Rome "La Sapienza"
Via Trapani, 9
00161 Roma – Italy
Tel. [+39] 339 774 9612
luanaswensson@hotmail.com

Tiago Andreotti e Silva - Brazilian
PhD candidate – European University Institute
Via Boccaccio 121
50133 Firenze - Italy
Tel. [+39] 389 139 4822
tiago.andreotti@eui.eu

Lucila Gabriel de Almeida - Brazilian
LL.M. candidate - *Fundação Getúlio Vargas*
Rua Almirante Marques Leão 638 apto 141
01330 – 010 São Paulo (SP) – Brazil
Tel. [+55] 11 6425-1999/ 84 9109-5357
lucila.almeida@gvmail.br

Clarissa Piterman Gross - Brazilian
LL.M. candidate - *Fundação Getúlio Vargas*
Alameda dos Aicas, 821 apto 72
04086-002 São Paulo (SP) - Brazil
Tel. [+55] 11 2649 6646
clarissa.gross@gvmail.br

Thiago Alves Ribeiro - Brazilian
LL.M. candidate - *Fundação Getúlio Vargas*
Rua Barata Ribeiro, 205 apto 67
São Paulo (SP) - Brazil
Tel. [+55] 21 9343 6414
thiago.alves@terra.com.br

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