

Trade facilitation for low-valued exports in Brazil: lessons to be learned from simplified export declarations and the use of postal networks through « Exporta Fácil »

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Universal Postal Union, 2008

The views expressed here are those of the authors and should not be attributed to the institution to which they are affiliated.

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The authors are grateful to Laia Bosch, Ursula Hermelink, Ricardo Guilherme and Matthieu Boillat for very helpful comments, suggestions or assistance.

Particular thanks should be given to Paulo Siciliano of ECT Brazil for his help in gathering crucial information as well as providing extensive data on the Exporta Fácil program.

Abstract English: This paper both presents and analyses the impact of trade facilitation policies for small and low-valued exports pioneered by Brazil. Based on the need to counter two major hurdles faced by many developing countries: overly complicated and costly export formalities on the one hand, and lack of access to an affordable transport means on the other, the Brazilian designated postal operator, in conjunction with various ministries, have created a simplified export procedure for low-valued exports. A significant share of all Brazilian exporters now take advantage of this procedure, and we are able, through fixed effects estimation over Brazilian municipalities, to estimate that most of them would not have otherwise exported. It is also found that low-valued exports are used in relatively large service-oriented cities with a high concentration of small firms. Additional emphasis has been put on the postal incumbent's own program, "Exporta Fácil": although the service's reliance on the post's vast and ubiquitous network has not led to greater geographical dispersion of exporting activity, the service is used to export smaller amounts than what is done through private carriers. As such, it is playing a particular role in the inclusion of the very small to the export market. Given the generally low initial survival rates amongst exporters, this is potentially crucial to the creation of new exporting activity in Brazil.

Abstract French: Cette étude vise à présenter et analyser l'impact de politiques de facilitation du commerce pour les exportations de faible valeur mises en place par le Brésil. Ces politiques ont eu pour but de s'attaquer à deux barrières auxquelles de nombreux pays en voie de développement font face : une bureaucratie à l'exportation compliquée et coûteuse d'une part, et le manque d'accès à un moyen de transport abordable d'une autre. Dans ce but, l'opérateur postal désigné, avec la collaboration de différents ministères, ont créé une procédure d'exportation simplifiée pour les exportations de faible valeur. Une part importante de tous les exportateurs Brésiliens tire maintenant parti de cette procédure, et nous sommes capables (grâce à une estimation à effets fixes sur les municipalités Brésiliennes) d'estimer que la plupart d'entre eux n'auraient pas autrement exporté. Il a aussi été trouvé que les exportations de faible valeur émanent de villes relativement peuplées, où le secteur tertiaire joue un rôle important et où il y a une grande concentration de petites entreprises. Un accent particulier a été mis sur le programme de la Poste Brésilienne, "Exporta Fácil". Bien que soutenu par le vaste réseau d'agences postales, le service n'a pas encouragé une dispersion géographique plus large de l'activité exportatrice. Néanmoins, le service est utilisé pour l'exportation de valeurs beaucoup plus faibles que ce qui est exporté par les expressistes privés. De ce fait, Exporta Fácil joue un rôle particulier dans l'inclusion des « petits » dans les marchés d'exportation. Étant donné les faibles taux de réussite initiaux chez les exportateurs, ceci est potentiellement crucial pour la création de nouvelles activités exportatrices au Brésil.

Keywords: International trade; Trade facilitation policies; Low-valued exports; Export barriers; Designated postal operator; Postal sector; Economic development

JEL Classification: F13; F14

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Definitions:

- **Postal sector:** will be used to describe the sector which includes a number of express carriers and the designated postal operator (as defined below). This generally follows the definition used by the Brazilian Ministry of Communication for regulation of that sector.
- **Express carriers :** any actor active in the delivery of small packages to addressed recipients
- **Designated postal operator :** refers to Brazil's postal (historic) incumbent, ECT Brasil (Correios)
- **Simplified export procedures = the DSE:** refers to the legislation implemented for the simplification of low-valued exports, the DSE "Declaração Simplificada de Exportação"
- **Export:** a shipment is in Brazil defined as an "Export" if the shipment is "of commercial value" and/or if its value is greater than \$1,000
- **Low-valued exports:** exports of less than \$20,000 (free on board – FOB), as defined by the DSE
- **DSE exports:** exports which have been done through registration in the simplified export registry. These include Exporta Fácil exports.
- **RE exports = normal exports:** exports which have been done through the traditional export procedures, through registration in the Brazilian export registry (RE)

Unless noted otherwise, all figures are in USD.

The following exchange rates have been used throughout:

Year	exchange rate
1999	0.567215
2000	0.556141
2001	0.404651
2002	0.340847
2003	0.346876
2004	0.329133
2005	0.422171
2006	0.456993
2007	0.521921
1 BRL = x USD	

1. INTRODUCTION

This study focuses on the presentation, analysis and impact of trade facilitation policies implemented in Brazil for low-valued exports. These policies have two dimensions: the simplification of legal export procedures, as well as the increase in the viability of low-valued exports through the usage of the postal incumbent's network. As such, these policies aim to counter two major hurdles to exportation faced by many developing countries: overly complicated and costly export formalities on the one hand, and lack of access to an affordable delivery means on the other. Such policies are attractive to a number of developing nations (some have already implemented similar schemes, such as e.g. Peru), and there are interesting lessons to be learned from the Brazilian experience.

In 1999, the Brazilian government has implemented a simplified export procedure for commercial exports of value less than \$10,000 through the “Declaração Simplificada de Exportação” (DSE) and has thereby substantially reduced the number of necessary steps required to register an export. From the start and although the original idea came from the postal incumbent Correios, it was decided that this procedure would be available for exports carried out through any postal or logistics operator. It was however believed that the capillarity of large pre-existing postal networks such as Correios' could be exploited to offer affordable transport of low-valued exports from locations that private carriers would not serve, solving a potential “market failure” in the availability of logistic services. In this aim, the Brazilian government, through Correios, launched in 2001 a DSE-based program named “Exporta Fácil”.

If this paper is mainly centred on the simplified export procedure (the DSE) and the exports it has generated (referred to as “DSE exports”), particular attention will be given to “Exporta Fácil”, as availability of more precise data allows us to analyze it more thoroughly and infer additional information about low-valued exports. It will also allow us to analyse the role that a designated postal operator can play in the delivery of low-valued exports.

This study focuses on an aspect of trade facilitation that has not received the same attention as others: facilitating low-valued exports. Although they generate only a tiny part of overall exported value, they involve a relatively large number of exporters, making their stimulation a potentially powerful economic development tool. Moreover, due to low survival rates in export markets, it is paramount to allow as many potential exporters as possible to attempt entering them.

In Brazil, DSE exports have experienced considerable growth since their inception in 1999, and the postal sector has been responsible for carrying almost half of these exports (with logistics and consolidators transporting the rest). We attempt to investigate a variety of questions regarding usage of the DSE: who takes advantage of this procedure, where these exports come from, and, most importantly, if the availability of simplified export procedures has been successful in creating trade. We find that usage in terms of value has been and is still rapidly increasing and that the number of exporters has stabilized at around 8,000, which represents almost 40% of total Brazilian exporters. Interestingly, we find that a majority of these would probably not have otherwise exported.

Additionally, we will ask the same questions regarding the designated postal operator's trade facilitation program, Exporta Fácil. We find evidence that the program is helping very small

and possibly new exporters to enter the global trade market: Exporta Fácil is indeed characterized by much lower exported values per exporter than both traditional exports and other DSE exports. But the geographical comparison of the localization of Exporta Fácil exports with that of exports relying on other market-based services reveals no evidence of a market failure in the provision of low-valued export delivery services, since we have found little evidence that its reliance on the postal incumbent's large network has stimulated exporting activity in remote areas. We do find substantial evidence that Exporta Fácil exporters are new to the export market, and that it has therefore contributed to generating export activity. Yet the low survival and individual usage, with a median number of only two packages sent per year by exporter, suggests that the potential value of the program in terms of development is not about the actual level of trade exchanges achieved by most Exporta Fácil exporters, but about allowing numerous small firms to access exports markets by lowering entry costs. Finally, it must be understood why it has (contrary to the rest of DSE exports), after a rapid initial expansion, been experiencing a steady decline both in exported value and number of exporters. Several hypotheses concerning this decline will be offered in section 8.

The study starts with a more thorough presentation of the aforementioned trade facilitation policies and their importance for economic development. Then, after having presented Brazil's general exporting landscape as well as the data this analysis is based on, section 5 will expose facts about usage of DSE services. Section 6 will describe where these exports come from, and in which type of municipality they seem to be most used, and finally section 7 will investigate if and how facilitating trade has actually created trade.

2. ECONOMICS OF THE PROBLEM

2.1 Importance of trade facilitation for low-valued exports

Brazil, as many other developing countries, has since the 1980s made considerable efforts to reduce its barriers to trade. It has indeed reduced its effective protection rates from 67.8% to 16.2% between 1987 and 1998³. However, as the World Bank points out in its 2004 report on Brazilian trade policy, the country still lags behind other large economies in terms of trade per GDP. Moreover, a noteworthy fact about Brazil is that on top of the fact that its share of total global trade is low (1.14% in 2007⁴) for such a large country, its exports are quite concentrated in large exporting firms. In 1999, micro, small and medium enterprises (MSMEs) contributed only 2.3% to total Brazilian exports⁵, compared with relatively higher values in other developing countries, particularly in Asia.

Even after the massive reductions in quotas and tariffs that have occurred over the last two decades, there remain considerable bureaucratic obstacles facing (potential) exporters in Brazil. Although hard to quantify, these complications are reflected in the World Bank's "Ease of doing business" index⁶ according to which it can take a Brazilian enterprise trying to export a 20-foot container abroad up to 18 days to go through all export procedures, including 12 days and \$400 for document preparation and two days and \$100 for customs clearance and technical control. These delays and costs create an artificially high barrier to entry in the international market, and the implied sunk costs are simply unbearable to someone wanting to export objects of low value. Before the introduction of the DSE in 1999, these were indeed subjected to the same bureaucratic hassles as a large multi-national exporter of automobiles, for example.

Trade facilitation is a widely used keyword gaining increasing attention from organizations such as the WTO, for which it is defined as "*the simplification and harmonisation of international trade procedures*". Trade procedures are themselves defined as the "*activities, practices and formalities involved in collecting, presenting, communicating and processing data required for the movement of goods in international trade*"⁷. Although such a definition might seem quite large, almost all of the literature on trade facilitation refers to exports of large value for which questions of rules of origin or quotas apply, as well as to problems of reducing delays at customs or at ports. Facilitation of exports of lower value, as dealt with in this paper, has hitherto not received much attention and is seldom mentioned in either the theoretical literature on trade facilitation or in policy-oriented papers. This is obviously due to the fact that their overall value remains small, making them seemingly negligible when compared to the flow of large exports.

We argue, however, that low-valued exports can be of relative importance for economic development, as they potentially affect a wider share of the population than large concentrated exports. Moreover, creating a new export-oriented business often starts with the exportation

³ World Bank (2004)

⁴ World Bank (2007)

⁵ SEBRAE (2007)

⁶ World bank ease of doing business index,

<http://www.doingbusiness.org/ExploreTopics/TradingAcrossBorders/Details.aspx?economyid=28>

⁷ Taken from <http://masetto.sourceoecd.org/vl=3015793/cl=18/nw=1/rpsv/cgi-bin/wppdf?file=5lg14dc44n36.pdf>

of a relatively small number of low-valued objects; facilitating their trade can, therefore, be a powerful tool for promoting the entrance of MSMEs in new export markets.

2.2 MSMEs and exporting

MSMEs are increasingly seen as playing a crucial part in a country's development. They create jobs, promote innovation, and are as important in the wealth-creation process as they are valuable in spreading wealth and knowledge across all layers of a society.

However, MSMEs problematically remain quite frail in many developing countries. Furthermore, they have in Brazil as in many other countries not been playing a substantial role in the export sector. Indeed, Latin American MSMEs are less "export-oriented" than those in other parts of the world. They traditionally "produce import substitutes and non-tradables" (Kuwayama (2001)) whereas manufactured exports are mostly "produced by large firms with relatively capital-intensive technology" (same source). This could be for a variety of reasons. As is pointed out in Kuwayama (2001), they "face much greater market failures in information, factor and capital markets than large enterprises". Exporting is therefore harder for them, as it requires more information about potential customers abroad and about export procedures (customs, transport, etc...) as well as capital (exporting can be costly at first). Some of these barriers are falling: in the last decade, ICTs (information and communication technologies) have emerged as a potentially powerful business instrument to give MSMEs easier access to foreign markets, enabling existing enterprises to consider exporting, or enabling export-oriented enterprise creation (same source). This singles out custom and transport hassles as a remaining impediment to exporting. As explained in the last section, they constitute a large fixed cost to exporting, which policies such as the DSE and *Exporta Fácil* attempt to lower.

Offering firms easier access to world markets is beneficial in a number of ways: on the firm level it offers them a broader customer base, and on the macroeconomic level it will force the economy to strengthen in the face of increased competition, as well as lead it to diversify. This paper will not attempt to analyse the importance of MSMEs in detail but will accept that small enterprise creation is desirable, and try to analyse if and how trade facilitating programs stimulate it.

2.3 Simplified export procedures – the "DSE"

As was mentioned in the introduction, the trade facilitation policies this paper analyses have two dimensions, the first one being the simplification of customs procedures, and the second being the usage of postal networks. This section aims to clarify how and by whom the former has been realized.

In 1999, the Brazilian Post (Correios) gave the impulse to create a new procedure enabling the export of low-valued objects without going through the hassle of the normal process. During that year, different ministries of the Brazilian government teamed up to create the legal foundations for such a procedure. These included the Ministry of Development, Industry and Trade (MDIC), the Ministry of Finance (MF), the Ministry of Communications (MC, to

which Correios is related to), the Brazilian Central Bank, customs authorities, but also some business promotion entities. What came out was a piece of legislation introducing a simplified export form called “Declaração Simplificada de Exportação” (DSE)⁸ which applied to the export of objects whose value is less than \$10,000 (this limit has been pushed up to \$20,000 in 2006, and to \$50,000 in may of 2008). It presented a number of advantages: First, the exemption for the exporting company from registration in the export registry (RE) and previously required export logs. Second, the replacement of various forms by a single form which can be easily completed and delivered by the exporting company to the postal or logistics operator (be it Correios or a private carrier). Finally, it permitted the empowerment of postal operators as representatives of exporting companies for due recording of the export in a newly computerized export directory (the “SISCOMEX”).

At least nine international operators which fall into the “postal sector” (as defined by the Brazilian Ministry of Communication) enable their customers to take advantage of the simplified export form (DSE). Some of them have, like Correios with Exporta Fácil (presented below), marketed branded programs in the aim of stimulating small exports by educating about the new possibilities offered by such a policy. Many of these operators also provide free customs brokerage.

Importantly, it is to note that although the actual export declaration has been reduced to a one-page form, there are in some cases other necessary documents which also apply to low-valued exports. First, it is sometimes necessary to fill out a fiscal note. This is not usually a complicated procedure for a registered enterprise. Second, it is sometimes required (or at least preferable) for an exporter to register a “rules of origin” certificate. Depending on bilateral trade agreements between Brazil and the recipient country, such a certificate is either imposed by law, or necessary for exemption or reduction of the subsequent import tax suffered by the importer. These certificates are issued by state federations of industry and trade, which are to be found in state capitals and major cities⁹.

The following table briefly summarizes the steps which need to be undertaken by a firm exporting a low-valued object under the DSE, as opposed to using normal export registry (RE) procedures.

⁸ The legislative act is referred to as the [Instrução Normativa SRF nº 155, de 22 de dezembro de 1999](http://www.receita.fazenda.gov.br/Legislacao/Ins/Ant2001/1999/in15599.htm)
<http://www.receita.fazenda.gov.br/Legislacao/Ins/Ant2001/1999/in15599.htm>

⁹ Source: Correios website http://www.correios.com.br/exportafacil/cfm/centro_certificado.cfm (in Portuguese)

Table 2.1 - Necessary steps to exporting

Normal registry of exports “RE” procedure (without DSE) ¹⁰ :	DSE/Exporta Fácil procedure (limited to low-valued exports)
<ul style="list-style-type: none"> • Sign enterprise up as exporting company • Obtain a key for the SISCOMEX system from the federal revenue secretary • Create a packing list • Establish a fiscal note • Establish a rules of origin certificate • Register export in the export registry (RE) • Possibly have merchandise physically searched • Inscribe the export in the SISCOMEX system 	<ul style="list-style-type: none"> • Fill out the one page DSE form • Establish a fiscal note • In some cases, it might be necessary to establish a rules of Origin certificate: are issued by state federations of industry and the state federations of trade • Give package to carrier, who registers the DSE (inscribes export into the SISCOMEX system) declaration and sends it back to exporter

2.4 Using postal networks to power trade facilitation policies: the case of Exporta Fácil

The second trade facilitation dimension relies on the usage of the large pre-existing historical postal network; this was implemented in Brazil through a program called Exporta Fácil (which literally translates to: “export easily”).

Exporta Fácil is a set of services offered by the Brazilian post (Correios) targeted at small and medium businesses and individuals with the aim of facilitating exports. The program was launched in November 2000 after the introduction one year earlier of the required legislation (the DSE). The service is however not limited at simply taking advantage of this simplified export form. Correios aimed to provide easy access to the export market to anyone in the country, by making the service available in more than 8,000 Brazilian post offices (in almost every municipality). This theoretically permits the inclusion of remote towns and villages that would, without the capillarity of the designated postal operator’s network, be physically excluded from access to a carrier for their exports. On top of that, Correios has used its expertise to market Exporta Fácil as a product and has actively advertised it. They have also set up a website on which anyone with an Internet connection can have access to information on exporting and find the required export forms. Exporta Fácil relies on Correios’ traditional international package services and permits shipments of up to 30kg through the EMS (express mail services) system and of 20 kg through standard package sending, and this to upwards of 200 countries.

Due to lack of data, no thorough price analysis has been carried out in this survey, but a cursory comparison of current Exporta Fácil prices with the other private carriers suggests it to be competitive, both in major export hubs and more remote areas. For all these reasons,

¹⁰ Source: www.aprendoaexportar.br – fluxograma de exportação

Exporta Fácil will be analysed in this study as a possible policy tool for other countries to exploit.

2.5 Brazilian export structure

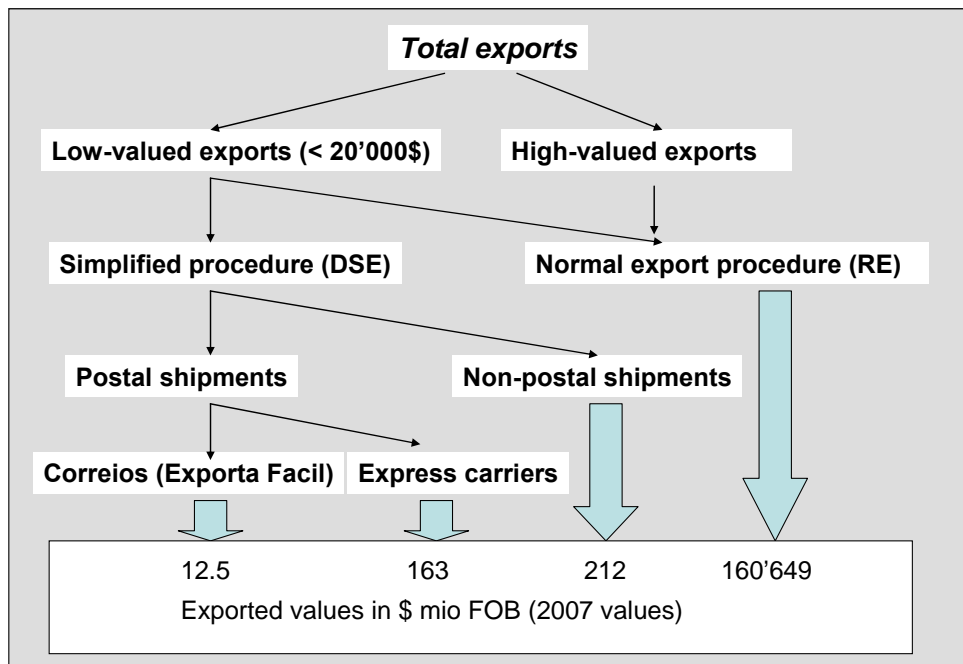


Figure 2.1 - Brazilian export structure

Figure 2.1 schematically summarizes the structure of Brazilian exports.

3. GENERAL FACTS ABOUT LOW-VALUED EXPORTS

3.1 DSE exports evolution

How have low-valued exports evolved since the introduction of simplified export procedures (DSE) in 1999?

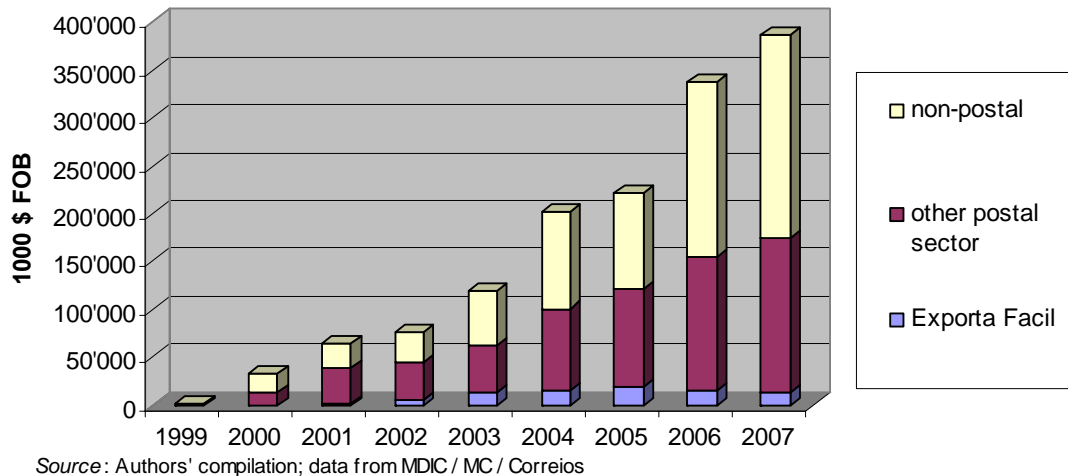
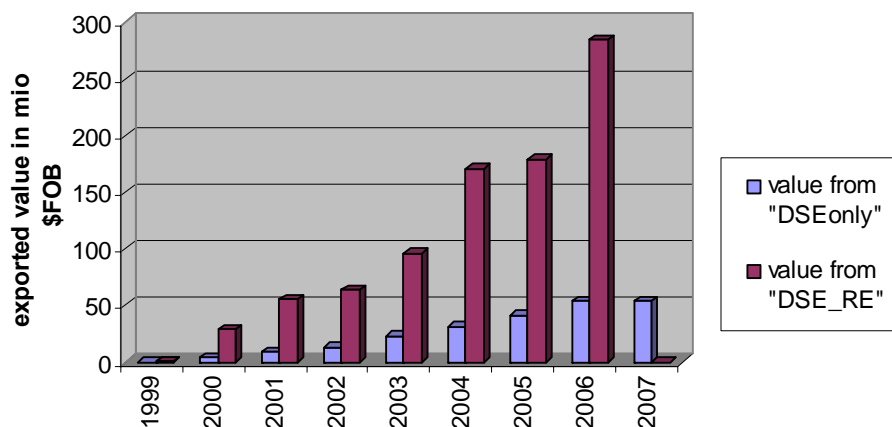


Figure 3.2 -Evolution of DSE exported value

Figure 3.1 illustrates three important and revealing trends: first, it shows the clear upwards evolution of the value of small exports through the DSE. From less than \$1.3 million in 1999, the value of exports has shot up to \$387 million in 2007. A particularly big jump is to be noticed between 2005 and 2006, which can be explained in part by the increase in the maximum exportable value from \$10,000 to \$20,000 which took place at that time. Total DSE exports include postal exports carried out by what the Brazilian Ministry of Communications defines as the postal sector. As the graph shows, exports through these means have also been constantly growing, and encompass about half of total DSE exports. This leads to the conclusion that the postal sector as a whole has an important role to play in the delivery of low-valued exports. The third trend revealed by this graph is that of the evolution of Exporta Fácil exports: they represent a relatively small share of the total small export market and their importance, both in absolute and in relative terms, is decreasing (see figure 3.4).

Moreover, our data allows us to separate DSE exported values of firms who have used the DSE exclusively (“DSE_only”) from those who have exported through the DSE, but also through traditional means (“DSE_RE”). As figure 3.2 reveals, a large (and increasing) share of total DSE exports come from firms who are also exporting through other means.



Source: MDIC

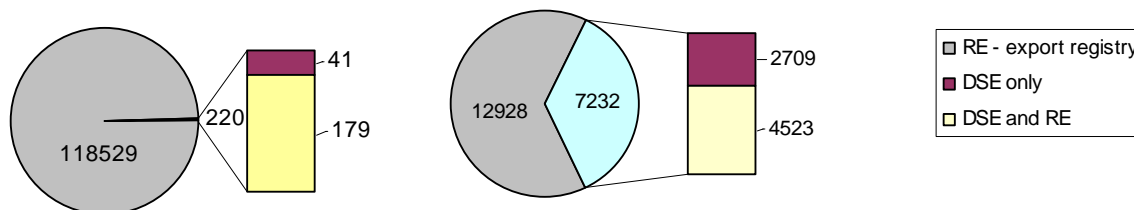
Figure 3.2 DSE exported value, separated by DSE_only and DSE_RE

3.2 Relative importance of low-valued exports

In terms of exported value, these small DSE exports constitute a negligible share of total Brazilian exports. Indeed, the \$220 million that total DSE exports were valued at in 2005 constitute a tiny drop in the ocean compared to the more than \$118 billion the country has exported that year. Small exports will obviously never compete in total value with large industrial exports such as automobiles, machinery or crops. This might explain the lack of attention these exports have gotten. However, their relative importance is much greater in terms of number of exporters: in 2005, for example, 7,232 exporters have used the DSE. This comprises a significant share of Brazil's total of 20,061 enterprises with exporting activity that year. Of these, 2,702 have exported only through the DSE. That same year, 2,451 different enterprises or individuals have used *Exporta Fácil* for their exports. Consequently, while in value DSE exports constitute less than 0.2 % of exports, the number of enterprises who use it constitutes 35% of the total. This is why this study focuses mainly on these programs' effect on the number of exporters rather than the overall exported value.

**Exported Value in mio \$
FOB (2005)**

Number of exporters (2005)

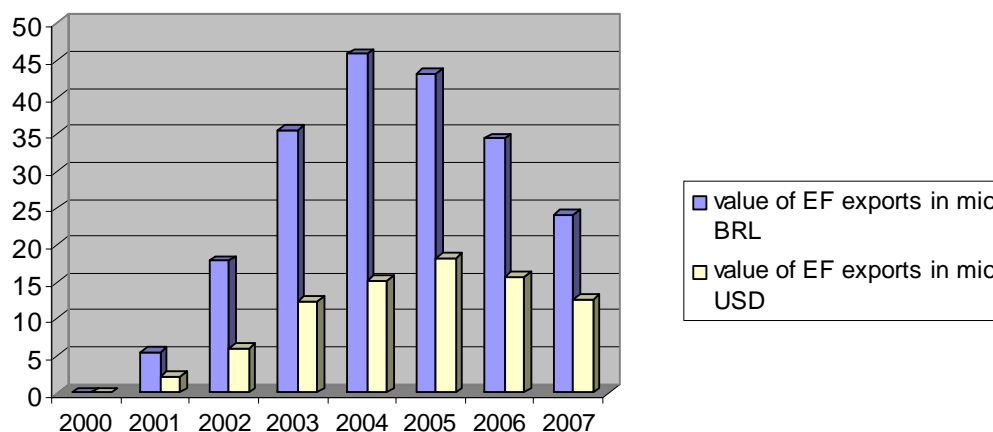


Source: authors' compilation; data from MDIC

Figure 3.3 - Relative importance of DSE exports relative to "normal" exports

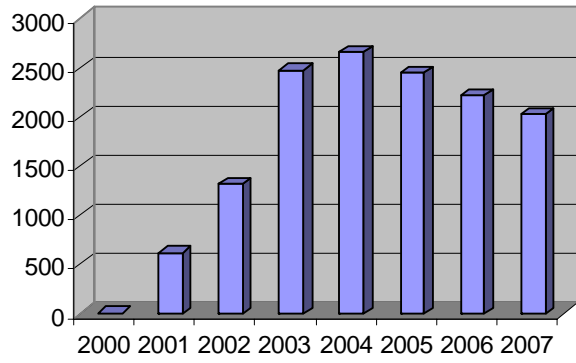
3.3 Evolution of Exporta Fácil

Figures 3.4 to 3.6 below illustrate the evolution of, respectively, Exporta Fácil exported values, the number of exporters which have used Exporta Fácil, and the number of objects sent through Exporta Fácil. All three measures follow the same trend: a rapid increase in the years following Exporta Fácil's launch in late 2000, and then a clear peak around 2004 after which usage starts to decline. Possible reasons for this decline are discussed in section 8.



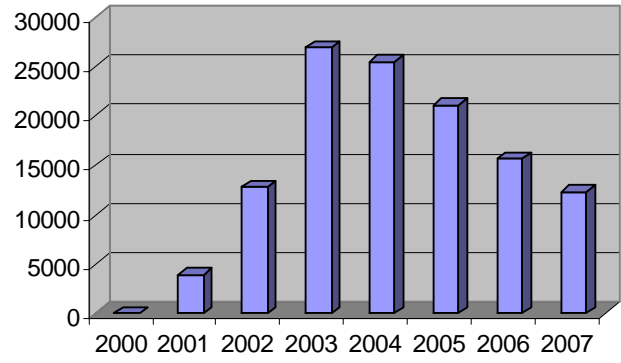
Source: Correios (ECT)

Figure 3.4 - Exporta Fácil exported values



Source: Correios (ECT)

Figure 3.5 – Exporta Fácil number of exporters



Source: Correios (ECT)

Figure 3.6 – Exporta Fácil number of exported objects

4. BACKGROUND AND DATA PRESENTATION

4.1 Brazil: some facts

4.1.1 Country facts

Brazil is almost a continent in itself. From the heavily industrialized South to the rural and relatively poor North-East, almost all levels of economic development can be found. In fact, this country of 183 million inhabitants (2007) is still affected by a high level of inequality. This variation, although probably having negative influences on economic development, has the consequence of creating a great deal of variation which should allow us to better determine economic effects. Besides, this enables the potential creation of more relevant policy predictions for other countries.

Table 4.1 - Brazil macro-economic facts

- Population (2008 est.): 191,908,598
- GDP (at PPP) (2007 est.): \$1.838 trillion
- GDP per capita (at PPP) (2007 est.): \$9,700
- Distribution of income (Gini index) : 56.7
- Population below poverty line : 31%
- Life expectancy at birth: 72.51 years
- Fertility rate (2008 est.): 1.86 children born/woman
- Administrative divisions: 26 states and 1 federal district

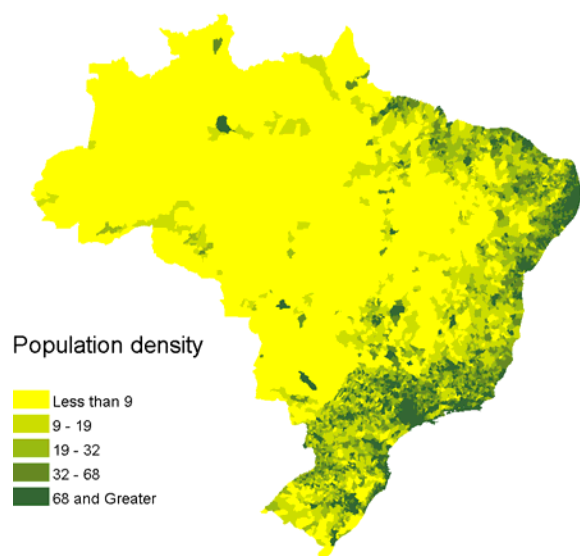
Source: IBGE / CIA world fact book

Table 4.2 - Brazil and its municipalities

- 5,561 municipalities
- Median population (2005) : 10,631
- Largest: São Paulo
- 340 municipalities incorporated in a metropolitan area of more than one million inhabitants
- Median GDP per capita (2005) : 5,657 BRL (\$2388)

Source: IBGE / IPEA

As the following maps illustrate, population is mainly concentrated along the coasts. Wealth is concentrated in the industrialized south-east as well as in some resource-rich interior municipalities.



Note: Population density as defined by pop. per square Km
Source: Authors' calculation; data from IBGE

Figure 4.1 - Population density in Brazil



Note: GDP per capita figures for 2005, in non-PPP BRL
Source: Authors' calculation; data from IBGE

Figure 4.2 - Distribution of wealth in Brazil

4.1.2 Regional differences

Table 4.3 reveals the distribution of population, wealth, and sectoral activity across Brazil's five regions. As can be seen, a large part of both the population and wealth is concentrated in the "Sudeste" (South-East) region, which is centred on the industrial powerhouses of São Paulo and Rio de Janeiro. The second table illustrates the geographical distribution of Brazil's exporting activity. Again, the "Sudeste" region has the lion's share of exporting activity with 54 % of total exported value, and 72% of the value of DSE exports.



Table 4.3 - Socio-demographic regional differences (2005 values)

region	population	GDP in Reals	GDP per capita	industry share	agricultural share	service share	Nb of firms
Centro-Oeste	13'014'333	1.90E+11	14'599	0.14	0.36	0.49	434'198
Nordeste	51'016'525	2.80E+11	5'488	0.13	0.20	0.67	952'466
Norte	14'698'878	1.07E+11	7'279	0.14	0.30	0.56	214'720
Sudeste	78'444'032	1.21E+12	15'425	0.20	0.21	0.59	3'041'597
Sul	26'973'511	3.56E+11	13'198	0.19	0.28	0.53	1'416'670
total	184'147'279	2.143E+12	11'637				6'059'651

Source: IBGE, IPEA

Table 4.4 - Exporting activity regional differences (2005 values)

region	Exported value \$FOB	Total exporters	DSE		EF nb of exporters	EF value per exporter
			exported value \$	EF exported value R		
Centro-Oeste	4'922'000'000	828	1'666'735	796'579	76	10'481
Nordeste	10'520'000'000	1'380	6'824'055	1'459'181	223	6'543
Norte	7'192'000'000	840	8'956'397	13'200'000	25	528'000
Sudeste	68'890'000'000	10'565	160'400'000	24'700'000	1'780	13'876
Sul	26'770'000'000	5'902	42'997'365	3'047'839	347	8'783
total	118'294'000'000	19'515	220'844'552	43'203'599	2'451	17'627

Source: MDIC / Correios (ECT)

4.1.3 The Brazilian post

The *Brazilian Post and Telegraph Corporation* (Empresa Brasileira de Correios e Telégrafos – ECT), also known as Correios, is a partly state-owned, partly private-owned entity which acts as Brazil's designated postal operator¹¹. It is under the supervision of the Brazilian Ministry of Communications, which is responsible for the postal sector.

Founded in 1969, the company is the country's largest employer and offers over 100 products and services. As figure 4.3 reveals, it is present in almost all Brazilian municipalities and its network spans all corners of the country.

Table 4.5 - ECT Brazil: facts

- Total number of permanent post offices (2006): 12,448
- Average number of inhabitants served by a permanent office: 15,209
- Number of sorting centres: 56
- Number of employees: 107,497

Source: Universal Postal Union Postal statistics, 2006

¹¹ Source : Wikipedia.com

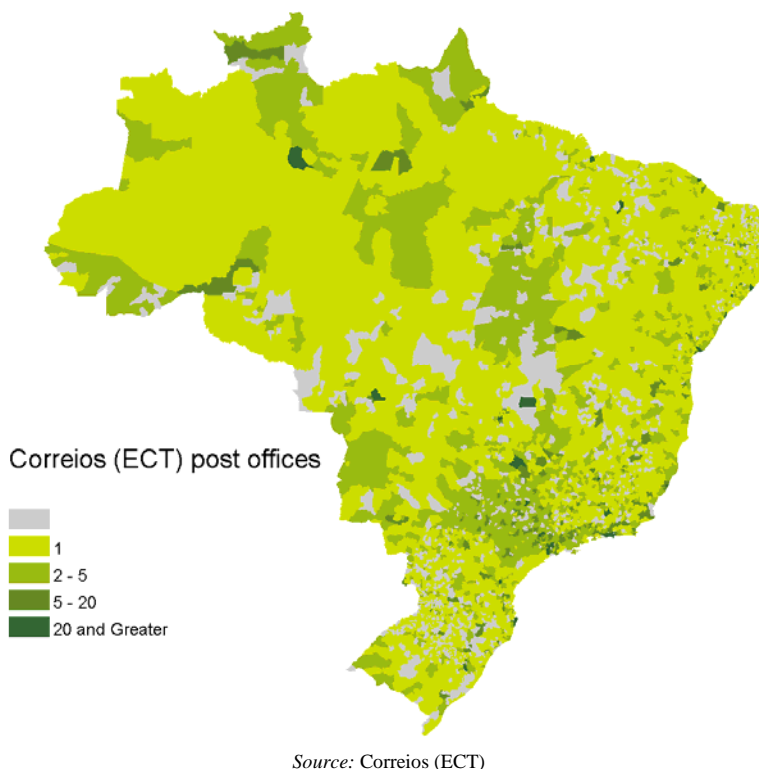


Figure 4.3 - Geographical distribution of Correios post offices

4.2 Data presentation

Our study is mainly based on municipality-level data, which is the most disaggregated level we could realistically work at. Working at this level permits us to exploit the huge variations in size and income of Brazil's more than 5500 municipalities. We are fully aware of the fact that there remains considerable heterogeneity within municipalities, especially for big cities where disparities between slums and rich neighbourhoods might make it dubious to consider them as uniform areas. A solution that has been used to reduce the potential bias arising from this lack of information is the availability of within-municipality inequality measures (Gini index).

The data we use covers the years 1999 (year of implementation of the DSE) to 2006, and all 5,561 Brazilian municipalities. The Brazilian post has provided extensive data on all the transactions that have been done through the Exporta Fácil program since its start in 2000. This data has been aggregated at municipality-level and reveals the number and value of Exporta Fácil exports in each city, as well as the number of different customers. Data on DSE exports done outside of Exporta Fácil has been provided by the Brazilian Ministry of Development Industry and Trade (MDIC), and includes the value of DSE exports in each city, as well as the number of exporters. All this data has then been merged with socio-demographic information collected from Brazilian statistical institutes (IBGE and IPEA), the central bank, as well as other sources. Alongside traditional control variables such as GDP and population, we collected data on sectoral activity, inequality, human development,

distance to nearest capital, distance to São Paulo, number of firms, average salary, education levels and life expectancy, just to mention a few.

Some micro-level analysis has also been done, as some data on the exporting firms is available. However, this data is limited and does not allow for distinction between firms that have exported through the RE or through DSE. For Exporta Fácil, the data is more complete, as it indicates how much the firms have exported (in value and in number of objects), therefore allowing for a more precise analysis. Further crucial data on exporting firms is however virtually impossible to gather, thus making a complete micro-level analysis unfeasible.

Table 4.6 - Summary of available export data

<i>Export data</i>							
Variable	Exported value per municipality	Number of exporters per municipality	Names of exporters per municipality	Exported value per exporter	Number of exported objects	Years covered	Source
RE	yes	yes	yes	Approx	no	1999-2007	SECEX/MDIC
DSE	yes	yes	no	no	no	1999-2007	SECEX/MDIC
Postal sector DSE	Only aggregate values					1999-2007	Ministry of Communications
Exporta Fácil	yes	yes	yes	Yes	yes	2000-2007	Correios (ECT)

The data does however reveal some inconsistencies. Exporta Fácil exports are not legally any different than any other DSE export, and should therefore be included in the MDIC's DSE export statistics. There is evidence that this is not always the case; consequently, the quality of data does not allow us to conclude rigorously if Exporta Fácil exports should or should not be included as a sub-group of DSE exports. It is likely that they are only partially included, as some of the very small exports exported through Exporta Fácil did not make it into the official statistics.

Description and source of all the data used in this study can be found in appendix I.

5. LOW-VALUED EXPORTS: USAGE STATISTICS

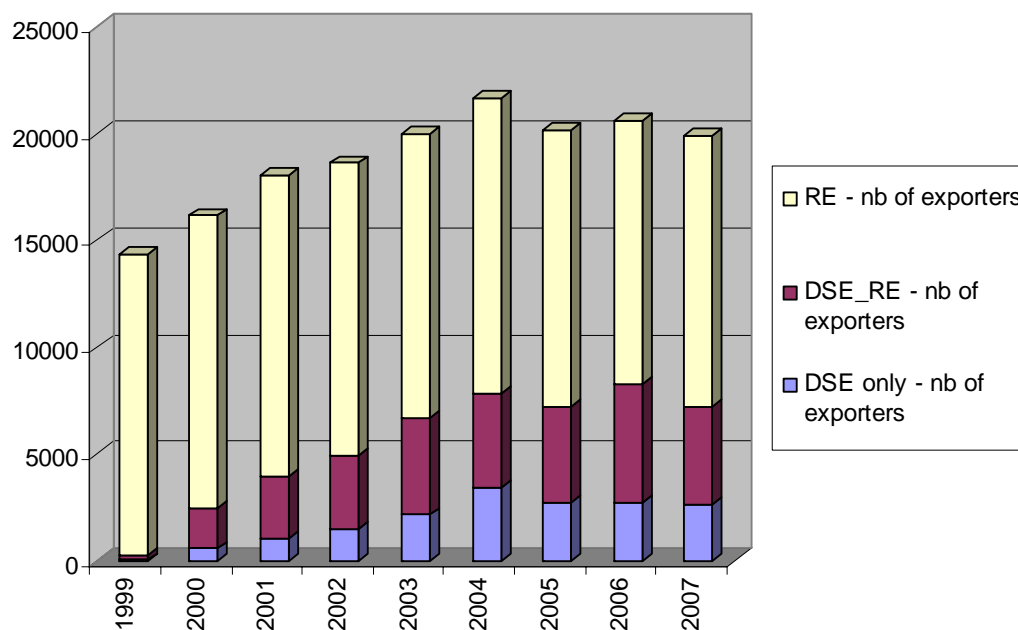
This section will examine what types of exporters are taking advantage of simplified export procedures. After having exposed some revealing statistics on usage, we will move on to the crucial question of trade creation.

5.1 Number and size of exporters

5.1.1 DSE exporters

Figure 5.1 illustrates the evolution in the number of Brazilian exporters. Our data allows us to separate the exporters who have exported exclusively with the DSE (DSEonly) system (i.e., have only exported low-valued exports) from those who have also exported through the normal procedure (called DSE_RE), and also from those who export exclusively with the normal procedure (RE). As the graph shows, the number of “normal” exporters has stayed relatively stable whereas the number of DSE exporters has increased dramatically from 1999 (the introduction of the law) until about 2004, where it has started to stabilize at a bit more than 7,000 exporters. In 2007 (latest available data), 2,622 (13%) exporters exported only with the DSE, 4,611 (23%) used both systems, and 12,690 (63%) exported through the RE. This implies that upwards of a third of all Brazilian enterprises with exporting activity are taking advantage of the simplified export procedure offered by the DSE, which a considerable share is considering the form was less than eight years old at the time.

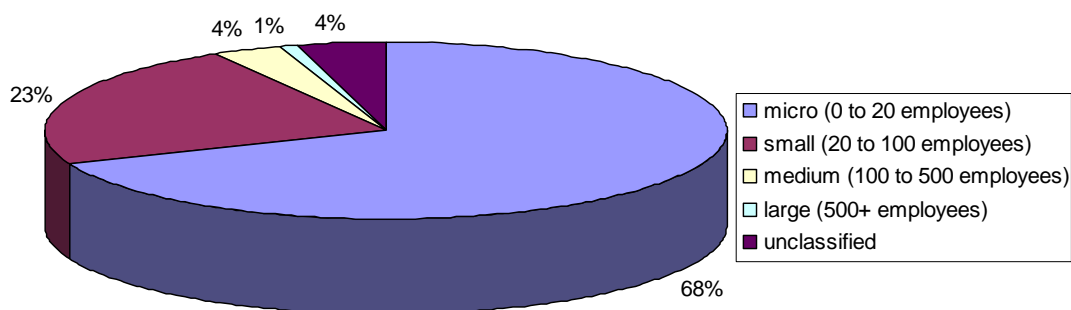
Furthermore, the fact that almost two-thirds of DSE exporters were also present in the RE suggests that a considerable amount of firms found the DSE useful even if they had already gone through the hassles of traditional exporting. We have no way of knowing, however, whether these enterprises have used the DSE for “support” activities to their main exporting business (such as spare parts) or if the DSE has enabled them to create new exporting activity.



Data source: MDIC

Figure 5.1 - Evolution of number of DSE, RE, and DSE/RE exporters

No firm-level data was available on DSE exporters for the purposes of this study; there was therefore no possibility of inferring more detailed information on the nature of these exporters. Brazil also does not directly collect information on the size of its exporting firms. However, a quite comprehensive study on the exporting activity of MSMEs in Brazil which was published by the SEBRAE (the Brazilian Service of Support for Micro and Small Enterprises) in 2007 reveals interesting facts by linking the usage of the DSE to the size (in employees) of exporters. They find that a vast majority of DSE exporters are “micro-enterprises” (having less than 20 employees). Figure 5.2 displays their estimated distribution of DSE exporters by size. Having data on all exporters, they were also able to find that 41% of the “micro” enterprises with exporting activity are using the DSE, as compared with 11,7% of the “small” exporting enterprises.



Source: SEBRAE Brazil

Figure 5.2 - SEBRAE estimates of distribution of DSE exporters by size

5.1.2 Exporta Fácil exporters

A total of 7,626 different exporters have used Exporta Fácil between 2000 and 2006.

As with DSE exports, we do not have direct data on the size of Exporta Fácil customers, but are able to use their legal nature as a proxy for the estimation of their size. Figure 5.3 plots the distributions of total exporters and Exporta Fácil exporters as regard to their legal nature. As can be seen, almost three quarters of Brazil's total exporting firms are Limited Liability companies ("LTDA"). This class of enterprise encompasses every size of firm from the very small to very large multinationals. The second largest class of firms is that of corporations (S.A.), with small (EPP) and micro (ME) enterprises sharing the rest. It may be worth noting however that it is optional for a Brazilian firm to mention whether it is a micro or small enterprise in its legal status; and that this should be seen as a lower limit to the actual number of small and micro enterprises. LTDAs also form a large proportion of Exporta Fácil's customers; however, the share of "other" exporters is for Exporta Fácil much larger than in overall exports. These are quite probably either informal enterprises or individuals. The relative number of "micro" exporters is also larger. This suggests that Exporta Fácil exporters are relatively smaller and comprise more individuals than overall exports. But, once again, this is by far not an exact measure, and whether this applies to other DSE remains uncertain.

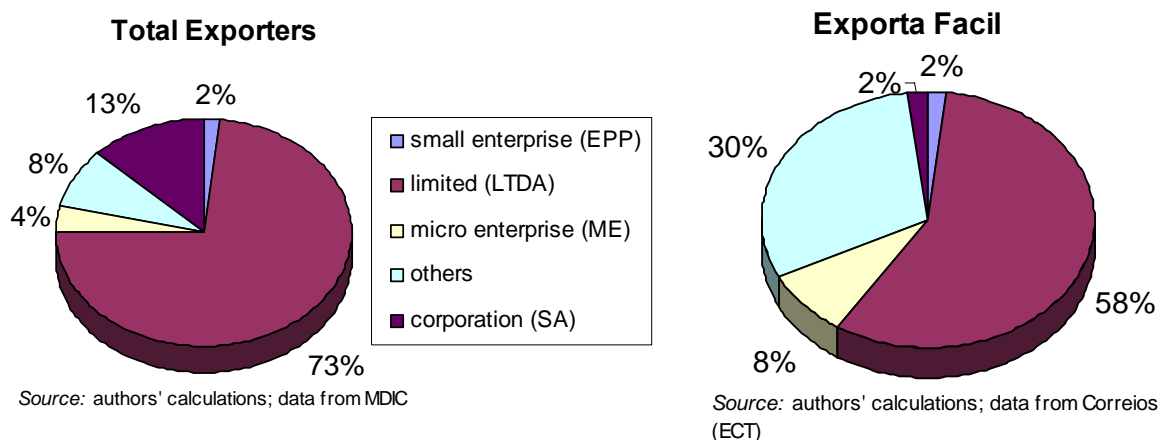
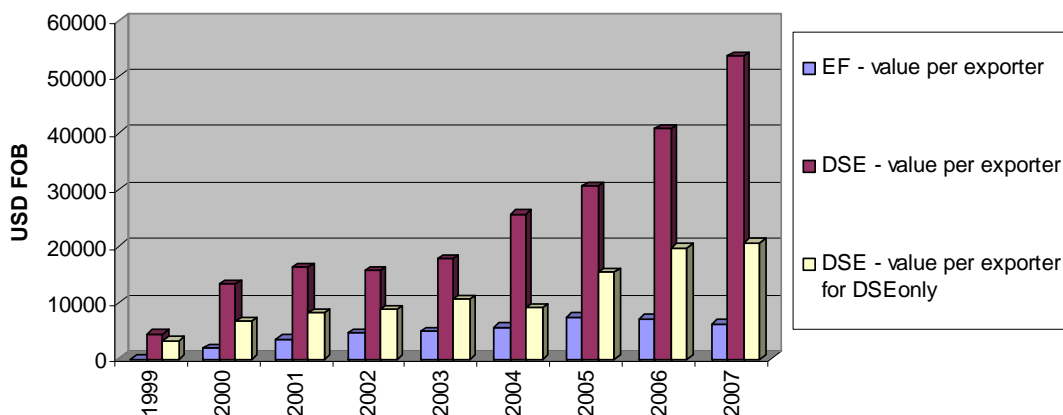


Figure 5.3 - Distribution of Exporta Fácil vs. normal exporters, by legal status

5.2 Usage intensity

5.2.1 DSE exporters

We now turn to the intensity of usage of the simplified export services. First of all, we compare average export values per exporter (per year). The DSE limits individual exports to \$20,000, so we obviously expect DSE exporters to export a much smaller total value per year than regular exporters. This is confirmed by the data: in 2007, an “RE” exporter exported more than \$8 million (\$8,668,243) on average, whereas the average exported value by DSE exporters was \$53,549. This is consistent with the fact that low-valued export do not add up to the large numbers of traditional exporting. Moreover, if we single out the exported value of those exporters who have exported exclusively under the DSE (DSEonly), the mean exported value drops to \$20,633. This implies that enterprises that use the DSE for some of their exporting business (but only as a side-business to their “RE” exporting activity) use the DSE to export a higher value than those who use only the DSE. This tends to confirm the hypothesis that the DSE is often used as a support exporting business, or a parallel exporting service to companies that have already exported before.



Data source: MDIC / Correios (ECT)

Figure 5.4 - Exported value per exporter

5.2.2 Exporta Fácil exporters

The same analysis for Exporta Fácil reveals an interesting fact: its exporters export on average much less than other DSE exporters. In 2007, they indeed exported on average only \$6,196 each! Figure 5.4 illustrates how this compares to other DSE exports over time. As can be seen, DSE exporters have individually been exporting an increasing amount, whereas the individual average amounts for each Exporta Fácil exporter has stayed constant. Although we cannot rule out the possibility that these exporters used another DSE service during the same year, this can be seen to indicate that Correios, through Exporta Fácil, is more often used by smaller exporters.

Additionally, the availability of extremely detailed data on Exporta Fácil allows us to dig deeper into the structure of its usage than we are able to for DSE exports. First of all, we can draw up the distribution of exporters with respect to the value they have exported (see histogram on figure 5.5), which appears to be skewed. Indeed, a very large number of exporters export very little, with a small number accounting for a large share of exported value. 50% of exporters exported objects totalling less than 2860 BRL (about \$1200 in 2005 USD) per year, while, at the other end, we find that 5% of exporters export 69% of total value. The same type of skewed distribution can be noticed in the number of exported objects per exporter: the average has been between six and ten objects per exporter and per year, but the median number of objects is only two (see figure 5.6). These two findings point to the fact that Exporta Fácil is clearly characterized by a large base of exporters who use it occasionally and a small number of enterprises who use it extensively.

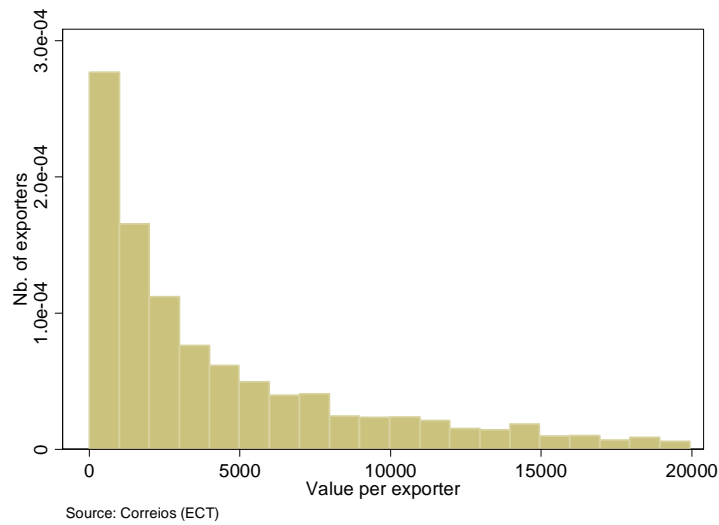


Figure 5.5 - Histogram of distribution of exported value per Exporta Fácil exporter (2005)

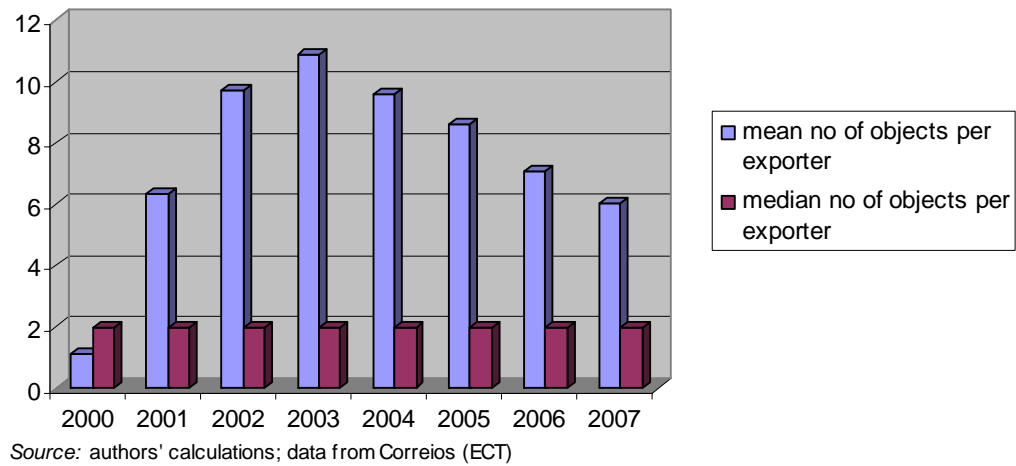


Figure 5.6 - Number of exported objects per Exporta Fácil exporter

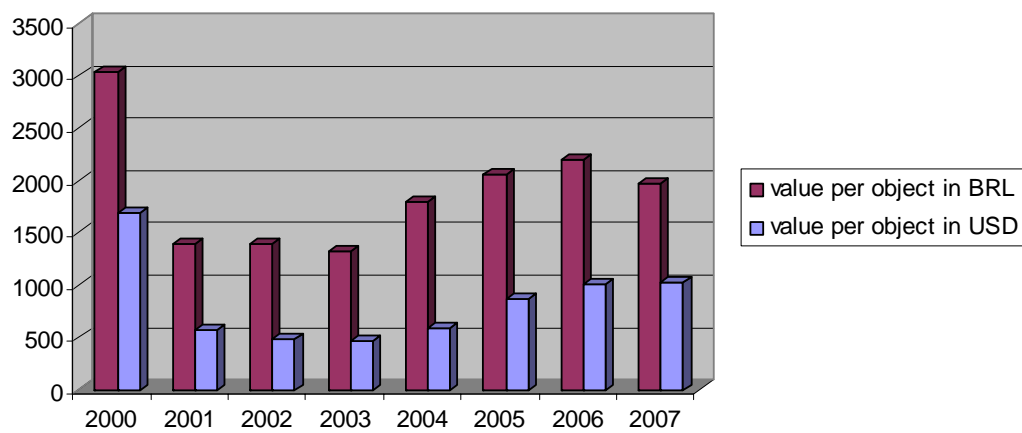


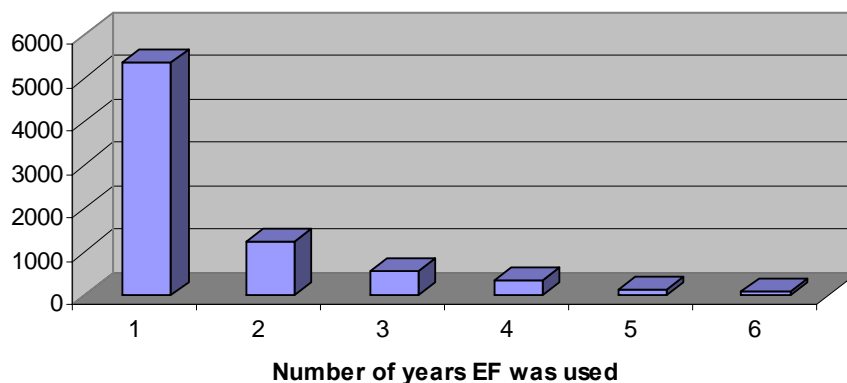
Figure 5.7 - Value per exported Exporta Fácil object

Not knowing the exact distribution of exported value of DSE exports, it is not possible to confirm if its usage is as skewed as Exporta Fácil's. But what is certain is that on average Exporta Fácil is used to export smaller values, and on top of that, a smaller number of objects.

Figure 5.7 reveals an interesting fact: the value per exported objects has steadily grown over the period. Thus, exporters are exporting fewer objects, but are packing more value into them.

5.3 New exporters, continuing exporters, and exits (survival analysis)

In trying to understand if and how Exporta Fácil has created new export-oriented businesses, it is interesting to see if its customers are repeatedly using the service (and therefore seeing it as an exporting channel) or if they are using it for one-time purposes. In this regard the data seems to reveal that a majority of Exporta Fácil customers have used the service only once. Indeed, 4,142 out of the 7,626 (54%) businesses or individuals who have used the service used it only for one transaction. Figure 5.8 illustrates the distribution of Exporta Fácil exporters by number of years of usage. As can be seen, only 30% of firms have used the program repeatedly (two years or more). Moreover, 5,412 (82%) out of the 6,542 enterprises that have started exporting before 2006 were not exporting in 2006 (the latest available year for this analysis), which implies that at least 82% of the exporters who have ever exported with Exporta Fácil have eventually stopped using the system.



Source: Authors' calculations; data from Correios (ECT)

Figure 5.8 - Number of Exporta Fácil exporters by years of usage (2000-2006)

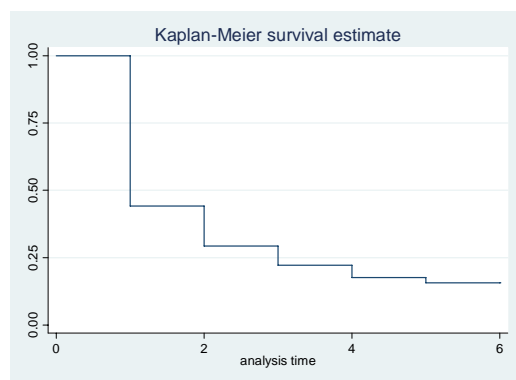
5.3.1 Duration analysis

Economists have only recently started analysing the question of “how long” trade relationships last. Different studies from Melitz (2003), Besedes and Prusa (2004) and others have, using different datasets, come to the conclusion that trade relationships are rather short-lived. Besedes and Prusa (2004) have analysed product and industry level data of trade in and out of the US and found some striking results: “more than half of all trade relationships are observed for a single year and approximately 80 percent are observed for less than five

years”. Moreover, “the results indicate the presence of negative duration dependence” (i.e. that the chance of a relationship stopping decreases with time). These facts are found to be true for industry-wide relationships, so one would expect individual-firm relationships (as the ones analysed here for Exporta Fácil) to be at least as short-lived.

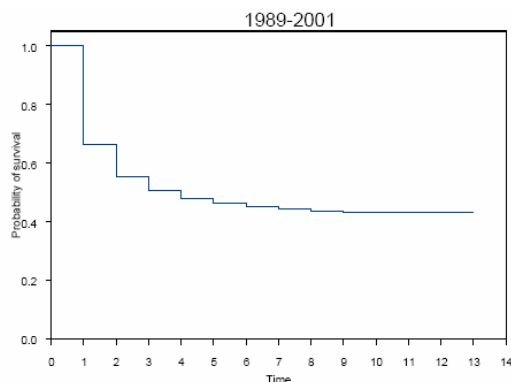
Figure 5.9 illustrates the non-parametric Kaplan-Meier survivor function for years of usage of Exporta Fácil by exporters. This graph represents the probability of “surviving” (i.e., continued usage of Exporta Fácil) that a firm has for a given number of years. As we can see, the probability of survival decreases quite rapidly. The probability of exiting the system, given that an enterprise has been in it for a given number of years is called the hazard rate. This rate is plotted in the hazard function in figure 5.11. It shows a very high hazard rate for the first year, which then gradually declines as years go on. Such a trend is quite common in the analysis of firm duration, and reflects what is called negative duration dependence. Negative duration dependence means that the hazard rate decreases with time: the longer a firm has been exporting, the lower its chance of dropping out¹². Figures 5.10 and 5.12 are taken from Besedes and Prusa (2004) and illustrate the survival and hazard functions they find for US trade relationships. Their shape is strikingly similar to ours, revealing the same pattern of negative duration dependence. However, if one compares survival rates for the same years, it is clear that the relationships they have analysed have a higher chance of surviving. As already mentioned, this can be explained by the fact that they have studied industry-wide relationships and not firm-level ones.

However, and more importantly, the same conclusion they make about the presence of negative duration dependence holds for Exporta Fácil exports: if a company starts using Exporta Fácil for a couple of years (thus surviving the initial “slump”), it will face a rapidly decreasing probability of quitting. The message from this is quite clear: for every firm that develops lasting trading activities, a large number of others will fail or abandon. This is not particular to low-valued exports but, as the relatively lower survival rates suggest, it might be further accentuated for them.



Source: authors' calculation

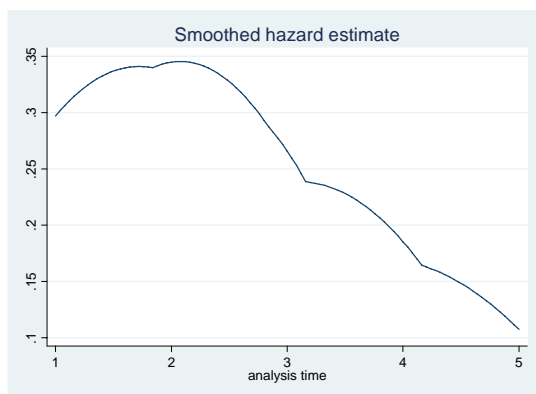
Figure 5.9 – Exporta Fácil survival estimates



Source: Besedes and Prusa 2004

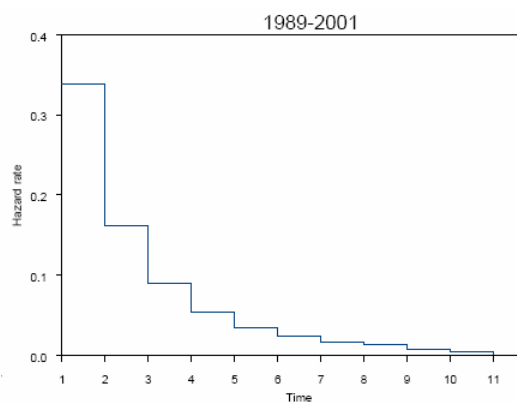
Figure 5.10 - Besedes and Prusa (2004) survival estimates

¹² Analysis is based on Braidford, Holmes and Stone (2003)



Source: authors' calculation

Figure 5.11 – Exporta Fácil hazard rate



Source: Besedes and Prusa 2004

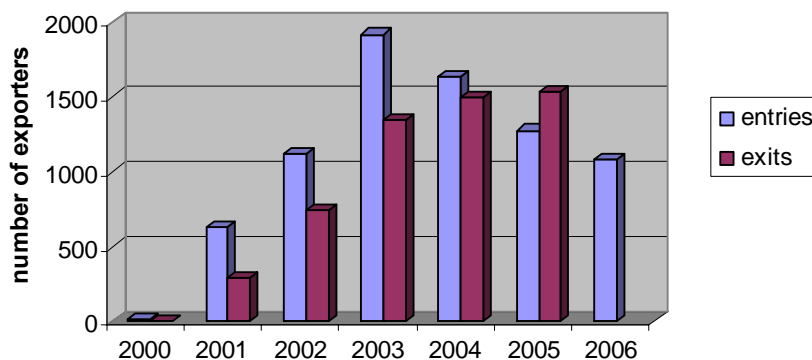
Figure 5.12 - Besedes and Prusa (2004) hazard function

5.3.2 Survival and size

Another interesting analysis to undertake is that of the relationship between survival and size. To see if and how the amount (in value) of exporting activity explains the hazard rate, we have run an exponential hazard rate model with mean exported value as a covariate. The estimated hazard ratio which was found is .99997, which is very close to one, but still statistically smaller (p-value 0.0001 - this result also holds if we had assumed a Weibull distribution instead of an exponential one). This means that the mean exported value decreases the hazard rate of leaving Exporta Fácil. Thus, enterprises that on average export more also remains longer, on average, in the Exporta Fácil system.

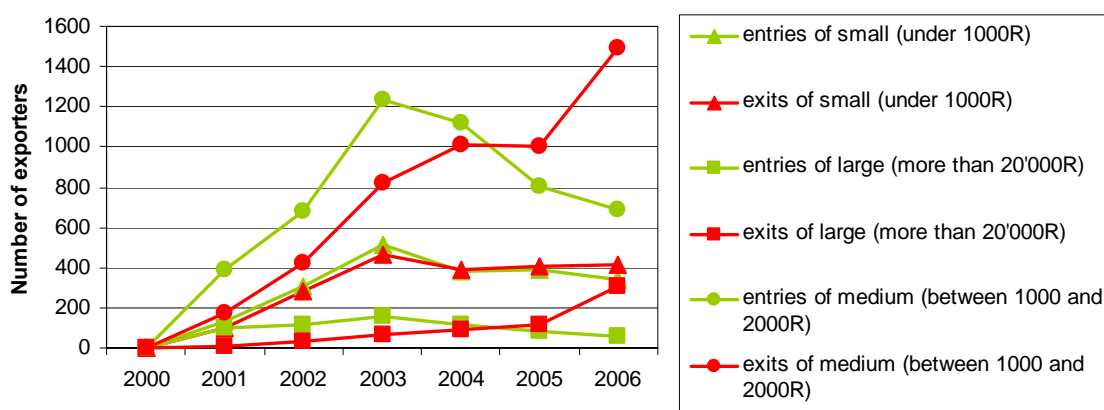
5.3.3 Entries and exits

If it is true that, as has been found, it is necessary for a large number of exporters to attempt exporting in order to have a few of them develop a long-term exporting business, then trade creation requires a high enough number of new small exporters every year. Exporta Fácil is still attracting a relatively high number of these new exporters, yet figure 5.13 clearly indicates a sharp decrease in their number. One could however wonder if this growing discrepancy between entries and exits depends on the relative size (as measured by its exported value) of exporters. To analyse this we have arbitrarily separated the exporters into three groups: the small, which export less than 1,000 BRL per year, the medium, who export between 1,000 and 20,000 BRL per year, and the large, which export more than 20,000. As figure 5.14 illustrates, the trends vary from category to category: for small and large exporters, the number of entries and exits varies in similar degrees. For medium exporters, the trend is more radical: entries have been decreasing rapidly as exits have been increasing. This is the segment where Exporta Fácil is losing the most customers.



Source: Authors' calculation; data from Correios (ECT)

Figure 5.13 - Exporta Fácil entries and exits, by year



Source: Authors' calculation; data from Correios (ECT)

Figure 5.14 - Exporta Fácil evolution of entries and exits, by size of exporters

5.4 Conclusions

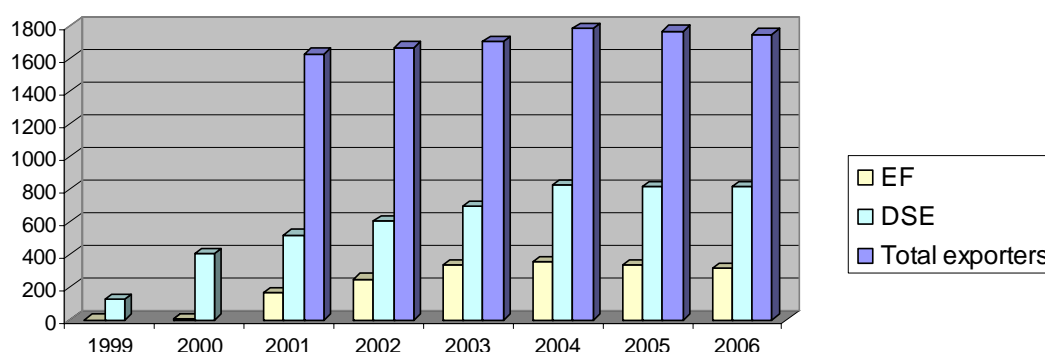
This section has revealed some interesting trends: DSE exporters have grown rapidly in number and have then stabilized, but have been exporting increasingly large amounts (in value). In particular, a growing share of DSE exports comes from a base of large exporters which have other exporting activities and end up using the DSE to export more than those who use the DSE exclusively. Furthermore, there seems to be evidence that most DSE users are micro or small enterprises, which confirms the hypothesis according to which simplified exports are particularly important for small firms. A typical Exporta Fácil customer exports even less (in value) than other DSE exporters, and Exporta Fácil is characterized by small and often one-time exports. The service is even more used by individuals and micro enterprises than other DSE services. Very few of its customers tend to re-use the service, and the overall number of new customers is declining.

6. DETERMINANTS OF LOW-VALUED EXPORT ACTIVITY AT THE MUNICIPALITY LEVEL

6.1 Brazilian municipalities with exporting activity

What explains the intensity of export activity in a particular city? This analysis will clarify where Brazilian exports come from and which types of city harbours the most exporters. It will also reveal whether low-value exports (under the DSE) come from different types of cities when compared to regular exports. In this context, available data allows us to do an extensive econometric analysis of the determinants of exports at the municipality level.

But first, let us start with some facts about the geographical distribution of exporting activity in Brazil. In 2005, 1769 (31% of the total) of Brazilian municipalities had some export activity, whereas the DSE was used in 813 (14% of total) and Exporta Fácil in 332 (6%) of those. Figure 6.1 illustrates the evolution of these values over time.



Source: authors' calculation; datat from MDIC / Correios (ECT)

Figure 6.1 - Evolution of number of municipalities with exporting activity, by type

Before turning to econometric analysis, some interesting facts can be inferred by simple descriptive statistics.

Table 6.1 displays some statistics on exporting municipalities and allows direct comparison between municipalities where there was general exporting activity, DSE exporting activity, and Exporta Fácil exporting activity with the “average” Brazilian municipality. Interestingly, DSE (and in particular Exporta Fácil) exports are more concentrated in larger (in population) and richer (in GDP per capita) municipalities than in not only the average Brazilian municipality but also the average *exporting* municipality. At the same time, these municipalities are more industrial, more service oriented, less agricultural, less rural, and more educated.

Table 6.1 – Exporting municipality characteristics

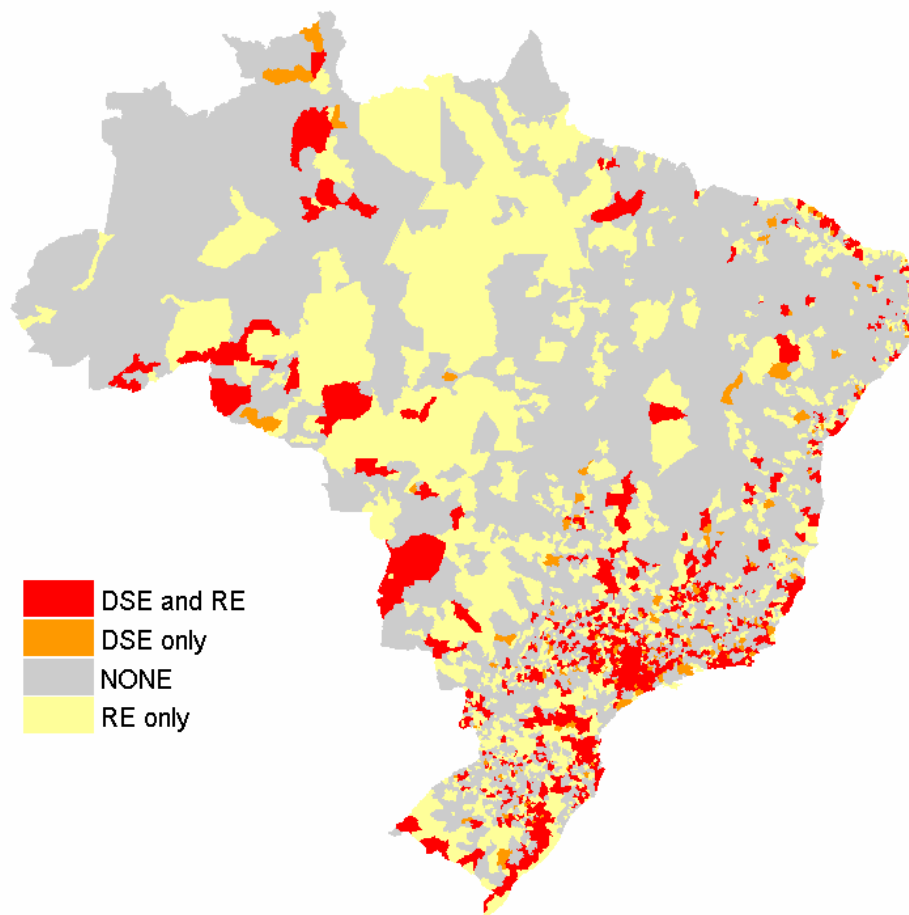
average values from 2005	<i>population</i>	<i>GDP/cap</i>	<i>industrial sector share</i>	<i>service sector share</i>	<i>agricultur al sector share</i>	<i>rural pop share</i>	<i>inequality (gini)</i>	<i>median years of schooling</i>	<i># of municipali ties</i>
all municipalities	33'114	7'594	0.17	0.59	0.24	0.41	0.56	4.04	5'561
with RE exports	67'192	10'947	0.25	0.57	0.18	0.28	0.55	4.89	2'203
with DSE exports	140'084	12'374	0.30	0.60	0.10	0.19	0.54	5.56	813
with EF exports	264'332	13'104	0.30	0.63	0.07	0.13	0.56	6.04	332

6.2 Geographical distribution of low-valued exports: Searching for evidence of inclusion

About half of total DSE exports are transported by the postal sector, and it is interesting to analyse if and how this has affected the geographical distribution of these exports relative to normal RE exports. Indeed, postal networks are characterized by a greater capillarity than the logistics operators used for larger exports; therefore, one might expect them to allow greater access (in terms of geographical distance) to export markets.

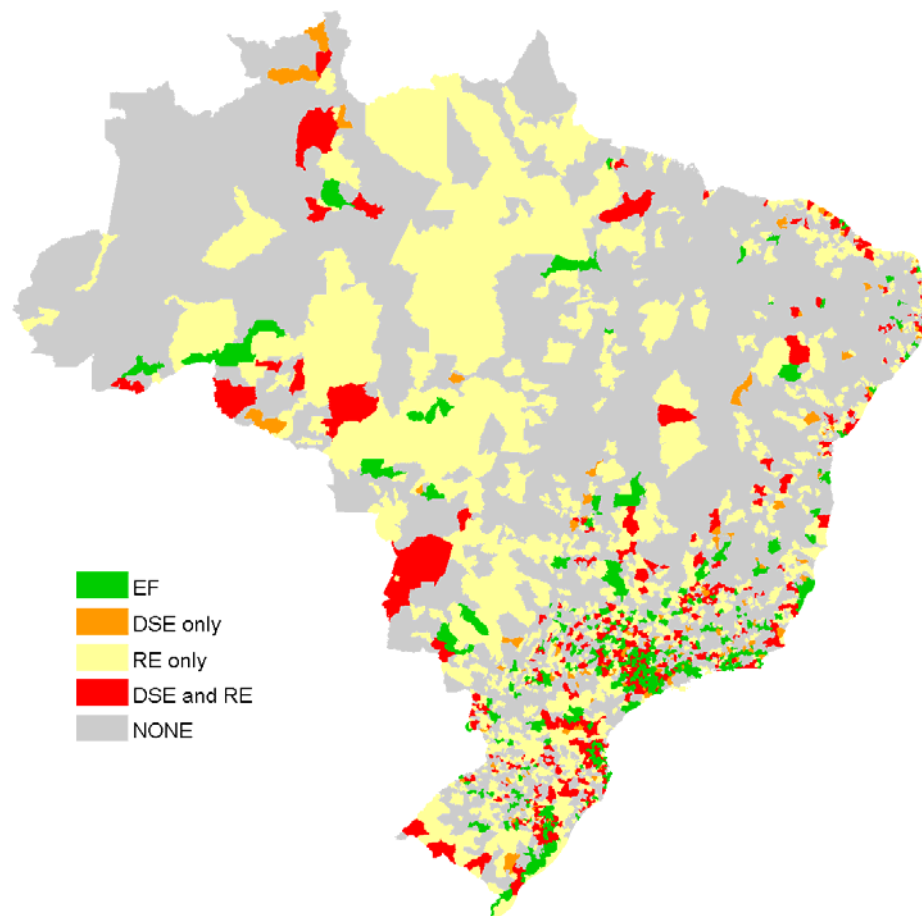
This was a key rationale in the government's support of Correios' Exporta Fácil. As it relies on the postal incumbent's extensive distribution network, it might have a plausible advantage over others in the promotion of geographical inclusion.

The following maps graphically display the geographical distribution of exporting municipalities, by type of exportation (RE only, DSE only, or both). As can be seen, exports are concentrated along coastal cities and in the south-east region. Figure 6.3 shows the distribution of municipalities where Exporta Fácil was used.



Source: author's calculations; export data from MDIC; geographic data from IBGE

Figure 6.2 - Geographical distribution of exporting municipalities, by type



Source: author's calculations; export data from MDIC; Exporta Fácil data from Correios; geographic data from IBGE

Figure 6.3 - Geographical distribution of Exporta Fácil usage

In order to provide more precise statistics, geographical inclusion has been measured around three dimensions (see figure 6.4 for visual illustration):

1. distance of export origin to São Paulo (still the principle economic hub in Brazil, and the main point of exit for Brazilian exports)
2. distance to the nearest state capital (state capitals are often small economic hubs that sometimes constitute the only link between remote municipalities and the outside world; they may also constitute, in most states, the only cities that provide the necessary infrastructure for small exports)
3. inclusion of the municipality in a large metropolitan area (defined, arbitrarily, as comprising more than one million inhabitants)

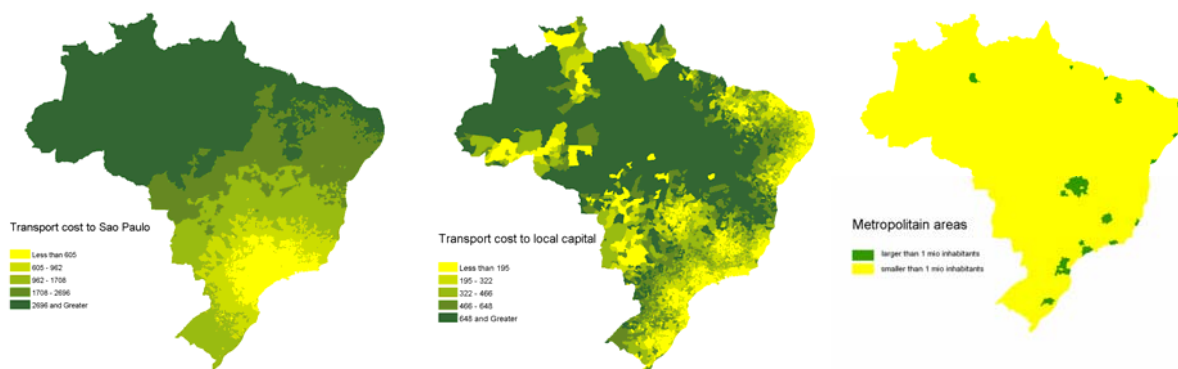


Figure 6.4 - The three dimensions of geographical inclusion

For the first two dimensions, an index of “transport cost weighted by exported value” has been calculated as such:

$$\text{Distance index} = \frac{\text{sum (transportcost*exportedvalue)}}{\text{sum (exportedvalue)}}$$

Where the summation has been done across municipalities

Transportcost is the estimated transport cost between a municipality and São Paulo or the nearest state capital; estimates are provided by IPEA

The index has been calculated for all exports (enterprises signed up in the RE), for DSE exports (only the companies who exported exclusively through DSE) and for Exporta Fácil exports. The higher the index, the farther the exports come from. The index is also standardised to allow direct comparison between exporting channels. The following tables display this index for distance to São Paulo and distance to nearest capital, as well as the share of exports of each type which originate from a metropolitan area of more than one million inhabitants, and this for exported values (table 6.2) and number of exporters (table 6.3).

Table 6.2 - "Distance index" for exported values

Value numbers from 2005	Exporta Fácil	DSE only	RE exporters (RE + RE_DSE)
Index with respect to distance to São Paulo (Manaus included)	1717	541	846
Index with respect to distance to São Paulo (Manaus excluded)	516	442	778
Index with respect to distance to nearest capital	100	142	181
Percentage in large metro area (> 1 mio)	74%	64%	49%

Source: authors' calculation; MDIC, Correios and IPEA (for transport cost estimates)

Table 6.3 - "Distance index" for number of exporters

Numbers of exporters from 2005	Exporta Fácil	DSE only	RE exporters (RE + RE_DSE)
Index with respect to distance to São Paulo	637	776	882
Index with respect to distance to	133	128	207

<i>nearest capital</i>			
<i>Percentage in large metro area (>1 mio)</i>	67%	61%	45%

Source: authors' calculation; MDIC, Correios and IPEA (for transport cost estimates)

The results are quite striking and indicate that instead of directly promoting geographical inclusion, DSE exports and especially Exporta Fácil exports are even more concentrated around local capitals and in large metropolitan areas than regular exports. Exporta Fácil does seem at first hand to be relatively more used away from São Paulo, but this might be severely biased by the heavy usage of the program in the city of Manaus (which represented 42% of Exporta Fácil usage in 2005). Manaus is the largest city in Brazil's northwest region and a large exporting pole in itself, and it is also likely that it has a substantial export infrastructure of its own, making its distance to São Paulo less relevant. Apart from Manaus the result is mixed, but it seems that Exporta Fácil (and DSE) exports originate from cities which are closer to São Paulo than regular exports.

In a purely descriptive analysis, then, it seems that DSE exports are more concentrated in large cities than overall exports. Furthermore, Exporta Fácil exports seem to be even more concentrated than overall low-valued DSE exports. This is consistent with the results of table 6.1. The program does not seem, as such, to be directly promoting geographical inclusion. However, as was already pointed out, our study is based on municipality-level data, and we are unable to say anything about inclusion of poorer parts of large cities.

That DSE exports are more concentrated than others may not necessarily seem surprising: one could argue that it probably well reflects the fact that low-valued exports require a proximity service. Their value is indeed small and does not justify a large transporter coming to pick the merchandise up like it would be feasible to do for large scale exports emanating from a remote municipality (setting up a train line to a mine, for example). If this was true, it would mean that access to a means of transport is a limiting factor for exporting low-valued objects. However, Exporta Fácil, thanks to its reliance on the postal incumbent's large network, does permit to export from virtually anywhere in the country. But, as demonstrated above, Exporta Fácil exports are not any less concentrated in large cities than higher valued exports (on the contrary). Therefore, it seems that access to exporting infrastructure is not the limiting factor.

Furthermore, as table 6.4 shows, there is no clear downwards trend in the way DSE export concentration varies in time (the value for 1999 being unrepresentative due to the very low number of exports that year). This either means that DSE transporters are not geographically developing their service, or that there are other factors limiting their usage. What these factors might be is what we aim to understand in the following econometric analysis.

Table 6.4 - Evolution of "distance index", for value, in time

distance index		1999	2000	2001	2002	2003	2004	2005	2006
DSE	w.r.t. Sao Paulo	921	614	642	531	563	633	542	544
	w.r.t. nearest cap.	218	140	133	144	145	146	142	140
EF	w.r.t. Sao Paulo	-	3430	590	434	685	1076	1718	1738
	w/o Manaus	-	460	556	423	458	518	516	460
	w.r.t. nearest cap.	-	31	191	158	135	128	100	98

6.3 Econometric analysis of low-valued export determinants

Our data allows us to further investigate what drives exporting activity at the municipality-level by econometric methods. By doing this, we would be able to estimate the impact (or lack thereof) of socio-demographic variables on exported value and number of exporters for RE, DSE, and Exporta Fácil exports. To capture possible non-linear effects we have added log versions of the population and GDP variables.

Because of the large number of zero values present in the data, a Tobit model has been used for the estimation.

Table 6.5 displays the estimated effect of the different explanatory variables, by type of export, on the number of exporters and exported value, respectively. To simplify interpretation, only the sign (positive = “+”, negative = “-“) of the effect is displayed here. The full coefficients as well as technical considerations can be found in appendix II.

Table 6.5 – Robust Tobit regression of number of exporters and exported value, per type of export

2005 estimates	<i>RE</i>		<i>DSE</i>		<i>Exporta Fácil</i>	
	# exporters	value	# exporters	value	# exporters	value
Population	0	0	0	-	-	0
Log population	0	0	+	+	+	+
Share of rural population (2000 est.)	0	+	0	0	0	0
GDP	0	0	-	0	0	0
Log GDP	+	+	+	0	0	0
Gini inequality coefficient (2000 est.)	-	0	0	0	0	0
Share of services sector	0	0	+	+	0	0
Share of industrial sector	+	+	0	+	+	+
Transport cost to closest capital	0	0	-	0	-	0
Transport cost to Sao Paulo	0	0	0	0	-	0
In large metro area (dummy)	+	0	0	0	0	0
labor participation rate (2000 est.)	+	+	+	+	+	0
Number of bank agencies	-	0	-	+	0	0
Median no of years of schooling	+	+	+	0	0	+
No of firms (unidades)	+	0	+	0	0	0
Average size of firms (in employees)	0	0	0	-	0	0
Constant	-	-	-	-	-	-
<i>No. of uncensored observations</i>	1714		459		302	

Note: signs are reported if effect was found to be statistically significant at the 5% level

6.3.1 Geographical effects

The first thing to notice from these estimates is that the descriptive results on geographical origin of exports (from last section) are mostly robust to econometric analysis: all other effects being controlled for, both transport cost to São Paulo and transport cost to nearest capital either negatively affect or do not affect low-valued (DSE and Exporta Fácil) exports. This confirms the finding that neither DSE (which was expected) nor Exporta Fácil (which was not expected) has promoted geographical inclusion. It is interesting, then, to analyse which variables affect their usage, and if there are some which explain DSE exports but not RE exports.

6.3.2 Socio-demographic effects

The following factors seem to consistently explain all types of exporting activity in a municipality: the share of industrial sector (positively), the labour participation rate (positively) and education level (as defined by the median number of years of schooling, positively). This gives some idea of the necessary prerequisites for exporting activity in a municipality: it has to be industrialized, educated and have a high labour participation rate. The total number of firms in a municipality positively explains the number of exporters but not the exported value (for both the DSE and the RE).

More interestingly, some factors influence low-valued exports (DSE including Exporta Fácil) differently than normal ones (RE). As can be seen, population (in log form) positively affects DSE and Exporta Fácil exports, but not RE exports, whereas the log of GDP affects RE exports and the number of DSE exporters, but not its value and not Exporta Fácil exports. This implies that low-valued exports (particularly Exporta Fácil) depend more on population and less on wealth than regular exports. Moreover, it seems that the share of the services (tertiary) sector positively explains DSE exports, meaning that low-valued exports are more intensely used in service-oriented cities. Finally, it seems that the average size of firms (in employees) negatively affects the value of DSE exports. These two last results together seem to indicate that cities with a concentration of small firms where the service sector plays a larger role will generate a higher usage of DSE and Exporta Fácil exports. What the limitations to DSE and Exporta Fácil exports are in practice is still unknown, but the fact that services are important point to some plausible hypotheses:

- lack of payment services: in order to get paid for their exports, exporters need access to an internationally connected bank
- lack of communication means: exporters need access to information and communication technologies to find and contact potential customers abroad
- lack of access to chambers of commerce: these organizations are typically concentrated in large centres, thus complicating the transmission of trade promotion information to peripheral areas
- difficult access to the state federations of industry and trade, which are enabled to issue “rules of origin” certificates, which are sometimes mandatory
- lack of local intra-industry competition: if a firm is not confronted with local competition, its incentive to export is lower

6.3.3 Exporta Fácil usage determinants

The results show that most municipality-level characteristics which explain Exporta Fácil usage are not sensibly different from those who explain overall DSE exports. However, three variables (log GDP, the share of the service sector, and the number of firms) which positively explain the total number of DSE exporters have no significant effect on Exporta Fácil exports. These variables together represent a proxy for the level of wealth and structure of a municipality’s economy. This is important in the sense that it tends to prove that, geographical location controlled for, Exporta Fácil is less affected by wealth and number of firms than other DSE exports. This leads us to the following conclusion.

6.4 Market failure not in geographical provision of low-valued export delivery services, but in wealth and structure of the economy

The different findings that have been found in this section tentatively allow for crucial conclusions: first, there is no clear evidence of a market failure in the geographical provision of low-valued export delivery service. Indeed, the fact that Exporta Fácil can be used virtually anywhere in the country has not lead to a more geographically diversified usage than what is undertaken with private carriers. Other factors are limiting the expansion of low-valued export activity in remote areas, such as, possibly, the lack of a sufficient base of small service-oriented enterprises. Second, Exporta Fácil is, unlike other DSE exports, not affected by wealth, service-sector intensity, and number of firms. This would imply that the market which Exporta Fácil is serving consists, possibly, of relatively poorer, less service-dependent municipalities, where the number of “official” firms plays a lesser role.

7. HAS TRADE FACILITATION CREATED TRADE? SUBSTITUTION ANALYSIS

A crucial element in the analysis of the impact of these trade facilitation policies is the question of actual trade creation: has Brazil exported more because of the availability of simplified export procedures? The fundamental question here is: how much of these exports would have happened anyways? Otherwise said: are DSE-oriented services just used as substitutes to other exporting means, or are they fostering trade? This question cannot be answered by a simple look at DSE exported values, as we do not dispose of firm-level data on DSE exporters. The analysis therefore requires econometric estimation techniques.

DSE exports might be substitutes to two types of exports: either to the traditional channel (the RE) exports, or as they are sometimes of very low value, they might be substitutes to informal exports. Our data allows us to estimate the amount of substitution from the first possibility, but not from the second, as no data or estimate is available on the amount of informal exports. However, dynamic panel data econometric modelling enables us to take into account the possible effects of a measurement error in exports variables due to the use of an informal exporting channel.

7.1 Substitution from “informal” exports

Since we are dealing with exports of value of less than \$10,000 (\$20,000 after 2006), which furthermore are often of small size (half of them transported by the postal sector), we cannot reject the possibility that at least some of these packages would have been exported in an informal manner. Brazilian legislation defines an export as an object which is of “commercial nature” and/or is of value of at least \$1,000. We do not know the distribution of value of overall DSE exported objects, but, for Exporta Fácil exports at least, it is known that a considerable amount of the exported objects are of value of less than \$1,000 (80%). There is no way of knowing if these packages would have been exported even without the introduction of the DSE legislature by simply concealing their “commercial nature”. Furthermore, there was the possibility of sending packages of even higher value by declaring them as “samples”. According to experts at Correios, this was far from uncommon, but was probably only feasible if occasional. Nevertheless, one could wonder which incentives an occasional exporter would have in “formalizing” his small export, as it requires filling out more documents (the DSE declaration, fiscal note and sometimes a rules of origin certificate), instead of going on exporting informally through “samples”.

However, DSE exported value numbers have experienced a sharp increase between 2005 and 2006, when the upper limit was pushed to \$20,000. This, we believe, can be seen as evidence that the maximum exportable value is relevant to an exporter’s decision to export with the DSE and would imply that a considerable (but unknown) share of these exports is of value approaching the \$10,000 to \$20,000 range. Concealing the “commercial value” of such objects is less realistic.

7.2 RE to DSE substitution - Panel data analysis

The DSE policy was implemented in 1999 and, in theory, made immediately available to everyone, everywhere. This means that there is no source of variation in availability across municipalities which could be used to directly identify its effect on trade creation through causal analysis methods (e.g. treatment effects models). Exporta Fácil was also made available in every Correios agency from the beginning, and although the rollout of promotion, training and advertising for the program was made gradually, most of it was done between 2001 and 2002, therefore not presenting the necessary variability either.

Not having any possible source of variation in access to the DSE, we have used variation across **usage** of the DSE in time within municipalities. The problem is formulated in the following terms: over time, all other things being held constant, do municipalities which export more through the DSE export more in total? This can be tested both in terms of exported value and in terms of number of exporters. The inherent logic is the following : we assume that there is an unobservable element (such as historical exporting activity, cultural impact, etc.) in each municipality which is correlated with the amount of exporting activity that does not change over time and that can as such be eliminated by running a fixed effect model (within municipality estimation). Such an econometric model is appropriate for this analysis as it allows for a municipality specific constant, which will capture all time-constant (unobserved) characteristics.

To identify possible substitution between RE exports and DSE exports, we regress the number of RE exporters (that have not used the DSE) on the number of DSE exporters (that have not used the RE), controlling for exporters who exported through both systems (DSE_RE). If the estimated coefficient is not significantly different than zero, then we would have found no evidence of substitution, as we would not have found that a new DSE exporter explains the loss of an RE exporter.

We present two types of specifications, which give comparable estimates. First, an Arellano-Bond dynamic panel regression is applied which, we believe, is the strongest specification for this model: it integrates a lagged version of the dependent variable (RE only exporters), and by differentiation, controls for a potential omitted variable bias across municipalities. In order to test the robustness of this specification, we also compute robust fixed-effect estimates. Further technical considerations are to be found in appendix III.

Arellano-Bond dynamic panel data Model:

of RE only exporters_{it} = α *REonly exporters_{it-1} + β *DSE only exporters_{it} + γ *DSE_RE exporters_{it} + δ *export determinants_{it} + ϵ * time dummies_t + error term

Index i: denotes the Brazilian municipalities with at least some RE exporting activity

Index t: denotes the 7 years between 1999 and 2005

Export determinants are: population, GDP, and sectoral shares

Table 7.1 - Fixed-effects (within) substitution analysis

<i>Method</i>	Arellano-Bond		FE Robust OLS		FE Robust OLS
<i>Years</i>	1999-2005		1999-2005		1999-2000
Number of DSE only exporters	-0.16456345 0.1582		-0.11501908 0.2588		-0.57685459 0.2421
Number of DSE/RE exporters	-0.51993349 ** 0		-0.56503157 ** 0		-0.55795517 ** 0
Lagged RE (for A-Bond)	0.24340964 0.15				
GDP	-4.75E-07 0.07		-6.84E-07 0.0767		1.75E-06 0.0609
Population	0.00006715 ** 0.0086		0.00009013 ** 0.0009		-0.00001445 0.5919
Share of services sector	0.37850448 0.3826		-0.89737784 0.1021		0.59895791 0.6746
Share of industrial sector	0.55102175 0.3049		-1.2050131 0.0318		0.78656581 0.5015
2000 dummy			0.18550803 0.1582		0.28739596 ** 0.0004
2001 dummy			0.62081448 ** 0		
2002 dummy	0.30472384 ** 0		0.56220518 ** 0		
2003 dummy	-0.11038443 0.2117		0.60332394 ** 0		
2004 dummy	0.20316633 0.1206		1.1536661 ** 0		
2005 dummy	-0.57515873 ** 0.0002		0.68907535 ** 0		
Constant	0.33028347 ** 0		3.5285014 * 0.0472		8.9662712 ** 0.0001
Number of observations	8329		11365		3031
Number of groups	2170		2289		1687

Note: p-values are displayed in parenthesis

** and * denote, respectively, 1% and 5% statistical significance levels

Table 7.1 displays the estimated coefficients. The conclusions are robust to both specifications: the number of DSE-only exporters does not significantly affect the number of RE-only exporters in a municipality (see the p-values displayed under the coefficients). There is therefore no evidence that a new DSE exporter comes at the expense of an RE exporter. Even if the coefficient was statistically significant, its value (at -16%) is still low. It would imply at most 16% substitution between RE only and DSE only exporters. Furthermore, it is worth noting that, unsurprisingly, the coefficient for DSE_RE (exporters who exported through both channels) is statistically significant and much larger (at -51%). Indeed, we would expect DSE_RE exporters to be pre-existing RE exporters, and therefore, mostly be substitutes to RE only exporters. However, the 95% confidence interval for the coefficient of DSE_RE does not include the value of -1, which would mean a full substitution case for these exporters. About half of the DSE_RE are thus likely to be new according to the Arellano-Bond estimation.

Moreover, we find that that the instant substitution effect taking place immediately after the introduction of the DSE legislature in 1999 is much higher than in the following years (see the third column in table 7.1). We estimate this by running the regression on years 1999 and 2000, assuming 1999 to be the year “before” the introduction, and 2000 being the “after”. This substitution comes from pre-existing firms that have taken advantage of the introduction of the simplified export form to switch exporting channels. This substitution is immediate, as there is little reason for a pre-existing exporter to wait once the option was made available. This is to be contrasted with the (statistically insignificant) substitution taking place in the following years, which would have come from new exporters choosing the DSE over the RE for their exporting activity.

These estimates imply that, out of a total of 20,160 exporters in Brazil in 2005, an estimated 4,915 exporters would otherwise not have exported without the access to the DSE program; that is 24 % of total number of exporters. The Exporta Fácil program provided by the designated postal operator has enabled 2,451 exporters to access exports markets, out of which 2,084 use the DSE as their exclusive export channel and would otherwise not have exported, that is 10% of the total number of exporters.

7.3 More precise analysis using Exporta Fácil data: merge with RE Exporter database.

The detailed Exporta Fácil firm-level data which is available to us will once again allow a more precise analysis. In order to understand if the exporters who exported through Exporta Fácil are new to the exporting business, their names have been matched to a database containing the names of enterprises registered in the export registry (RE – data furnished by the MDIC), therefore having a “traditional” export business and going through regular export procedures. The match had to be done through company name only, and therefore may not be perfect. Indeed, the names have not been collected the same way in both databases, making their standardizing necessary. The match is believed to be quite accurate, as a large sub-sample has been hand-checked. However all estimates of matches should be considered has a lower bound to the actual number of matches. Once again, due to lack of relevant data, the analysis could not be done with all DSE exports, and EF will serve as an approximation, in the hope of confirming econometric results.

Table 7.2- Number of Exporta Fácil exporters which are also in the RE

	2000	2001	2002	2003	2004	2005	2006	01-05 total
total EF exporters	9	620	1322	2478	2662	2451	2214	9533
Number also in RE		134	216	423	419	355	?	1547
share also in RE		0.216129	0.16339	0.1707	0.1574	0.14484	-	0.1622784
in RE one year later		130	211	392	387			
2 years later		110	189	348				
3 years later		100	170					
4 years later		92						

The results are quite interesting. In any given year, only 14 to 21% of the names match (see “share also in RE” in table 7.2), with a declining trend. This implies that 80 to 85% of the EF exporters did not have other “regular” (at least non-DSE) exporting activities. This is one of

the strongest and most robust findings in this study. Since the possible “export by sample” bias has been econometrically rejected, we can conclude that these enterprises would not have otherwise exported the goods they have exported.

Table 7.3 displays the differing characteristics of Exporta Fácil exporters who were or were not also registered in the RE. Interestingly, those who had another form of exporting business used Exporta Fácil more often than the others: on average, they exported twice as many objects for four times the value, exported for longer periods, and are more likely to be SAs or LTDAs and less likely to be microenterprises or individuals (others).

Table 7.3 - Exporta Fácil exporters with RE activity versus those without: characteristics

2000-2006 averages	was at least once in RE		diff	t-stat	p-value
	No	Yes			
exported value	15951	64109	48157	-4.2493	0
no. of years of ef usage	1.45466	1.979414	-0.52475	-17.1647	0
no. of transactions	3.597045	6.140934	-2.54389	-9.1843	0
no. of objects	12.47273	21.01108	-8.53835	-2.5522	0
<i>by type :</i>					
share of SA	1.4	4.99			
share of LTDA	53.14	78.23			
share of ME	9.4	3.72			
share of EPP	1.7	2.14			
share of OTHER	34.37	10.93			

7.5 Conclusions

This section has discovered that only a limited share of the usage of export facilitating policies has been done at the expense of the traditional exporting procedure. Indeed, substitution from RE is found to be statistically insignificant. From this we can infer that facilitating trade for low-valued exports has created formal trade. What we cannot estimate (but econometrically control for) is the amount of substitution there has been from informal (illegal) exports. Economic intuition and econometrics results however suggest that this was generally not a major issue. Therefore, DSE policies have almost certainly been successful in fostering new low-valued exports: it seems safe to say that most of the exporters which have exported through DSE and Exporta Fácil would not have otherwise exported. As such, these policies (as a whole) have been creating a substantial amount of new exporters.

8. POSSIBLE REASONS FOR THE DECLINE IN EXPORTA FÁCIL USAGE

Following a rapid increase in usage in Exporta Fácil's first years of existence, a gradual decline has been identified. This decline is persistent and thus deserves to be analysed. Several explanations have been suggested to explain it, and we will now attempt to systematically review and evaluate them.

Firstly, there has been the appreciation of the Real relative to the Dollar that occurred between 2004 and 2005. The United States are Exporta Fácil's biggest recipient country, and such an appreciation could well explain a relative loss of competitiveness in Brazil's exports. This however has neither affected overall Brazilian exports (which have continued to grow strongly during that period), nor other low-valued exports using the DSE. So the argument according to which low-valued exports are more affected by exchange rate fluctuations than large ones does not seem to hold. One mechanism through which this appreciation could have affected Exporta Fácil's business is that the express carriers it competes with often price their services in dollar-based terms, and have thus become more competitive relatively to the designated postal operator's service, which is based on the local currency for pricing calculations. Once again, this study has not attempted to gather precise data on prices and therefore cannot quantitatively judge the impact of this effect.

Another possible explanation for Exporta Fácil's relative decline in usage is that it has been used as a launching pad for exporters who have entered the exporting business because of the availability of Exporta Fácil's simplified procedure, and have then expanded their business in a way that has made the usage of this program less interesting to them. This could be because the value of what they export has increased passed the 20,000\$ (10,000\$ before 2006) limit imposed in the DSE legislation, making the usage of the Exporta Fácil (or the DSE in general) impossible. In this case, we would suppose that, after dropping out of Exporta Fácil, those firms have signed up in the RE. This has been tested using the names of exporters (as has been done in the previous section). The number of switches can be found in table 8.1. As can be seen, only a very small fraction (between 1 and 3%) seems to sign up in the RE after having used Exporta Fácil.

Table 8.1 - share of switches from Exporta Facil to RE

number of Exporta Facil exporters	2000	2001	2002	2003	2004	2005	2006
<i>EF at t</i>	9	620	1322	2478	2662	2451	2214
<i>EF at t, not at t+ 1, RE at t+1 but not at t</i>		14	11	22	18	x	x
share of switches from EF to RE	0	0.0345	0.0133	0.0145	0.011	x	x

Example of switch

time	t-2	t-1	t	t+1	t+2
EF		yes			
RE				yes	

Another possible reason is that customers are constrained by the 30kg weight limit imposed by Correios' express shipping service. This might have forced exporters to move to other operators which propose logistic services and allow shipments of larger size and weight whilst proposing the simplicity of the DSE. This is however not testable without conducting a

comprehensive survey of Exporta Fácil customers. This hypothesis, if validated, would imply the limits of the designated postal operator in the delivery of exports.

Alternatively, the relative decline in Exporta Fácil usage could simply be due to private carriers' expansion of their service out of the main urban centres and into more remote areas where Correios was previously operating alone. Evidence for this is weak, since, as was found, Exporta Fácil usage is quite concentrated in urban centres, as was already the case in large centres before the start of the decline in 2004.

In conclusion, the exact reasons for the decline in Exporta Fácil usage are ultimately unknown to this study. However, there is evidence that the decline is not specific to the program but attributable to Correios' general performance in the outgoing international shipment of packages. As figure 8.1 illustrates, Exporta Fácil is following the same declining trend as the rest of Correios' international shipments. This trend reveals a structural problem, especially when one confronts it to the general growth of Brazilian exporting activity. Furthermore, Correios is handling an ever increasing number of *incoming* international packages.

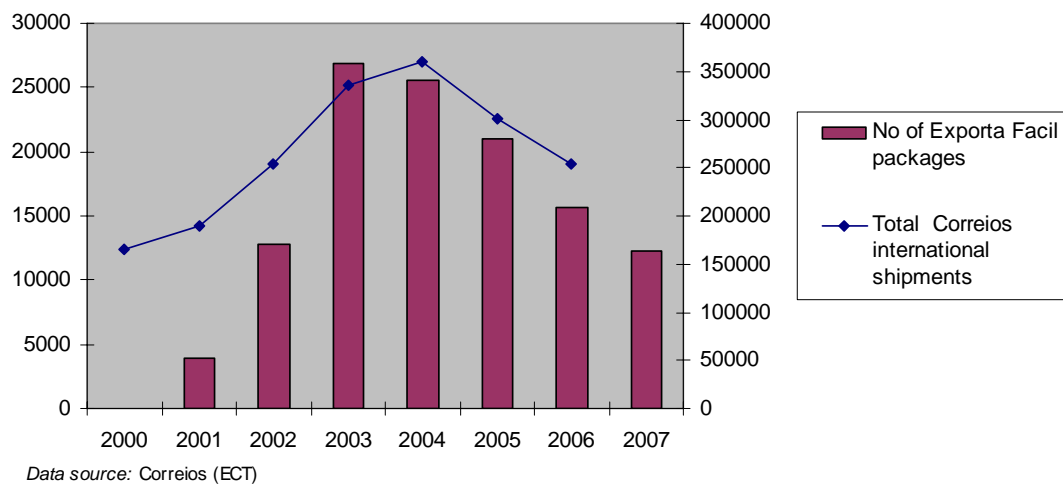


Figure 8.1 - Exporta Fácil relative to. all Correios international shipments

9. CONCLUSIONS

9.1 Trade-facilitation policies for low-valued exports: summary of findings

Here is a summary of findings on simplified export procedures (DSE) revealed by this study:

- Exported value through DSE has been experiencing rapid and constant growth
- Postal and express operators are responsible for about half of that value
- Increasing the maximum exportable value to \$20,000 has played a role in the increase
- A large and increasing share of DSE exports is due to exporters who are also exporting through traditional means
- Exporters who are also exporting through traditional means tend to export on average three times more through the DSE than those which export exclusively through it
- This leads us to believe that a substantial share of DSE usage is not for core exporting business but as a support exporting activity
- 36% of all Brazilian firms with exporting activity are taking advantage of the simplified export form
- A vast majority of firms using the DSE are MSMEs
- Low-valued exports active firms are even more subject to failure than others; it is therefore important to allow as wide a range of firms as possible to attempt entry in export markets
- Once an exporting firm has established itself (for at least a couple of years), its chance of dropping out is greatly reduced
- Low-valued DSE exports are even more concentrated around local capitals, around São Paulo, and in large metropolitan areas than regular (RE) exports
- Low-valued DSE exports also tend to originate from cities with a higher concentration of small service-oriented enterprises than “normal” exporting cities
- Comparison with almost-universal service furnished by the postal incumbent seems to reveal that access to transporters is not a limiting factor
- Econometric analysis finds no statistically significant evidence that DSE exporters are simple substitutes to RE exporters

9.2 Exporta Fácil: findings

Here is a summary of the main Exporta Fácil-specific findings revealed by this study:

- Exporta Fácil has (up to 2006) allowed 7,626 different Brazilian firms or individuals to export
- It has experienced considerable growth until 2004-2005 after which usage has started to decline. The decline is to be found in exported value, number of both new and returning customers, number of objects sent, exported value per customer and number of municipalities where service is used

- Decline has been found in all types of Exporta Fácil exporters (irrelevant of usage intensity)
- This has led it to loose substantial market share in overall low-value export market (which has been expanding)
- There is a slightly increasing trend in value per object up to 2007 (in dollar terms)
- Exporta Fácil is used to export sensibly lower values than what is done through other DSE channels, and therefore probably panders to smaller exporters. The median number of exported objects per exporter and per year is two
- As with most exporting activities, the exporting periods are very short. This translates to a vast number of one-time customers. There is however evidence of negative duration dependence, implying that, once a firm survives a couple of years, its probability of continuing exporting activities increases
- Exporta Fácil usage is heavily concentrated in a handful of exporters, concentrated in particular exporting clusters (such as the Amazonian city of Manaus)
- The capillarity of the incumbent post's network has not led to significant geographical inclusion of remote areas. Indeed, service use is even more concentrated than other DSE exports
- Exporta Fácil is not as influenced by wealth and number of "official" firms than other DSE exports, implying that it panders to relatively poorer, less service-oriented municipalities.
- Only about 15% of Exporta Fácil exporters are also signed up in the RE, which points to significant trade creation of exports
- Substitution from informal postal exports is unknown, but controlled for econometrically
- Substitution to and from other DSE exports is unknown

9.3 Importance of simplifying low-valued export procedures

Simplifying export procedures for low-valued exports has created a popular export channel at no discernable expense. The Brazilian DSE experience has proven that political will and cooperation between governmental entities can lead to the successful creation of trade facilitation policies. Such policies should be considered by other developing countries, especially since simplifying procedures for low-valued exports potentially faces less political resistance than doing the same for large exports, as they only represent a tiny fraction of overall exports (in value). Moreover, the Brazilian experience proves that they represent a possible breach in the lowering of trade impeding barriers, as the maximal exportable value has already been increased twice, and might be further increased in the future. As this study has revealed, they have proven to be useful to a large share of Brazilian exporters, and are used by exporters either with or without other export activities. They are as such both simplifying the export of low-valued objects for "regular" exporters, and fostering the creation of a new breed of small exporters, which, in the long run, should be beneficial to the country's exporting activity.

9.4 The postal incumbent's role in trade facilitation

As we have discovered, there is no clear evidence in favour of a market failure in terms of geographical availability of low-valued export delivery services. If the limiting factor in usage of low-valued exports is not a lack of transport options, what is a postal incumbent's potential role in trade facilitation?

The fact that Exporta Fácil is used to export a comparatively small number of comparatively low-valued exports can be seen as a justification for Exporta Fácil's very existence: if the postal incumbent's vast network is going to help in economic development, it might not be, as was originally postulated, in the inclusion of underserved areas, but in the pandering to very small exporters (who export smaller values) in relatively poorer and less service oriented municipalities. These indeed often start out by sending very low-valued objects, and the postal incumbent, as the data shows, seems to be most apt at pandering to them. As such, it seems that the market failure which Exporta Fácil is effectively countering is that of the under provision of affordable shipment of very low valued objects. It is used by customers who will only export a few packages a year, on average, and are therefore less attractive to private carriers. Nonetheless: as was argued in this paper, they are potentially crucial to the creation of new exporting activity in Brazil. However, due to the low survival rates among exporters, the continuing success of the program relies on the attraction of a steady inflow of new exporters, which, in the past couple of years, has not been the case.

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Appendix I – Data description

Table I.1 - Municipality-level socio-demographic data

Variable	years available	source	notes
population	1999-2005	IBGE	estimated values from IBGE
share of rural population (2000 est.)	2000	IPEA - 2000 population census	
GDP per capita	1999-2005	IBGE	real GDP - in BRL
gini inequality coefficient (2000 est.)	2000	IPEA - 2000 population census	
share of services sector	1999-2005	IBGE	computed from share of service in GDP
share of industrial sector	1999-2005	IBGE	computed from share of service in GDP
share of agricultural sector	1999-2005	IBGE	computed from share of service in GDP
transport cost to closest capital (2000 est.)	2000	IPEA - 2000 population census	
transport cost to Sao Paulo (2000 est.)	2000	IPEA - 2000 population census	
in large metro area (dummy)	1999-2005	IPEA	defined as = 1 if municipality is present in a metro area of more than 1 million
labor participation rate (2000 est.)	2000	IPEA - 2000 population census	
number of bank agencies	2000-2006	Brazilian central bank	not including correspondants
median no. of years of schooling	2000	IPEA - 2000 population census	
no. of firms (unidades)	2001-2005	IBGE	
average size of firms (in employees)	2001-2005	IBGE/	computed from number of employees

Table I.2 - Municipality-level export data

Variable	years available	source	notes
DSE_only_nb	1999-2006	MDIC	number of exporters who exported exclusively through the DSE
DSE_only_value	1999-2006	MDIC	exported value from these exporters
RE_only_nb	1999-2006	MDIC	number of exporters who exported exclusively through the RE
RE_only_value	1999-2006	MDIC	exported value from these exporters
DSERE_nb	1999-2006	MDIC	number of exporters who exported through the RE and the DSE
DSERE_value	1999-2006	MDIC	exported value from these exporters

Table I.3 - Exporta Fácil transaction-level data

Variable	years available	source	notes
exporter name	2000-2007	Correios (ECT)	including exported legal status
no of transactions	2000-2007	Correios (ECT)	
no of objects	2000-2007	Correios (ECT)	multiple objects per transactions are possible
city	2000-2007	Correios (ECT)	
post office name of transaction	2000-2007	Correios (ECT)	
value of export	2000-2007	Correios (ECT)	in BRL

MDIC = Ministério do Desenvolvimento, Indústria e Comércio Exterior; www.mdic.gov.br/

IBGE = Instituto Brasileiro de Geografia e Estatística; www.ibge.gov.br/

IPEA = Instituto de Pesquisa Econômica Aplicada; www.ipeadata.gov.br/

Appendix II – Notes on section 6.3's econometric analysis

The following tables display the full coefficients from the Tobit regressions.

Table II.1 – Robust Tobit regression of number of exporters - Full coefficients

2005 estimates	<i>NB of RE exporters</i>	<i>NB of DSE only exporters</i>	<i>NB of Exporta Facil exporters</i>	
Population	0.00003	0.00001	-0.00002	*
	0.00003	0.00000	0.00001	
Log population	0.56674	1.62440	6.12517	**
	1.07174	0.71451	1.56193	
Share of rural population (2000 est.)	3.56393	1.62259	-1.13836	
	2.25851	1.77461	3.36209	
GDP	0.00000	0.00000	0.00000	*
	0.00000	0.00000	0.00000	
Log GDP	8.11522	1.47200	-1.48503	**
	1.15896	0.65617	1.12816	
Gini inequality coefficient (2000 est.)	-22.80547	-1.98540	-0.75213	
	5.83794	4.98470	6.56783	
Share of services sector	-1.87236	5.58401	8.13784	**
	2.99244	2.61814	4.79713	
Share of industrial sector	9.21065	4.31293	14.12533	**
	2.61330	2.52768	4.74189	
Transport cost to closest capital	-0.00070	-0.00734	-0.00398	*
	0.00097	0.00168	0.00215	
Transport cost to Sao Paulo	0.00043	-0.00063	-0.00181	*
	0.00050	0.00038	0.00063	
In large metro area (dummy)	3.55861	1.34814	-0.76439	
	1.83643	0.83582	1.27608	
labor participation rate (2000 est.)	17.39463	16.90974	21.41823	*
	4.96673	4.77020	8.94809	
Number of bank agencies	-1.28586	-0.31021	0.54960	
	0.41679	0.10747	0.16977	
Median no of years of schooling	2.51643	1.15590	1.02992	
	0.60921	0.37724	0.61830	
No of firms (unidades)	0.00425	0.00124	-0.00053	
	0.00146	0.00034	0.00059	
Average size of firms (in employees)	0.04879	-0.00538	-0.12684	
	0.03732	0.02026	0.15542	
Constant	-119.78352	-60.31080	-80.33276	**
	13.60279	11.55720	14.92572	
<i>Wald chi2(16)</i>	171.54000	79.71000	1087.68000	
<i>Prob > chi2</i>	0.00000	0.00000	0.00000	
<i>Nb of uncensored observations</i>	1714.00000	459.00000	302.00000	

Note: standard-errors are displayed under the coefficients; ** and * denote, respectively, 1% and 5% statistical significance levels

Table II.2 – Robust Tobit regression of exported value - full coefficients

2005 estimates	<i>RE exported value</i>	<i>DSE only exported value</i>	<i>Exporta Facil exported value</i>
Population	-128.95033	-0.49086 **	0.45720
	238.26087	0.17323	0.63636
Log population	-1356354.8	66'936.25700 **	122'271.44000 *
	18980499	20'355.69400	48'461.64800
Share of rural population (2000 est.)	53760575 *	-39'460.48300	-33'815.99000
	23486169	33'036.00400	95'834.70200
GDP	36.7839	0.00142	0.00929
	36.8521	0.01151	0.01891
Log GDP	1.08E+08 **	-4'333.55590	-22'200.94100
	18805497	14'895.76300	30'326.48400
Gini inequality coefficient (2000 est.)	-1.17E+08	-184'479.15000	124'255.38000 *
	78711467	98'183.93500	202'532.63000
Share of services sector	-12135624	102'159.82000 *	199'447.77000
	48634173	56'851.87800	139'579.65000
Share of industrial sector	1.63E+08 **	196'552.39000 **	346'879.39000
	36573118	59'211.39700	178'097.03000
Transport cost to closest capital	-20723.016	-138.38700	-161.96816
	11890.6	29.86834	99.49123
Transport cost to Sao Paulo	6307.2181	-0.50111	-11.70927
	5661.7484	8.01027	16.98511
In large metro area (dummy)	36747960	7'017.35800	-53'068.86300
	24251602	15'344.35500	39'441.51700
labor participation rate (2000 est.)	1.12E+08 *	396'707.65000 **	610'412.79000
	57580819	101'442.09000	347'316.16000
Number of bank agencies	1358839.5	11'944.68900 **	3'027.25150
	5694804.2	3'158.79740	3'344.55150
Median no of years of schooling	24726832 *	11'843.75100	73'581.41400 *
	10238461	8'199.72690	42'683.14200
No of firms (unidades)	-10420.026	-14.50087	-17.96770
	6944.5233	12.12619	11.87288
Average size of firms (in employees)	532076.16	-6016.4374 *	-4978.3044
	412835.04	2697.8934	4930.5311
Constant	-1.54E+09 **	-1042496.6 **	-2343279
	0	201208.54	893904.66
<i>Wald chi2(16)</i>	114687.6	897.9	488.07
<i>Prob > chi2</i>	0.000000	0.000000	0.000000
<i>Nb of uncensored observations</i>	1714	459	302

Note: standard-errors are displayed under the coefficients; ** and * denote, respectively, 1% and 5% statistical significance levels

An interval regression model (equivalent to a Tobit model) has been run because a majority of observations are grouped around a *real mass point* at zero (most municipalities do not export at all). The interval regression model takes in account the information contained in the covariates for the truncated observations, and is therefore best suited for this analysis. As many of the covariates are only available for one year (2000), panel-data (xttobit) Tobit analysis was only possible in random-effects mode. Its analysis has given similar results to the cross-section presented here and is not presented in this paper.

The coefficients presented above use 2005 data. The same type of cross-section analysis has been run for different years, with the same conclusions.

Model robustness

Heteroskedasticity

The errors in the underlying latent variable model have been found to be heteroskedastic, which would make standard Tobit model coefficients inconsistent. To counter this, the estimation would be done using a generalized Tobit approach. As the “robust” option is unavailable in STATA, an equivalent interval regression model has been used for the estimation. Such a model can be programmed to be analogous to a Tobit model, but allows for robust standard errors. The standard errors presented above are therefore believed to be robust.

Normality test

The Tobit model depends heavily on the assumption that the underlying errors follow a normal distribution. A common test of misspecification for the Tobit model consists of making sure the coefficients from the corresponding Probit model (estimates the probability of being at the mass point) with the adjusted coefficients (by dividing through by the estimated standard deviation of the error term) from the Tobit are not very different. The following table displays the corresponding coefficients for this test on the equation explaining the number of RE exporters.

Table II.3 - Normality assumption test for no of RE exporters equation

variable	Probit Model (1)	Tobit	Adjusted Tobit (3)	Ratio of 1 to 3	normality holds
population	0.000	0.000	0.000	-1.151	no
log population	-0.180	0.567	-0.039	4.635	no
rural population (year-t	-0.189	3.564	-0.245	0.773	yes
GDP	0.000	0.000	0.000	2.498	no
log GDP	-0.568	8.115	-0.557	1.018	yes
Gini 2000	1.332	-22.805	1.566	0.851	yes
share of services sector	0.105	-1.872	0.129	0.815	yes
share of industrial se-r	-1.372	9.211	-0.633	2.169	no
transport cost to clos-a	0.000	-0.001	0.000	2.641	no
transport cost to Sao -o	0.000	0.000	0.000	2.303	no
metro area dummy	-0.179	3.559	-0.244	0.732	yes
labor participation rate	-1.152	17.395	-1.195	0.965	yes
Number of bank agencies	0.055	-1.286	0.088	0.621	yes
median nb of years of ~	-0.260	2.516	-0.173	1.504	yes
nb of firms (unidades)	0.000	0.004	0.000	0.913	yes
Average size of firms	-0.003	0.049	-0.003	0.871	yes
Constant	9.788	-119.784	8.226	1.190	yes

note: Adjusted Tobit coefficients are Tobit coefficients divided by the estimated standard dev. Of the residuals (14.561)

Whether the coefficients from the Probit and the adjusted Tobit are close is a subjective measure; we have (conservatively) proposed that the coefficients are “close enough” if their ratio is smaller than 1.5. The last column in the table displays the variables for which we suppose the normality assumption to hold. As can be seen, there is doubts that the assumption holds for population, log population, GDP, share of industrial sector, and transport costs. The coefficients from these variables should therefore be considered with reservation. Moreover, this comparison test also picks up other misspecifications than non-normality. This same test has been run for all six presented regressions.

Appendix III – Notes on section 7.2’s econometric analysis

As the regression is of the fixed-effect type, only export determinants that have yearly values can be used (less control variables were therefore used than in the cross-section analysis of the previous section). The possibility of time-specific effects was accounted for by adding yearly dummies, which might capture nation-wide variations in exporting activity (due to changes in exchange rate, for example).

Model robustness

Measurement error

There is exists possible measurement errors in the number of RE exporters as representatives of the total non-DSE exporters, due to informal exporting of very small shipments. Since we test whether DSE exporters are only those who switch from one export regime to another, we must take into account not only the possibility of a switch from the formal RE regime to the formal DSE regime, but also from the informal “export by sample” channel to formal DSE exporting. Yet we only observe the RE exporters to estimate this substitution from the informal or formal RE export channels to the formal DSE channel, while ideally, we would have liked to build a variable adding up RE and informal exports. Therefore, there is a potential measurement error in the variable we use to measure the total number of exporters using only one non-DSE export regime (be it formal or informal). The Arellano-Bond estimates do not suffer from this possible occurrence.

Arellano-Bond assumptions

The Arellano-Bond underlying assumption of no second-order autocorrelation in the first-differenced idiosyncratic errors is met (with a p-value of 0.9557 and z of -0.06).

Arellano-Bond test that average autocovariance in residuals of order 1 is 0:

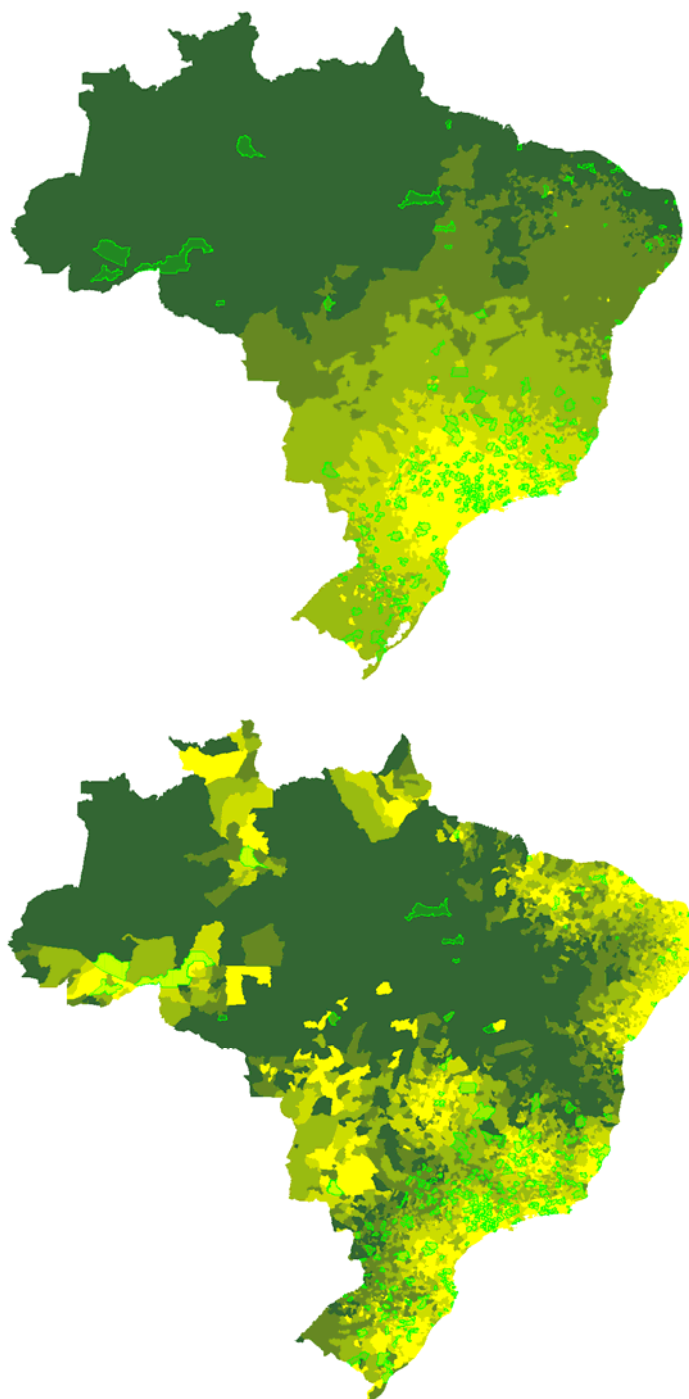
H0: no autocorrelation $z = -2.46$ $\text{Pr} > z = 0.0139$

Arellano-Bond test that average autocovariance in residuals of order 2 is 0:

H0: no autocorrelation $z = -0.06$ $\text{Pr} > z = 0.9557$

Appendix IV – Additional figures for section 6.1

The following maps display, respectively, the geographical location of Exporta Fácil usage (in highlighted light green) above, respectively, transport cost to Sao Paulo and transport cost to nearest state capital.



Source: Authors' calculation; Exporta Facil data from Correios; geographical data from IBGE