

Brazil in transition

– Opportunities for Sweden where trade meets innovation

The Swedish Agency for Growth Policy Analysis, has been commissioned by the Ministry of Enterprise to provide an overview and analysis of the challenges and needs regarding the for Sweden important markets of China, India, Japan, South Korea and Brazil. Each country is reported in a separate Direct Response.

Ref. no.: 2014/248

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Foreword

Growth Analysis has been commissioned by the Ministry of Enterprise, Energy and Communications to produce a summary and analysis of the challenges and needs faced in the markets of China, India, Japan, South Korea and Brazil, all of them important for Sweden.

The aim of this study is, *"By using existing resources more efficiently and effectively, to achieve greater returns from initiatives designed to promote export and investment within the fields of responsibility of the Ministry of Enterprise, Energy and Communications in selected countries"*.

Reports for each country are provided in individual Direct Response reports. A synthesis report will also be compiled in late 2014 within the scope of the commission.

This interim report aims to enhance awareness of Brazil; awareness in the sense of understanding of political and economic priorities, but also awareness of which aspects are important to understand so as to be able to establish a successful partnership with Brazilian counterparts.

All reports will be available to download from www.tillvaxtanalys.se and will be published regularly. Brazil is the first country for publication as part of the commission from the Ministry of Enterprise, Energy and Communications. The author of the Brazil report is Mikael Román. The project manager is Andreas Larsson at Growth Analysis Stockholm.

Stockholm, October 2014

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Sammanfattning

Arvet från den tidigare import-substitutionspolitiken är fortfarande påtaglig i Brasiliens agerande som internationell handels- och samarbetspartner. Det medför att ”technology upgrading” i första hand förväntas ske genom att utveckla nationella värdekedjor på en växande intern marknad. Denna process understöds i de internationella relationerna genom höga importtullar samt olika krav på lokalproducerat innehåll. För internationella motparter är det därför ibland svårt att tillmötesgå Brasiliens krav då omfattande tekniköverföring efterfrågas samtidigt som policydialogen länderna emellan kretsar kring innovation, vilket medför att motparten har svårt att se handelsdimensionen som Brasilien för in i vad andra länder uppfattar som en innovationsdiskussion.

Rapporten identifierar några av de orsaker som medför att Brasilien och Sverige talar förbi varandra. I Brasiliens fall handlar det i huvudsak om att diversifiera en redan haltande ekonomi, för att på så sätt undvika den sårbarhet som följer av ökad råvaruexport. Detta sker i sin tur i ljuset av: bristande infrastruktur; allmänt låg innovationsgrad; brist på humankapital och utbildad arbetskraft; samt omfattande byråkrati och administrativ ineffektivitet.

I just fallet relationen Sverige–Brasilien är en möjlig anledning att denna dialog haltar något då det finns väsentliga skillnader i den svenska och brasilianska synen på innovation. Dessa bottnar till stor del i avgörande skillnader i våra respektive samhällsliga utmaningar.

Den brasilianska innovationspolitiken syftar till att: 1) vinna spetskompetens inom det man betraktar som strategiska framtidsområden; samt 2) snabbt skapa volym för industriell produktion. I praktiken sker den, till skillnad från Sverige, också genom ett stort inslag av statlig styrning.

Resultatet är att man från brasilianskt håll har en annan syn på innovation än Sverige och svenska motparter. Något förenklat kan man hävda att Brasilien talar primärt om handel med innovations-/tekniköverföringsinslag av stor skala samtidigt som Sverige talar om samarbeten kring forskning, innovation och utbildning i mindre skala. Mycket tyder dock på att relationen mellan Sverige och Brasilien just nu befinner sig i ett formativt skede för framtida samarbete. Den enskilt största förklaringen till detta är utan tvekan JAS Gripen-affären som inte bara ökar möjligheten till utvidgat samarbete inom försvarsområdet, utan även skapar förutsättningar för ett utökat innovations- och industrisamarbete också inom andra områden. I praktiken kan därmed JAS Gripen bli den katalysator och plattform som knyter ihop redan pågående aktiviteter inom ramen för: 1) det bilaterala innovations-samarbetet; 2) redan existerande industriprojekt; samt 3) olika ”autonoma”/fristående initiativ.

Givet den breda och historiskt starka kontaktytan mellan Brasilien och Sverige finns det potential till samordningsvinster givet att ett par faktorer beaktas. För det första måste vi internt diskutera vad denna *nya relation mellan Sverige och Brasilien* kan innehålla. Vad öppnar det för nya samarbetsmöjligheter, såväl institutionellt som sektoriellt? Vidare måste svenska aktörer i betydligt högre grad än tidigare förstå de brasilianska utmaningarna och prioriteringarna. Endast på detta kan Sverige sätta ihop ett nationellt erbjudande som är intressant för båda parter.

Den huvudsakliga poängen är dock att denna nya relation med Brasilien endast kan utformas tillsammans med våra brasilianska partners. Endast genom nära dialoger och

större ömsesidig förståelse kommer Sverige att kunna ta tillvara på de möjligheter som ligger i potten. Förutsättningarna är dock goda med ett flertal initiativ på olika nivåer som, om vi lyckas knyta ihop dem, kan leda oss ”från ett innovationsdrivet samarbete till industrisamarbete baserat på innovation”.

Summary

The legacy of the previous import substitution policy is still evident in Brazil's actions as an international trade and business partner. This means that the 'technology upgrading' in the first place is expected through the development of national/domestic value chains, serving a growing domestic market. These technology up-grading ambitions affect Brazilian international relations through high import tariffs and demands for locally produced content. For international counterparts, it is sometimes therefore difficult to meet Brazilian requirements when extensive technology transfer is requested while the policy dialogue between the two countries revolves around innovation. Hence when Brazil brings a trade dimension into what other countries perceives as an innovation discussion.

This report identifies some of the causes which may point to misunderstandings in the policy dialogue between Sweden and Brazil. For Brazil's public policy in the domain of innovation and trade policy, the goal is mainly about diversifying the industry structure to decrease the vulnerability of exposure to commodity exports. This in turn takes place in the light of: a lack of infrastructure; a generally low level of innovation; shortage of human capital and skilled labour; and heavy bureaucracy and administrative inefficiency.

In the Sweden-Brazil relationship one possible reason for these misunderstandings is significant differences in the Swedish and Brazilian approaches to innovation. The misunderstandings can be traced back to the significant differences in the two countries societal challenges.

The Brazilian innovation policy aims to: 1) gain core competences in future key technology areas; and 2) quickly create a large base for industrial production. In practice, unlike in Sweden, the way forward includes a large element of government involvement. Hence, public policy in Brazil is more hands-on in industry-related issues than in Sweden and other similar countries.

The result is that Brazil holds a different view of innovation than Sweden and Swedish counterparts. Somewhat simplified, one can argue that Brazil focuses primarily on trade issues including large scale innovation /technology transfer projects while Sweden speaks of international co-operation on research, innovation and education on a smaller scale, leading to smaller projects and in broader domains. However, indications are that the relationship between Sweden and Brazil right now is in a positive formative stage for future co-operation. The single biggest reason for this is undoubtedly the JAS Gripen deal, which not only increases the potential for greater cooperation in the defence field but also creates the conditions for increased innovation and industrial cooperation in other areas. In practice, therefore JAS Gripen is the catalyst and platform that connects the ongoing activities within the framework of: 1) the bilateral co-innovation; 2) already existing industrial; and 3) the various "autonomous" / standalone initiative.

Given the broad and historically strong contact area between Brazil and Sweden, there is a potential for synergies, considering a couple of factors. We need to internally discuss what this new relationship between Sweden and Brazil may contain, in order to set the stage for deeper collaboration. What new possibilities for cooperation, both institutionally and sectorally, will this new co-operation open? Furthermore, Swedish players must to a much larger extent than in the past make an effort to understand the Brazilian challenges and

priorities. Only that way, Sweden can put together a national offer that is interesting for both parties.

The main point of this study is that the new relationship with Brazil can only be designed in conjunction with our Brazilian partners. Only through close dialogue and greater mutual understanding, Sweden will be able to take advantage of the opportunities that lie in the pot. The prospects are good, however with a number of initiatives at various levels that, if we manage to tie them together, can lead us “from an innovation-driven collaboration to industrial cooperation based on innovation”.

1 Introduction

The chapter below can be found in all country reports in the Direct Response series on innovation and export promotion.

The economic world map is rapidly being rewritten as emerging countries take up more and more space in the world economy, and consequently become increasingly important as partners for trade and cooperation for a small, open, export- and knowledge-intensive economy like Sweden. We are seeing major transformation in what is being demanded from international relations as many emerging countries become ever more powerful. In this report, Growth Analysis has studied a Brazil in transition with a view to helping to bring about greater understanding of how Sweden can both cooperate and bargain with its counterpart/customer more effectively.

Countries such as India and China, which formerly received aid, are now some of the most important export markets for many Swedish companies, and at the same time R&D (research and development) in these countries is becoming ever more advanced, frequently working in cooperation with Western partners to help move the research frontier forward.

Sweden and Swedish promotion work are facing major challenges when it comes to responding to the new criteria for international cooperation with countries important to Sweden, such as China, India, Japan, South Korea and Brazil. Some countries, like Japan and South Korea, are attempting to promote themselves from an increasingly dominant China. Brazil and China are attempting to make the switch to an innovation-based economy, and India is trying to diversify its business structure. Swedish companies are dependent on exports as Sweden is a small domestic market in an unfavourable geographical location in relation to new and growing centres of economic activity in Asia and the Southern Hemisphere. Sweden and Swedish companies are in need of favourable conditions on these markets in order to maintain and reinforce their competitiveness through outsourcing of production, cost-effective R&D and innovation partnerships. And not least, these countries are vital export markets.

Understanding the societal challenges and political priorities of these countries will provide vital baseline values when devising Sweden's future strategies and action plans¹. There are signs indicating that these countries – and their governments – view access to their markets as part of a wider political agenda. This may have implications in respect of how Sweden should hone and expand its offering and achieve the best returns, even for non trade-oriented activities such as research and innovation.

There are opinions to indicate that the lack of a consistent common Swedish perception of "the customer" (Brazil, for example) has resulted to a great extent in the lack of a strategic approach to these countries. As a result, on a political level Sweden has found it difficult to hold together the Swedish offering and hence bargain/negotiate more effectively with the counterpart/customer. Many stakeholders in the public system for innovation, investment and trade promotion are finding that conditions are now suboptimal at both authority and government office level.

¹ WP/PM 2013:12, Increase in exports of environmental technology to China – three case studies, Growth Analysis

The objective of this study – which includes five separate country reports and a synthesis report – is, in the short term, to support operational efforts in respect of export and innovation promotion in the countries studied; and, in the longer term, to aid in discussion of how these increasingly intertwined activities can be addressed in a more integrated fashion.

1.1 The Growth Analysis commission

As one element of this Swedish internationalisation enterprise, Growth Analysis has been commissioned by the Ministry of Enterprise, Energy and Communications to produce a summary and analysis of the challenges and needs faced in the markets of China, India, Japan, South Korea and Brazil, all of them important for Sweden. Reports on each country are provided in separate Direct Response reports, and this one relates to Brazil.

The aim of this study is, *"By using existing resources more efficiently and effectively, to achieve greater returns from initiatives designed to promote export and investment within the fields of responsibility of the Ministry of Enterprise, Energy and Communications in selected countries"*.

The study is founded on the following trends:

- Selected countries are undergoing major change/transformation. (Examples of change factors include a growing middle class, an increasingly important export market for Sweden, the hunt for innovation and balanced structural transformation, and a growing China which is creating pressure for change in the local area.)
- Sweden will benefit from understanding how this change/transformation is affecting each country's view of the rest of the world and what is demanded in terms of international cooperation and exchange.
- Swedish international relations work has traditionally been characterised by a domestic debate in which the operational and tactical level has mainly aimed to coordinate the Swedish offering in the short term, without necessarily analysing what would be in the best interests of each country (for instance, What does Brazil demand in its relationship with Sweden?)

2 The consequences of globalisation

The chapter below can be found in all country reports in the Direct Response series on innovation, export and investment promotion.

2.1 Innovation and trade intertwined

International trade and cross-border value creation have increased significantly over the last few decades. What initially involved large-scale manufacture of end-use products which were transported to customers has developed into subcomponents being moved in all directions before eventually being assembled to make finished products.

Not only are products manufactured across borders nowadays, but a complex, intertwined network is being used to create knowledge, information, intellectual property rights, training, technology transfer and service production.

There is currently consensus that increasingly complex and more intertwined networks have resulted in development of what used to be the export of physical products from one country to another into something completely new. The fact that international exchange nowadays comprises complex links between trade, innovation, research and training will present major challenges for the formulation of national policy in future, and in the long run it will redefine traditional policy areas to an extent. Economic policy, labour market policy, training and research and innovation policy and trade policy are some of the policy areas that will probably need to be integrated in an as yet unknown manner in order to face up to the future challenges presented by globalisation, not least in emerging countries, where the boundary between the business community and policy is not the same as in countries which underwent industrialisation previously.

2.2 Sweden's position and future challenge

Earlier Growth Analysis studies show that Sweden's exports are increasing, while at the same time our exports are including previously imported content to an increasing extent². Thus Sweden and the Swedish business community have become more dependent upon both imports and exports. Earlier Growth Analysis studies have also shown that a Swedish business community with increasing international links has resulted in greater added value in Sweden³. Therefore, Sweden and Swedish welfare have benefited from increased

² PM 2014:10: Competing in Global Value Chains – Implications for Jobs and Income in Sweden

PM 2014:03: Global Value Chains from a Growth Policy Perspective – An overview

WP/PM 2013:10: Outsourcing och offshoring av FoU i globala värdekedjor [Outsourcing and offshoring of R&D in global value chains]

³ PM 2014:15: Are R&D Activities Moving from Sweden? – R&D in Swedish Enterprises in Sweden and Abroad

Growth Facts 2014: Internationalisering 3.0 – Nya vägar och möjligheter för svenska små och medelstora företag [Internationalisation 3.0 – New routes and opportunities for small and medium-sized Swedish enterprises]

WP/PM 2012:23: Global value chains and international competitiveness

WP/PM 2011:53: Svenska företag i globala värdekedjor – sex fallstudier [Swedish companies in global value chains – six case studies]

WP/PM 2011:51: Direktinvesteringar inom tjänstesektorn och offshoring av tjänster [Direct investments in the service sector and offshoring of services]

WP/PM 2011:18: Lokalisering av huvudkontor, produktion och FoU i Sverige. En undersökning av svenska företags attityder och planer [Localisation of head offices, production and R&D in Sweden. A survey of Swedish companies' attitudes and plans]

globalisation to date, not least when Swedish companies have found their way into new markets and undergone growth there. The Swedish economy has handled structural transformation relatively well so far as simpler manufacturing has been outsourced (offshored) to other countries, to be replaced by activities offering greater added value such as Knowledge Intensive Business Services (KIBS) and what are known as head office services. Despite its cost situation, Sweden has also retained most of its research and innovation activities, with certain industry-specific deviations. This means that the country is often cited as a success story on an international level. Swedish successes in important export markets can largely be ascribed to successful major corporations which also have an appropriate support system. However, there are signs that the shift towards Asia and the Southern Hemisphere may present new challenges to Sweden and Swedish companies. The position of the emerging countries is becoming ever stronger, not least as an important export market:

*"By 2025, 1.8 billion people around the world will enter the consuming class, nearly all from emerging markets, and emerging-market consumers will spend \$30 trillion annually, up from \$12 trillion today"*⁴

In other words, the shift in economic activity towards Asia and the Southern Hemisphere which we have seen to date is only in its infancy. This means that in future, Swedish prosperity will probably be based on success in these emerging markets to an even greater extent. However, the growing middle class means that these countries are gaining even more bargaining power in international relations. Most of these countries are attempting to move away from being manufacturing hubs for the Western world and to make the same switch to a knowledge- and innovation-based economy that Sweden once made. Countries such as China and India have growing middle classes which are demanding – and receiving – more and more, which means that policies are finding it much more difficult to meet these new, more stringent demands. Countries such as Japan and South Korea are attempting to distance themselves from the threat of being excluded from global value chains; the positions which China is attempting to conquer. At the same time, China is attempting to build up its own major corporations to capture the same benefits in global value chains which have historically been held by Sweden's top major corporations. The boundary between the public sector and the private sector in these countries often differs from the equivalent boundary in Western countries, where the dividing line between them is frequently not as apparent; a factor brought to a head in public procurement procedures, for instance.

Responding to this many-headed counterpart, where the boundary between the private sector and the public sector is not what we are used to, means that the role of the public sector in Sweden may need to be redefined.

There is already a perception that the Swedish support system is not formulated adequately to serve these important emerging countries as effectively as possible. The lack of a consistent perception of "the customer" has resulted to a great extent in the lack of a strategic approach to these countries, which are of growing significance to the Swedish economy. As a result, on a political level Sweden has found it difficult to hold together the Swedish offering and hence bargain/negotiate more effectively with the counterpart/customer. Many stakeholders in the public system for innovation, investment

⁴ Urban world: Cities and the rise of the consuming class, McKinsey Global Institute, June 2012; Yuval Atsmon, Peter Child, Richard Dobbs, and Laxman Narasimhan, "Winning the \$30 trillion decathlon: Going for gold in emerging markets," McKinsey Quarterly, August 2012.

and trade promotion are finding that conditions are now suboptimal at both authority and government office level. The Ministry of Enterprise, Energy and Communications feels that *"The initiatives for which the Ministry is responsible are becoming ever more incidental and ad hoc, rather than becoming parts of the Government's strategies and long-term objectives with emerging markets which fall within the responsibilities of the Ministry of Enterprise, Energy and Communications"*.

2.3 Questions

Growth Analysis has studied the following questions in the respective countries as part of this initiative.

- **Framework conditions:** How has the country's "context" (criteria, links, surroundings) and political direction altered over the last few years? What are the "framework conditions" within which policy has a part to play? What changes and new challenges is the country facing?

The following questions are limited mainly to innovation and trade.

- **Priorities:** What priorities does the country have in respect of international cooperation? Why does the country have these priorities, and on what basis?
- **Perception of Sweden:** What is the country's perception of Sweden? What are the most important platforms for cooperation? Essentially, what does the country want from Sweden?
- **Relationship with Sweden:** How does this (framework conditions, Sweden's impact and priorities) affect the relationship with Sweden in more specific terms?

In summary: given the fact that the country's challenges are weighed up together with priorities, the objective of international cooperation and Sweden's "impact" in the country – what can Sweden do to make the most of the relationship with the country in terms of innovation and trade flows?

3 Brazil and Sweden

November 2014 marks the fifth anniversary of the occasion when Sweden and Brazil signed a bilateral partnership agreement concerning innovation and high technology. However, a number of the fundamental criteria for such a cooperation have altered radically since that time.

On a global level, the world has seen in the past few years: 1) a deep crisis in the world economy; 2) the emergence of new global economic centres; 3) changes in international trade patterns; 4) the ever-increasing pace of technological development, with far-reaching consequences for established industrial structures; and 5) ever more apparent socio-economic effects of climate change and other environmental problems, all in the light of new values and expectations in society as a whole.

In this context, Sweden and Brazil have also changed. Both countries have faced new, more or less unpredicted challenges over the past few years; leading in turn to changes in national priorities and strategic initiatives.

Of course, the above also affects the relationship *between* Sweden and Brazil. This issue has very much come to the fore recently as there is the potential for a completely new dynamic. One crucial incident in this regard, which further alters the context, involves the ongoing negotiations relating to the SAAB Gripen. Not only has the latter drastically increased Brazilian interest in Sweden, it also paved the way in purely practical terms for major opportunities for extended innovation and industrial cooperation. However, to achieve this we are certain to have to operate in a different way to previously. One starting point for this work is that rather than setting up our own targets and plans for the partnership, we need – more than ever before – to actually try to understand the counterpart's challenges and interests in collective activities. Only on the basis of this will we be able to formulate effective policies and action strategies.

All in all, therefore, there is every reason to discuss ***the new relationship between Sweden and Brazil***. In purely practical terms, we will be considering two overarching issues on the next few pages:

- 1) *What main challenges does Brazil face in today's global context?* The aim of this discussion is to understand the Brazilian priorities and reflect on how these affect the country's strategies for international cooperation, primarily in respect of innovation and trade.
- 2) *How does the above affect the relationship with Sweden in more specific terms?* The question which then follows on from the above discussion involves how Brazil views Sweden – which has also changed over the past few years, in the same way. What is Brazil hoping to gain from a partnership with Sweden? What are the country's expectations? What challenges and opportunities do we face together?

4 Brazilian challenges – towards a new policy

To understand Brazil's actions in a future cooperation, we initially have to understand the challenges and changes that the country faces. With which fundamental structural problems is the country grappling? How has the global development of the past few years altered priorities in national development and growth policy?

The actual starting point for this discussion is, in the case of Brazil, the fact that the country is currently facing a direct threat of recession after a number of years of relative economic growth and enhanced social welfare.⁵ Essentially, over the last couple of years it has been possible to perceive a gradually declining trend in more or less all development- and trade-related indicators; economic growth, competitiveness, innovation capacity, etc. The threat of inflation and increased unemployment is now growing in the shadow of this. The discussion on growth policy targets, alternative priorities and revised action plans is therefore very high up on the political agenda.

4.1 The country's size and diversity

The first – and perhaps biggest – challenge in the ambition to establish a more consistent development and growth policy for Brazil is, without doubt, the size and diversity of the country. Brazil is – and this cannot be emphasised enough – a country of continental proportions with major climatological and socio-economic differences. Consequently, there are also major differences between different states and regions in respect of economic bases and industrial structure.

This perception of "several different Brazils" is central to understanding the country and presents an initial relief of the challenges it faces. If we work, as an initial illustration, on the basis of aggregated data for economic growth, we can see that in 2012 Brazil saw weak economic growth of around 0.9 per cent of its GNP – explained primarily by a decline in the country's industrial production as a consequence of the international crisis.⁶ However, the reality behind the figures is far more complicated. If, instead, we look at the corresponding growth figures for the country's five main regions, we can see that the areas seeing the most powerful growth were: the central-western parts of Brazil (3.3 per cent), where most of the country's agricultural production takes place, and; the country's northern (1.1 per cent) and north-eastern (1.3 per cent) parts, which have traditionally been the most deprived regions in terms of both infrastructure and socio-economic considerations. One of the trailing regions was the dominant industrial region around São Paulo and Rio de Janeiro, which saw a growth rate of 0.5 per cent in 2012; i.e. a rate considerably below the national average. Ironically enough, the southern parts of Brazil saw the worst growth (0.2 per cent). These parts, with their economy based on small industries and farming, have

⁵ Soares, E., Martins, D. (2014) PIB do Brasil cai 0,6% no 2º trimestre e país vê recessão técnica. Valor Econômico 29 August. <http://www.valor.com.br/brasil/3673060/pib-do-brasil-cai-06-no-2>, (accessed 4 September, 2014).

⁶ Saraiva, A., Martins, D. (2013) Economia cresce 0,9% em 2012 sobre 2011, diz IBGE. Ibid. 1 March. <http://www.valor.com.br/brasil/3027990/economia-cresce-09-em-2012-sobre-2011-diz-ibge>, (accessed 17 March, 2013).

higher levels of development and training than elsewhere in the country.⁷ This trend essentially remains unchanged for the current year.⁸



Figure 1 The five regions, 26 states and federal district of Brazil.

The above figures illustrate some of the challenges now facing Brazil. Given the fact that regions and states have their own primary industries and characteristics, where should investments be made, and in what? Furthermore, how can investments be coordinated in purely practical terms in a federal political system with 26 states and one federal district, all of which have a comparatively high level of autonomy and, hence, their own priorities in many instances?

4.2 Economic structure: commodities vs high technology

Another overarching challenge which in one sense follows on from the above reasoning, relates to the composition of the Brazilian economy. Brazil is often depicted as one of the strongest emerging economies in the world, with the potential to emerge as a new economic centre of power. During the first decade, the Brazilian economy also grew by 3.6 per cent per annum on average, before reaching almost 7.5 per cent in 2010.⁹ According to

⁷ De Lorenzo, F. Ibid. Indústria deve ajudar Sudeste e Norte em 2013. 22 January. <http://www.valor.com.br/brasil/2978646/industria-deve-ajudar-sudeste-e-norte-em-2013>, (accessed 15 March, 2013).

⁸ As can be noted in the cited reference, the growth numbers for 2012 used in this section refer to the first preliminary data coming out of IBGE. They were later slightly adjusted but not in a way that changes the overall argument.

⁹ Spitz, C. (2011) PIB brasileiro fecha 2010 com crescimento de 7,5%, maior desde 1986, aponta IBGE. O Globo 3 March. <http://oglobo.globo.com/economia/mat/2011/03/03/pib-brasileiro-fecha-2010-com-crescimento-de-7-5-maior-desde-1986-aponta-ibge-923926837.asp>, (accessed 14 July, 2011).

the latest calculations from the World Bank, the country is therefore the seventh biggest economy in the world.¹⁰ Major social progress has also been made in parallel with this, and between 2002 and 2012 the number of people living in extreme poverty (with a monthly income of less than SEK 270) fell from 8.8 per cent to 3.6 per cent of the population, for example.¹¹ Furthermore, what makes Brazil unique in a South American context is that unlike its neighbours, the country has traditionally had what is in many respects advanced industry and a high proportion of production goods for export.

This general view is now changing rapidly. In retrospect, it may be stated that most of the above growth has been based on an increase in the export of raw materials. For just two or three years, the proportion of production goods fell by almost 10 per cent¹² and amounted to just 45 per cent of Brazilian exports in 2008. Compare this with India and China, where the corresponding figures at the same time were 63 and 93 per cent respectively.¹³

Thus there is an impending risk of Brazil being affected by "Dutch disease", and the federal government is also working hard to diversify the economy.¹⁴ The latter is mainly taking place on two fronts. On the one hand, new markets are being sought; not least in Africa, where Brazil has primarily invested in traditional raw material markets (agriculture, mining, and oil and gas). This is taking place in harmony with an explicit geopolitical discourse relating to *South-South collaboration*. Perhaps more important, however, is the ambition to stimulate new industries in a number of sectors defined as being of particular strategic importance for the future, such as nanotechnology, health and medical care, energy and so forth. The Brazilian government is now attempting, via extensive initiatives relating to research and technology transfer, to overcome the *technology gap* facing the country so as to find new export markets and thus reduce its exposure to the global price of raw materials. This explicit emphasis on innovation currently constitutes the hub of Brazilian growth policy. We will return to this shortly.

4.3 Inadequate infrastructure

Perhaps the foremost, most specific obstacle to socio-economic development in Brazil today is probably the country's substandard and underdimensioned infrastructure. This affects both established industry and future initiatives. In the latest edition of the World Economic Forum's *Global Competitiveness Report*, in which Brazil came in 56th of a total of 148 countries, 19.7 per cent of all respondents considered inadequate infrastructure to be the single biggest obstacle to continued growth (e.g. *doing business*). In the separate ranking of some of the individual infrastructure indicators, Brazil also lagged far behind

¹⁰ The World Bank (2014b) GDP (current US\$).

http://data.worldbank.org/indicator/NY.GDP.MKTP.CD?order=wbapi_data_value_2013+wbapi_data_value+wbapi_data_value-last&sort=desc, (accessed 2 October, 2014).

¹¹ Nobrega, C. (2013) Bolsa-Família: template for poverty reduction or recipe for dependency? The Guardian 5 November. <http://www.theguardian.com/global-development-professionals-network/2013/nov/05/bolsa-familia-brazil-cash-transfer-system>, (accessed 3 October, 2014).

¹² (2011) Commodities ganham espaço nas exportações brasileiras, diz Ipea. Folha de São Paulo 10 May. <http://www1.folha.uol.com.br/poder/913739-commodities-ganham-espaco-nas-exportacoes-brasileiras-diz-ipea.shtml>, (accessed 14 July, 2011).

¹³ Wolf, M. (2010) Must try harder. The New Brazil (Financial Times Special Report) 29 June, p. 11.

¹⁴ "Dutch disease" is an economic phenomenon occurring in countries where economic growth is strongly dependent on individual raw materials. Essentially, it refers to the situation in which the price of a given product, such as oil, increases massively and so temporarily strengthens – and in fact overvalues – the exchange rate for the country's own currency. The latter will then penalise other export sectors and hence affect economic growth in the long term.

most of the countries of the world in factors such as: infrastructure in more general terms (114); roads (120); ports (131); and air transport (120).¹⁵

The above affects all economic sectors. One example is the fact that the agricultural industry, so important to Brazil, is estimated to lose almost SEK 27 billion (BRL 9 billion) each year as a result of poor infrastructure.¹⁶ However, similar patterns can be seen in more or less all areas of infrastructure; urban transport, waterways, ports, airports and the massively underdeveloped rail network. In all, Brazilian industry is estimated to lose almost SEK 240 billion (BRL 80 billion) a year as a result of neglected investments in infrastructure.¹⁷

The inadequate infrastructure also affects future socio-economic development – and not least, the above-mentioned ambitions for diversification of the economy. One example involves the initiatives required to recover the enormous oil and gas deposits, *Présal*, found off the coast of Brazil, at the level of Espírito Santo, Rio de Janeiro and São Paulo. Of the SEK 3.6 trillion (BRL 1.15 trillion) set aside for investments in the energy system as a whole for the period 2013-2020, the *Présal* initiatives account for almost SEK 2.6 trillion (BRL 835 billion).¹⁸ Further, the Olympic Games to be held in Rio de Janeiro in 2016 will demand extensive initiatives to allow the competitions to be held. Even more importantly, beyond the oil extraction and the two sporting events, there is also a deeper, more extensive socio-economic need for a functioning infrastructure which includes factors such as homes, working electricity, drains and roads.¹⁹

The government has had an active policy for a number of years, no least within the scope of what is known as the *Programme for Accelerated Growth* (PAC), with a view to overcoming many of the problems. In 2014, total investments in infrastructure are estimated to amount to almost 3 per cent of GNP – a clear advance. However, Brazil is still very much bringing up the rear compared with Russia (7 per cent), India (85 per cent) and China (10 per cent).²⁰ Instead, new studies show that up to 2018, the country needs to invest almost SEK 3.6 trillion (BRL 1.19 trillion), mainly in transport, energy, sanitation and oil and gas with a view to meeting both internal needs and facing up to international competition.²¹ In practice, this will involve investments totalling almost 20 per cent of GNP.²²

¹⁵ Schwab, K. (2013) *The Global Competitiveness Report 2013–2014*. World Economic Forum, Geneva.

¹⁶ (2014) Falta de infraestrutura portuária gera perdas na safra de soja. Canal do Produtor 29 January. <http://www.canaldoprodutor.com.br/comunicacao/noticias/falta-de-infraestrutura-portuaria-gera-perdas-na-safra-de-soja>, (accessed 13 August, 2014).

¹⁷ Morales, D. (2013) Falta de investimento logístico ocasiona perdas de US\$ 80 bilhões por ano ao país. RuralBR 30 October. <http://agricultura.ruralbr.com.br/noticia/2013/10/falta-de-investimento-logistico-ocasiona-perdas-de-us-80-bilhoes-por-ano-ao-pais-4317848.html>, (accessed 13 August, 2014).

¹⁸ Rockmann, R. (2014b) Tensão em todas as fontes de energia. *Valor Setorial: Energia* July, pp. 8-15.

¹⁹ Rockmann, R. (2014a) Muita coisa para sair do papel. *Valor Setorial: Infraestrutura* Junho, pp. 10-16.

²⁰ Kury, F. (2014) Visão de investimentos financeiros para PPPs no Brasil. *FGV Projetos: Parcerias público-privadas no Brasil* 23, pp. 96-101.

²¹ Rockmann, R. (2014a) Muita coisa para sair do papel. *Valor Setorial: Infraestrutura* Junho, pp. 10-16.

²² Pupo, F., Elias, J. (2014) Projetos para infraestrutura até 2018 exigem R\$ 920 bilhões. *Valor Econômico* 4 July. <http://www.valor.com.br/brasil/3604170/projetos-para-infraestrutura-ate-2018-exigem-r-920-bilhoes>, (accessed 12 August, 2014).

4.4 Low degree of innovation – particularly in the private sector

Another major challenge for Brazilian growth policy is the country's comparatively weak research and innovation climate. As stated previously, Brazil is ranked notoriously low in various indices for innovation and competitiveness. Moreover, the country has a relatively small number of registered patents and scientific publications in various international comparisons.²³ In most cases the trend is rising, but Brazil still trails behind in all international comparisons.

This problem is particularly apparent in the private sector. A new study from IBGE, the Brazilian equivalent of Statistics Sweden, shows – for example – that just 35.7 per cent of a total of 128 699 companies had implemented some kind of innovation activity. Furthermore, it was able to conclude in the same study that the problem is most pronounced among small and medium-sized companies.²⁴ This phenomenon can be found in more or less all economic sectors, with four notable exceptions; the aviation industry, the agricultural sector, and the oil and gas industry – which, conversely, are technological world leaders in their respective fields. One thing which the latter have in common is the fact that they all operate on global markets.

This is largely explained by the economic import substitution policy in force during the military regime (1964–1985). As a result of this, when democracy returned in the early 1990s, Brazil was, in practice, technologically isolated and had its own national standards in a large number of technological fields (such as television and information technology), while at the same time the internal market was dominated by a small number of major national companies with domestic national value chains.²⁵ Research and technology development, insofar as these took place, were carried out instead more or less exclusively in the form of basic research at preferably federal universities. This pattern persists to this day.

Therefore, one of the major challenges faced involves encouraging greater innovation in the private sector. On the one hand, this is taking place by means of various regulatory measures such as increased import duties and demands for local production. The latter aim to expose Brazilian companies to foreign technology and knowhow without running the risk of them failing to live up to the competition. Furthermore, in the last few years the government has also introduced extensive credit lines and arrangements which aim in various ways to encourage innovation within companies; but also to encourage partnerships, primarily with universities and other research institutes. We will discuss these initiatives in further detail soon.

4.5 Shortage of human capital and skilled labour

The above initiatives in respect of innovation and research in turn lead to another of the major challenges for Brazil, namely access to human capital and skilled labour. The latter

²³ UNESCO (2010) UNESCO Science Report 2010: The Current Status of Science around the World. UNESCO, Paris.

²⁴ IBGE (2013) Pintec: In 2011, industrial companies spent more on research and development than in 2008. 12 May. <http://www.4-traders.com/news/IBGE-Brazilian-Statistical-and-Geographic-Instit--Pintec-In-2011-industrial-companies-spent-mor--17594964/>, (accessed 7 September, 2014).

²⁵ Schwartzman, S. (2008) Pesquisa universitária e inovação no Brasil, Avaliação de políticas de ciência, tecnologia e inovação: diálogo entre experiências internacionais e brasileiras. Centro de Gestão e Estudos Estratégicos, Brasília, pp. 19-43.

presents one of the biggest obstacles to a switch to a modernised economy. The situation is in itself a result of inadequate access to qualified training at all levels.

An initial problem is greatly neglected compulsory schooling, which is frequently of substandard quality. Almost 13.2 million Brazilians, or 8.7 per cent of the population over 15, are currently unable to read or write. A further 28 million people (18.3 per cent) are what is known as "functionally illiterate"; in other words, they can read but do not understand what they are reading.²⁶

The Brazilian university and research system also falters in the same way. For historical reasons, the latter has been greatly neglected for a long time, and despite considerable initiatives and enormous expansion in the 1990s it is still characterised by:

- relatively low investment in research and production of research results
- strong concentration of R&D/I at academic institutions (except in certain private sectors)
- similarly strong concentration of academic institutions in specific regions, primarily the areas around São Paulo and Rio de Janeiro
- poor interaction between academia and the business community.²⁷

The above has far-reaching consequences for Brazil's global competitiveness. Despite the relative growth of the Brazilian economy over the last decade, this development is now under threat on account of the shortage of skilled labour. Brazil is already short of almost 150 000 engineers, in a situation in which the need and conditions for industrial expansion should be at their greatest. More specifically, Brazil is now – second only to the ageing Japan – the country in the world where companies find it most difficult to find skilled staff.²⁸ In practice, the country has arrived at a point where it is forced in the short term to import skilled labour.²⁹ In parallel with this, pay for skilled staff is skyrocketing.³⁰

Strong initiatives for higher training and research are now being implemented in order to overcome these problems. Perhaps the foremost example is the extensive scholarship programme *Science without borders* (Ciência sem fronteiras), which will make it possible between 2011 and 2014 for 106 000 Brazilian students and researchers to study at foreign universities. The intention is to use international exchange and mobility to enhance Brazil's international competitiveness and encourage development in the fields of science and technology, in the main. In the same way, the government – via the Ministry of Education

²⁶ Junior, C. (2013) IBGE: analfabetismo cresce pela primeira vez desde 1998. terra.com 27 September. http://noticias.terra.com.br/educacao/ibge-analfabetismo-cresce-pela-primeira-vez-desde-1998_e5e1e55448c51410VgnVCM3000009acceb0aRCRD.html, (accessed 7 September, 2014).

²⁷ Schwartzman, S. (2008) Pesquisa universitária e inovação no Brasil, Avaliação de políticas de ciência, tecnologia e inovação: diálogo entre experiências internacionais e brasileiras. Centro de Gestão e Estudos Estratégicos, Brasília, pp. 19-43.

²⁸ (2013) The price is wrong. The Economist Special report: Brazil 28 September. <http://www.economist.com/news/special-report/21586678-why-brazil-offers-appalling-value-money-price-wrong>, (accessed 8 September, 2014).

²⁹ (2012) Sem priorizar a educação no Brasil, governo estuda importar profissionais. Correio Braziliense 22 August. http://www.correio braziliense.com.br/app/noticia/economia/2012/08/22/internas_economia,318652/sem-priorizar-a-educacao-no-brasil-governo-estuda-importar-profissionais.shtml, (accessed 20 September, 2012).

³⁰ (2013) The price is wrong. The Economist Special report: Brazil 28 September. <http://www.economist.com/news/special-report/21586678-why-brazil-offers-appalling-value-money-price-wrong>, (accessed 8 September, 2014).

(MEC) and the Pronatec programme; as well as the National Confederation of Industry (CNI), via its subsidiary body SENAI – is providing various forms of vocational training so as to enhance skills in industry in the medium term.

4.6 Brazil Cost: Planning vs implementation

A final but nevertheless important challenge for the competitiveness of the Brazilian economy is the country's almost boundless bureaucracy and administrative inefficiency. The resulting transaction costs are often referred to as "Brazil Cost" (*Custo Brasil*) and are so institutionalised that the latter has come to be a generally accepted term even in dictionaries.³¹ Essentially, "Brazil Cost" is a generic term for the costs resulting from corruption, extensive bureaucracy, complicated tax laws, extensive regulations, slow legal processes, high inflation – and the aforementioned shortcomings in infrastructure. Together, these constitute the main obstacle to efficient implementation of both public policy and specific business projects.

The problems cannot be overemphasised. In the World Bank's *Doing Business Index* for the current year, Brazil is in 116th place (of 189 countries) with respect to the regulatory burden and in 159th place with regard to the tax burden. The consequences of this are manifold, and very specific. For example, it takes almost 2 600 hours for a medium-sized Brazilian company to complete its annual income tax return: compare this with China (318 hours) and the OECD as a whole (108 hours). Similarly, it takes 119 days on average to start a company in Brazil, when the equivalent OECD average is 12 days.³² In practice, therefore, many smaller companies choose instead to operate in the informal sector. This then has direct consequences in the form of loss of tax revenues and lack of valid contracts, for example, as well as a general legal vacuum as regards employment.

However, not only the private sector is affected. Quite the opposite, the above pattern is found to an even greater extent among public institutions, if such is possible. A recently published survey shows, for example, that 30 per cent of the tasks that began in 2007, when the first version of the above-mentioned PAC infrastructure programme was initiated, have still not been completed – or even started.³³ This general inability among state institutions to offer the promised services and implement planned programmes, frequently leads to general apathy towards public policy; which in turn simply leads to reduced transparency and even more inefficiency. However, the problem of inadequate implementation goes deeper than that. In a broader sense, the situation – paradoxically enough – also reflects a confidence in rational state control in which implementation does not constitute a potential problem, but instead is expected to happen automatically. Therefore, according to this logic problems can just be "planned away" insofar as they occur. This results in further, many often extremely elaborate documents without the potential for implementation. Brazil is full of such action plans and policy documents.

On a more general level, these administrative obstacles cripple the competitiveness of the Brazilian economy. More specifically, Brazil is generally very expensive as a consequence of these collective transaction costs. Household appliances and cars, for example, cost up

³¹ Farlex Financial Dictionary (2012) *Custo Brasil*. <http://financial-dictionary.thefreedictionary.com/Custo+Brasil>, (accessed 7 September, 2014).

³² The World Bank (2014a) *Ease of Doing Business in Brazil*. <http://www.doingbusiness.org/data/exploreeconomies/brazil/>, (accessed 8 September, 2014).

³³ Amora, D. (2014) *Dilma relança PAC com 30% das grandes obras inacabadas*. Folha de São Paulo 3 August, <http://www1.folha.uol.com.br/fsp/poder/178901-dilma-relanca-pac-com-30-das-grandes-obras-inacabadas.shtml>, (accessed 3 August, 2014).

to 50 per cent more than in over middle income countries. Similarly, office rents in Rio de Janeiro and São Paulo are some of the highest in the world. This affects individual consumers, on the one hand, who on average see how 21.5 per cent of their household income is spent on paying off debts.³⁴ In the long run, this also means that many foreign companies refuse to invest in the country. The latter is emphasised not least in a number of the interviews we held with Swedish companies in connection with this study.

³⁴ (2013) The price is wrong. The Economist Special report: Brazil 28 September. <http://www.economist.com/news/special-report/21586678-why-brazil-offers-appalling-value-money-price-wrong>, (accessed 8 September, 2014).

5 The present initiative for innovation

Given this fact, the Brazilian government has been implementing an explicit innovation initiative for a decade now. This in turn is taking place within the scope of a number of public federal programmes which are seeking *de facto* to unite traditional, state-led industrial policy with a number of more innovative approaches. The overall idea behind these programmes is, simply, to encourage innovation as a unifying instrument for economic development in general.

The above ambitions are expressed clearly in the present national industrial policy plan from 2011, "Bigger Brazil Plan" (*Brasil Maior*), the explicit aim of which is to "promote sustainable and socially including economic growth through innovation and reinforcement of national industrial production chains".³⁵ For this purpose, the government is seeking on the one hand to further encourage innovation among Brazilian companies by means of various regulations which use different methods to promote cooperation between universities, companies and research centres, but also new mechanisms for finance, as well as programmes for continuous vocational training and skills enhancement in industry. Further, additional support is being given to the domestic market through public procurements and incentives in order to attract foreign investments and occasionally extensive import duties. Moreover, demands are being made for local manufacture of certain foreign products, and in connection with this minimum requirements are being imposed in respect of the content of components produced nationally (*local content*).

With a view to coordinating parts of the above, the federal government began working in 2011 on a new programme, *Plano Inovar Empresa*, with the specific task of encouraging innovation in private companies. The aim of this was to create order from lots of finance options, creating instead a "one-stop shop" for applications and finance for innovation. The programme now has a turnover of SEK 103 billion (BRL 32.9 billion), divided over four different forms of finance: a) direct contributions to companies (SEK 3.8 billion); b) financing of individual cooperation projects between companies and research institutes (SEK 13.2 billion); c) direct investments in technology companies (SEK 6.9 billion); and d) credits to particularly innovative companies (SEK 65.8 billion). The aim of this programme is to encourage innovation in seven priority sectors.³⁶ The Funding Authority for Studies and Projects (FINEP) and the Brazilian Development Bank (BNDES) bear overall responsibility for the implementation of *Plano Inovar Empresa*.³⁷

Finally, to complement the various financing programmes and further support the practical partnership between private companies and research institutes, the government worked with the National Confederation of Industry Brazil (CNI) in 2013 and introduced a new organisational unit, *The Brazilian Enterprise for Research and Industrial Innovation* (Embrapii). The aim of the latter, which was devised in cooperation with the Fraunhofer Institute in Germany, is to act as a bridge between the initial research-based phase of

³⁵ Ministério de Desenvolvimento Indústria e Comércio (2011) *Brasil Maior: Inovar para competir. Competir para crescer. Plano 2011/2014*. MDIC, Brasília, DF.

³⁶ The sectors are: aerospace and defence (Inova Aerodefesa); agriculture (Inova Agro); energy (Inova Energia); oil and gas (Inova Petro); health and medical care (Inova Saúde); green technology (Plano Inova Sustentabilidade); and telecoms and information technology (Plano Inova Telecom).

³⁷ BNDES (2014) *Plano Inova Empresa*. BNDES.

http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Institucional/Apoio_Financeiro/Plano_inova_empresa/, (accessed 9 September, 2014).

innovation and the subsequent commercialisation phase – all in view of clear products. In practice, therefore, there is support on the basis of collective applications in which companies and research institutes provide partial funding for the establishment of research centres within the seven sectors specified above.³⁸ In the current year, Embrapii will be contributing – besides practical assistance – SEK 1.8 billion (BRL 577.2 million) to projects with a total turnover of SEK 5.6 billion (BRL 1.78 billion).³⁹

To summarise, therefore, Brazilian innovation policy has a number of characteristics which affect cooperation with other countries.

The first is ***strong emphasis on technology development and volume***. Essentially, the Brazilian government is hoping to be able to increase the country's competitiveness by overcoming its shortfalls in respect of technology (*technology gap*) as quickly as possible. This in turn will lead to innovation in the Brazilian context relating in the first instance to technology development (*invention*) rather than commercialisation and application (*innovation*). It also means that more specifically, innovation policy has two fundamental objectives: 1) to gain excellence within fields regarded as being strategic areas for the future; and 2) to rapidly create volume for industrial production.

The above are then combined with ***general confidence and expectation of state intervention***. The latter reflects a long tradition within Brazilian economic policy rooted in – among other things – "Dependency School" and the specific import substitution policy advocated by the *United Nations Economic Commission for Latin America and the Caribbean* (ECLAC) in the 1950s. The thoughts of rational, large-scale government control that formed the basis of these schools were quickly adopted by the military regime which controlled Brazil between 1964 and 1985. This resulted in the notion of the public sector as the prime mover for economic development, and an expectation that the state would enforce policy at all times, being gradually institutionalised. This situation is very much applicable even now, not least – rather paradoxically, it may seem – in the field of innovation. The latter cannot be overemphasised, and in practice it means that all stakeholders in systems expect some form of initiative and control.

The ultimate expression of the above is the ***central role played by the BNDES*** in the Brazilian industrial and innovation system. Without a doubt, the former is the actual hub around which everything revolves and often defines by its volume both priorities and how policy is to be implemented. This does not rule out other stakeholders at federal and state level, such as FINEP and FAPESP, being of major significance occasionally. However, what is striking is the more or less complete absence of private capital.

Lastly, it may also be stated that ***the dominant form of finance is credit***. This does not just apply to innovation, but runs through Brazilian development policy as a whole. This is possibly a result of BNDES dominance in the same way.

³⁸ Monteiro, S. (2013) Can the government foster innovation? *The Brazilian Economy: Economy, Politics and Policy Issues* 5, pp. 10-17.

³⁹ Bouças, C. (2014) Embrapii financia projetos de R\$ 1,78 bilhão. *Valor Econômico* 18 August. <http://www.valor.com.br/empresas/3656962/embrapii-financia-projetos-de-r-178-bilhao>, (accessed 9 September, 2014).

6 The Brazilian view of Sweden

This begs the question: how does Brazil, conversely, perceive Sweden? What makes Sweden an interesting partner? What does Brazil think it can gain from an extended partnership in respect of innovation?

6.1 Who is Brazil?

This question is absolutely central to our discussion, but in itself it presents a more fundamental methodological challenge. Who is Brazil in this case? The answer, as already intimated, is far from obvious. Rather, one of the main aims of this report is to show that in practice, Brazil is made up of a large number of markets and interests. In practice, individual states often pursue their own innovation policies, which occasionally vary substantially from the federal initiative. Similarly, it is far from definite that public priorities will always coincide with private interests. The pattern in this overall dynamic is, again, absolutely central to our understanding of Brazil and is worthy of a separate study. For reasons of space, however, on the next few pages we will *restrict understanding of "the Brazilian view" to the more general debate and the official position of the federal government.*

6.2 The foundation for the present partnership

An initial observation is that given our economic scope and position, Sweden has had a relatively large impact in Brazil to date. There are currently more than 220 Swedish companies present in Brazil, and since the first investments were made in the 1870s we have had a comparatively long and uninterrupted commercial presence in the country. This sets us apart from many countries, which have left Brazil for various periods. In the same way, the Swedish industrial and development model is attracting particular interest from Brazil. Sweden, together with the USA, Germany and South Korea, is now one of four countries given priority for cooperation in respect of innovation; and thanks to the Strategic Partnership and the above-mentioned bilateral partnership agreement in respect of innovation and high technology, we have a formalised framework and specific channels for cooperation in these fields.

So what is it that makes Sweden such an interesting partner? There are various answers to this question, but essentially this is because of a more general Brazilian admiration for the "Swedish welfare model" which has managed to combine rapid economic growth with major social progress thanks to an effective industrial policy and successful technology development. This combination of what are perceived as clear strategies and recipes for economic success with firm social values is, in itself, of major relevance to the Brazilian context. Further, the notion of a "social project", with the state as a driving and omnipresent stakeholder, is very attractive in a political system based on state interventions – where it can take on an almost legitimising function. Lastly, it is also clear that the early interest in Swedish innovation which arose in the 1970s on account of the interest shown by the military regime in Swedish defence technology is also intimately linked with more geo-strategic issues such as non-alignment and neutrality.

All in all, this means that Sweden in a broader sense is perceived to be a credible, open and honest partner with which it is possible to cooperate under collective conditions from a Brazilian perspective. At the same time "the Swedish model" is also viewed as a practical

example of how to deal with many of the challenges which Brazil currently faces. The word "model" is particularly alluring in the Brazilian context as it gives the impression that Swedish experiences can be recreated through effective public planning.

At the same time, this more engineering view of the Swedish welfare state and its creation is problematic for a number of reasons. Firstly, there is an obvious tendency for Brazil to prioritise technological development (*invention*) without considering the surrounding administrative system and the significance of individual processes to product development and commercialisation (*innovation*). This is gradually changing, but it still constitutes a fundamental difference in how we regard innovation processes. Similarly, when analysing the Swedish model many of the strongly decentralised interests have also been missed which, despite state control, have been fundamental to the emergence of the Swedish welfare state. This then directly affects the understanding of Swedish innovation, which has essentially been a "bottom-up movement". Lastly, it should also be emphasised that the almost mythical "welfare model" which many Brazilians associate with Sweden no longer exists in many respects. Instead, it has been subject to constant review in terms of both targets and means for quite some time. This is in itself a natural process in the Swedish national context. The question, however, is how this affects international cooperations. There may be reason here from a Swedish perspective to work actively on creating a new legend which indicates that Sweden has made further advances. We will return to this shortly.

7 Emergence of a new relationship

There is much to indicate that the relationship between Brazil and Sweden is currently facing a qualitative leap. As we mentioned at the outset, a number of contextual factors have changed and created new conditions for cooperation which is both broader and deeper. The question now is, how best to capture the various initiatives that abound? What is going on? What are the main opportunities and challenges?

7.1 Three main flows

One way of describing the ongoing development is to regard it in terms of three parallel flows, each of which currently has its own internal logic to an extent.

The first flow is the work ongoing within the scope of the above-mentioned *partnership - agreement relating to innovation and high technology*. The latter, which is being coordinated by Vinnova together with ABDI and FINEP in Brazil, has primarily focused on *small and medium-sized enterprises* over the past five years. They have also carried out a number of workshops together, primarily in respect of science parks and incubators; and these have also generated a number of specific partnership projects. However, perhaps the most important observation in this respect is the change in attitude seen among Brazilian delegates, where the earlier focus on technology is being abandoned to an ever-increasing degree and issues relating to "innovation environments" and integrated processes are being raised instead. This indicates that the process in itself has generated a learning on which it will be possible to build for the future.

A second stream refers to the traditional *corporate collaboration* taking place between firms in the commercial realm. This is now possibly undergoing a major transformation as a consequence of the negotiations relating to the SAAB Gripen. The latter largely supplement the work done on the above-mentioned innovation agreement, insofar as the Gripen project is a *major industrial project* with a large number of subcontractors and there is potential for spin-off effects far beyond the actual aircraft deal. In the wake of this, it has been possible to perceive a greatly increased Brazilian interest in Sweden over the past year. In practice, the aircraft deal is also the single most important explanation for the new climate of cooperation between Sweden and Brazil.

The concluding trend involves the more *organically expanding partnership projects* which are currently emerging. The common denominator for these is the fact that they are based on more decentralised, network-based forms of organisation; which in some instances have consciously chosen to remain outside the established innovation structures.

One example of the latter involves the various platforms for cooperation which are currently being established between Swedish and Brazilian *start-up companies in the IT* sector in locations such as Porto Alegre (RS) and Kista. More specifically, these platforms consist of a number of physical venues which in turn are organised into networks through virtual communication. In practice, these platforms often emerge purely as a protest against bureaucratic sluggishness and long lead times for public finance. Instead, participants in these networks choose to remain outside the established structures in order to work together with likeminded partners on other markets to seek alternative finance in the form of crowdfunding, for example. Of course, this raises the question of how to capture this type of initiative. The IT sector is of central significance to Sweden and Brazil alike. Furthermore, Brazil – from a Swedish perspective – is one of the fastest growing

markets in the world in terms of both hardware and social media. However, the above example ultimately illustrates that the existing partnership does not have the institutional capacity to support the type of rapid change that characterises the IT industry.

The various *integrated urban planning* projects which have been initiated of late between Swedish and Brazilian stakeholders are another type of more organically emerging partnerships. One such example is the partnership between the Royal Institute of Technology (KTH) and Curitiba, the capital of the state of Paraná. These initiatives are particularly interesting as they represent: 1) the decentralised partnership form initiated from the bottom up which we Swedes perhaps associate primarily with innovation; 2) a way of identifying and establishing themselves on one of the many markets in Brazil; and 3) a way of packaging the type of integrated, holistic system solutions that in many respects constitute the core of Swedish innovation but which have been so difficult to market to date.

Lastly, it can also be noted that this type of network cooperation has also occurred in various types of *industrial cooperation* of late. Without a doubt, the primary example is the *Centro de Inovação Sueca-Brasileira* (CISB) initiated by SAAB, which is based in São Bernardo do Campos (SP). CISB, which emerged in the wake of the SAAB Gripen deal, is interesting insofar as it does not carry out any R&D/I of its own: instead, it acts as a coordinating "hub" for joint projects involving various companies, universities and public stakeholders.

7.2 General and specific learning

These three flows, together with some of the earlier observations, pave the way for opportunities for new and extended partnerships with Brazil. Essentially, there are a number of general and specific lessons to be learned that can serve as a starting point for continued discussion in respect of our future relationship with Brazil.

The first relates to our countries' ultimate *aims with innovation policy*. At first glance this may seem trivial but, as already intimated, it has far-reaching practical consequences. To put it simply; the Brazilian innovation policy fulfils two overall purposes: to create international partnerships based on *collective development of cutting-edge technology* within certain strategic fields, or to *create major projects with industrial volume*. This means, on the one hand, that there is no interest in small-scale projects based on local adaptation of technology already developed. Further, it emphasises, again, the Brazilian prioritisation of technological development. These insights are absolutely central to the creation of the right expectations and a functioning combination of stakeholders.

It is also possible to arrive at a similar observation as regards *organisation of innovation policy*. As stated previously, innovation in Brazil is *strongly associated with state intervention*. This is true at all levels; more generally, most people expect the state to drive innovation work, and at the same time it is almost impossible for individual stakeholders to take their own initiatives without being suffocated by the prevailing bureaucracy.

This strong state presence, combined with the protectionist elements which characterise Brazilian innovation policy, is particularly problematic in connection with the financing of joint international projects. In simple terms, Brazil currently has no instruments for international cooperation. Instead, innovation projects are mainly being financed by various forms of credit: this is something which frequently discourages foreign companies as credit in any respect requires transparency. These limitations in terms of finance now

present a problem when Brazilian companies expressly want to develop programmes for R&D/I cooperation together with Swedish companies.

A third general observation relates to the need, on the part of Sweden, to create a greater understanding of *multifaceted Brazil*. As already pointed out on a number of occasions in this report, Brazil is a continent in all respects and as such includes countless markets; which in most cases are bigger than the domestic Swedish market. Therefore, an initial practical recommendation would be to work directly with individual states and cities to a greater extent than is currently the case. Not only will this make it possible to avoid a layer of burdensome public administration, it will also create opportunities for the type of organic and more system-oriented innovation partnership that is Sweden's strength. A more specific proposal, therefore, would be to further chart the partnership potential in various regions and sectors. What are the new expansion areas, both regionally and sectorally?

These more general observations then lead to reflection on the *"three flows" and their supplementary role* in the future partnership with Brazil. Essentially, it is clear that each and every one of these have their own part to play, and so the question is how best to coordinate efforts between them so as to achieve the best joint outcome.

In this regard, we can state, as intimated previously, that the attention surrounding the *SAAB Gripen industrial project* has fundamentally helped to change the relationship between Sweden and Brazil. Once again, there is also potential for industrial spin-off effects far beyond the aircraft deal itself. Apart from the technology transfer component, so important from the Brazilian perspective, the Gripen project is also living up to expectations in respect of industrial volume. This function as a catalyst and platform for extended cooperation cannot be underestimated. Quite the opposite, in fact: it emphasises the importance of also continuing to build on existing industrial innovation partnerships.

In the same way, it is also important to emphasise the importance and potential of the existing *partnership agreement in respect of innovation and high technology*. Briefly, the increase in interest in partnership with Sweden creates an opportunity for the agreement to function even more clearly as an instrument and platform for mutual learning. Regular contact with Brazilian authorities as a result of this work gives us a unique insight into the Brazilian system from our Swedish perspective. And conversely, it gives us an opportunity to introduce our more system-oriented view of market-driven innovation. This again is not an easy task: rather, it relates largely to a culture and attitudes. At the same time, these are precisely the questions often encountered in conversation with Brazilian stakeholders. How, for example, can incentives be created for start-ups and entrepreneurship? Are there any special programmes for this purpose? How do "transfer offices" work at Swedish universities? Who took the initiative for this – and why?

Lastly, there is in the same way reason to actively consider how to capture the more *organically expanding partnership initiatives*. The answer is not entirely obvious. Possibly, the whole point is precisely the fact that they should operate more freely so as to complement more traditional partnership forms. However, at the same time there is much to suggest that one does not exclude the other. Quite the opposite, one could well imagine that, for example, different urban planning projects could also become part of existing initiatives. As already intimated, this development is already in the pipeline. One example is the above-mentioned CISB which, with SAAB as the principal and owner, is already playing an active part in a number of similar projects. Therefore, there is reason to continue creative consideration of when best to work in partnership and how to go about this.

Lastly, there is therefore reason once more to emphasise the need for *extended discussion and continued learning*. As already intimated, the conditions at present are almost ideal for extended cooperation. Further, in the same way there seems to be a greater understanding of the need to actually understand and learn from one another. These can and should take place at many levels. We have already mentioned opportunities within the existing innovation agreement. In the same way, it is clear that the above-mentioned scholarship programme *Science without borders* has been central in the extension of contact between Swedish and Brazilian universities and researchers. The Brazilians are already talking, prior to the next version of the programme, about the need to persuade researchers to come to Brazil. Lastly, it is clear that CISB and other network activities have also created new venues, resulting in specific partnerships and discussions.

It is now necessary to build further on this momentum in an extended and even more coordinated form. One obvious overarching theme, it might seem, is to bear in mind the changes we face and discuss *the new relationship between Sweden and Brazil*. Of course, this has to take place together with our Brazilian partners; ideally with repeated formal and informal discussions. It should also be emphasised here that a strong interest has been expressed by Brazil in an official capacity in more open and unconditional discussion along these lines.

7.3 The need for a "new Swedish legend"

Finally, this leads to the question of how we want to be perceived from a Swedish angle. What message and image of ourselves do we want our Brazilian partners to have? As we have already been able to establish, this question is of fundamental importance, not least now that we are settling down to discuss potential extended cooperation.

There may be cause here for a great deal of reflection and strategic consideration. As already intimated, much of the Brazilian interest in Sweden is based on the "Swedish welfare state"; issues relating to health and medical care, training, tax systems and efficient public administration and robust regulations. However, Sweden has built further on this, and nowadays the political discussions are revolving around – for Brazil – terms such as green structural transformation, innovation and generally "softer" questions.

Many of the core values which we ourselves are keen to bring to the fore in international discussions and cite as central to Swedish innovation – a systematised approach, planning, efficient administration and so forth – are, as we have established, generally far too abstract to communicate individually. Even so, this is perhaps the path we have to take; but instead indicating it to be part of something bigger, something that carries the old legend forward. "We have already left behind the 'old welfare society' and are now heading towards something new which is even better!" One such example, of course, is the "sustainable society", which will then pave the way for sustainable cities and local system solutions, for instance. At the same time, there is reason to think slightly further ahead before arriving at a decision; not least because a new paradigm will necessarily involve some new partners on the Brazilian side of things.

This "refinement and clarification of the new legend" may possibly also be a theme for the above-mentioned policy discussions with Brazilian partners. One of the more thought-provoking comments in connection with this study related to the significance of the legend concerning the Swedish welfare state; and how the same purely presented an obstacle to ongoing experience exchange. "The myth of a welfare state", said the person in question, "is like a star. Unreachable, and so impossible to discuss in terms of daily problems; and at

the same time its light belongs to yesterday". On the basis of this, this person also stated that Brazil has ongoing experience exchanges and discussions in respect of public policy with countries such as France, the United Kingdom and Germany; but remarkably, not with Sweden. This appears to be something to bear in mind and follow up.

8 Sweden and Brazil – the new relationship, cooperation and promotion

This report began with a statement indicating that the world has undergone a series of events over the past five years which have affected the relationship between Sweden and Brazil. The single biggest event in this development, without a doubt, is the SAAB Gripen deal. The Brazilian decision to initiate direct negotiations for the potential purchase of 36 Gripen aircraft not only increases the chances of extended cooperation between Sweden and Brazil in respect of defence. This deal also paved the way in purely practical terms for major opportunities for extended innovation and industrial cooperation in other fields as well. More specifically, the SAAB Gripen is therefore the "game changer" which – if we analyse the situation and build on prevailing momentum – could potentially link together other initiatives already in progress. Similarly, this illustrates how trade and innovation issues are going hand in hand to an ever-increasing extent.

However, this new relationship between Sweden and Brazil will not emerge on its own. Quite the opposite: it will require an extensive discussion and greater mutual understanding in order to make the most of the opportunities available. It is particularly important for everyone involved to understand what overall societal changes – or framework conditions – are being faced by the counterpart. The latter will define its priorities in all events and thus, *de facto*, also define the framework and ground rules in all specific international relations. What overarching problems and challenges does Brazil face in this regard? What is the country hoping to gain from a partnership with Sweden? How, conversely, is Sweden perceived? What is the role of innovation in this context, and what is its significance?

In the earlier discussion, we have been able to establish that the Brazilian context is in many respects very different to the situation in Sweden. Apart from overall basic prerequisites, such as differences in geographical size and diversity, Brazilian considerations are controlled by the ambition to diversify their own economy; far more than is the case among Swedes. The Brazilian government is hoping to quickly reduce the vulnerability that comes from being heavily dependent on the export of raw materials by means of an explicit initiative involving technology development and manufacturing in a number of specially selected sectors. In turn, this selection of initiatives is being powered by a general "innovation" initiative which – besides its symbolic political value – aims to overcome the country's shortage of technology and human capital. Thus far, innovation has largely become an ordering principle for economic development in general. In purely practical terms, this work is now taking place – as we have also been able to establish – on the basis of a tradition in respect of rational planning, as well as an expectation that the state is primarily running its policies around economic development. Therefore, innovation in the Brazilian context is largely a state-introduced/elicited top-down process.

In turn, the above has direct consequences for Brazil's actions as an international trader and partner. As already intimated, the legacy from the earlier import substitution policy is still tangibly alive and well in Brazil. This means that "technology upgrading" is expected to take place in the first instance by establishing national value chains on a growing internal market. This process is supported in international relationships through high import duties and various demands for locally produced content. In the same way, international companies often bear witness to the variety of regulations which have to be complied with

to be able to work in Brazil at all; technology transfer requirements, requirements for locally employed R&D personnel and technical adaptation. In more general terms, however, this illustrates how the Brazilian state is being more involved and playing a more proactive part in issues relating to the international business community as well.

Given these observations, it is also possible to identify a couple of instances in which Sweden and Brazil are possibly talking at cross-purposes.

The first of these relates to *import-export considerations*. In simplified terms, it can be asserted that Sweden handles export as something which "companies do amongst themselves", regardless of whether the buyer is a public stakeholder; in public procurements, for example. The guiding principle for Swedish policy, therefore, is to pave the way for companies – Swedish and foreign alike – to establish themselves in Sweden but then leave the rest to the market. Insofar as the individual situations are safeguarded by some form of legislation, the latter often serves to guarantee competition on equal terms and monitor consumers' health and wellbeing. As we have already seen, this is very different to the Brazilian context, where policy plays a considerably greater part in the business community; and frequently with unclear regulations and constantly moving goalposts. These state interventions are readily perceived as protectionism and a sign that free trade is unable to flow freely in Brazil. Obviously, there is a lot in this. However, there is a risk of oversimplification with an analysis of this kind. Instead, it is important to understand what Brazil is trying to achieve with this policy so as to identify specific opportunities for extended cooperation. The main point here is that Brazil, despite its protectionist policy, is actively seeking extended international partnerships on the basis of its ambition to diversify its own economy through explicit innovation and technological development initiatives. This in itself indicates that there should be interesting openings for cooperation in some respect.

The *understanding of innovation* is another area in which Sweden and Brazil are possibly talking at cross-purposes. Of course, this is fundamental to the entire innovation partnership and emphasises, more than anything else, the importance of also understanding the other party's point of departure and framework conditions. Essentially, the Swedish discussion on innovation often relates to the "soft" aspects of economic commercialisation activities such as services, R&D, ideas generation and creativity. This differs from the Brazilian context, where there is more emphasis on what we would refer to as "technical development" or classic technology transfer. As a natural consequence of this, there are also crucial differences in the actual aim of the innovation policy. In Sweden, its main function is to address market failures – with emphasis on small and medium-sized enterprises – and to support interaction between industry and academia. The notion of facilitating and paving the way for innovation lies at the heart of all this. Brazilian policy has two explicit objectives instead: to use various partnerships to jointly develop cutting-edge skills in strategically important areas, and to use large-scale technology import to rapidly create volume for industrial production. As far as Sweden is concerned, it can be difficult to meet both of these expectations as our innovation policy ultimately serves a different purpose.

The SAAB gripen deal must be understood on the basis of the latter. As we have been able to establish previously, the Swedish-Brazilian innovation partnership to date has been characterised by three parallel flows, each with its own internal logic. In fairly simple terms, these have lived their own lives, while at the same time giving the impression that they have not reached their full potential. The latter is explained by the fact that

individually, they do not meet Brazilian expectations for cutting-edge technology and – SAAB Gripen deal, on the other hand, meets both of these criteria and is thus capable of changing the overall dynamic at a stroke; not least if they forge other partnerships at the same time.

The above image of the SAAB Gripen as a catalyst and platform for something bigger in turn paves the way for partnerships far beyond the aircraft deal itself, in which activities within the other flows also have an important part to play. This is further emphasised by the fact that Brazil is currently undergoing major changes with a view to meeting its overall societal challenges. In this endeavour, the country has clearly observed that extended international cooperation is sought. The fact that Sweden – thanks to the SAAB Gripen deal – is now being given a central position in Brazilian industrial and innovation policy is therefore opening up a unique opportunity. By building on the aircraft deal and extending our "national offer" to assisting Brazil in its broader development agenda, the activities within the other flows will also find their natural place. However, this will require us to expand our view of our own export policy to include other policy areas besides trade policy. As we have seen, this trend is already in progress. Innovation, research and training are already central components in our relationship with Brazil. In the longer term, however, issues such as health and medical care, information and communication, and urban planning may also constitute alternative approaches.

However, to create these synergies we have to have a clear strategy here in Sweden. This in turn emphasises the need for coordination on a number of aspects. Firstly, we have to discuss internally what this new relationship between Sweden and Brazil may involve. What new partnership opportunities does this present, both institutionally and sectorally? Further, we have to understand Brazil's challenges and priorities much more extensively than we have done before. It is only by doing this that we will be able to devise a national offering which is of interest to both parties. A third challenge involves considering in the same way how we ourselves are perceived and – even more importantly – want to be perceived. Here, there is due cause to discuss the extent to which the image of the "Swedish welfare state" should be replaced with a new Swedish "legend".

The main point, ultimately, is that the new relationship with Brazil can only be formulated together with our Brazilian partners. Only extensive discussions and greater mutual understanding will allow us to make the most of the opportunities available to us. However, we have every chance of moving "from an innovation-powered cooperation to industrial cooperation based on innovation" with a number of initiatives at various levels, if we manage to link them together.

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