Direction des Études et Synthèses Économiques

G 2009 / 15

The Effect of the Uruguay Round on the Intensive and Extensive Margins of Trade

Ines BUONO et Guy LALANNE

Document de travail

Institut National de la Statistique et des Études Économiques

INSTITUT NATIONAL DE LA STATISTIQUE ET DES ÉTUDES ÉCONOMIQUES

Série des documents de travail
de la Direction des Études et Synthèses Économiques

G 2009 / 15

The Effect of the Uruguay Round on the Intensive and Extensive Margins of Trade

Ines BUONO* et Guy LALANNE**

DÉCEMBRE 2009

We are grateful to Paula Bustos, Matthieu Crozet, Hélène Erkel-Rousse, Gino Gancia, Guy Laroque, Joao Santos Silva, Massimo Sbracia, Silvana Tenreyro and Farid Toubal for insightful comments.

---

* Banca d'Italia, via Nazionale 91, 00184, Rome, Italy

** Département des Études Économiques d'Ensemble - Division « Croissance et Politiques Macroéconomiques » Timbre G220 - 15, bd Gabriel Péri - BP 100 - 92244 MALAKOFF CEDEX

Département des Études Économiques d'Ensemble - Timbre G201 - 15, bd Gabriel Péri - BP 100 - 92244 MALAKOFF CEDEX - France - Tél. : 33 (1) 41 17 60 68 - Fax : 33 (1) 41 17 60 45 - CEDEX - E-mail : d3e-dg@insee.fr - Site Web INSEE : http://www.insee.fr

The Effect of the Uruguay Round on the Intensive and Extensive Margins of Trade

Abstract

Do tariffs inhibit trade flows by limiting the entry of exporting firms ('extensive margin') or by restricting the average volume exported by each firm ('intensive margin')? Using a gravity equation approach, we analyze how the decrease in tariffs promoted during the 1990s by the Uruguay Round multilateral trade agreement affected the trade margins of French firms across 57 sectors and in 147 countries, from 1993 to 2002. Our main contribution is to estimate the elasticity of trade for both margins, controlling for the unobserved heterogeneity of trade flows thanks to a three-dimensional panel and to time-varying tariffs as a measure of variable trade costs.

Our results show that the number of firms exporting in a given sector to a given destination is related to the level of tariffs. But they also show that the decrease in tariffs determined by the implementation of the Uruguay Round did not lead more firms to export and instead, only encouraged incumbent exporters to increase their shipments. We control for two problems that may affect our basic specification: tariffs changes may be endogenous and zero flows are not included. Our results are confirmed - even when the extensive margin is significant, its contribution is very small.

Keywords: Tariffs, Trade margins, Uruguay Round

Les effets de l'Uruguay Round sur les marges intensives et extensives du commerce international

Résumé

Les tarifs douaniers à l'exportation agissent-ils sur les échanges commerciaux en limitant l'entrée sur les marchés étrangers de nouvelles entreprises (marge extensive) ou en diminuant les volumes moyens exportés par chaque entreprise (marge intensive) ? À partir d'équations de gravité, nous analysons comment la baisse des tarifs douaniers ayant suivi l'accord commercial multilatéral négocié lors de l'*Uruguay Round* au milieu des années 1990 a affecté les marges des exportations françaises pour 57 secteurs, vers 147 pays entre 1993 et 2002. Le principal apport de l'étude est d'estimer l'élasticité des exportations aux coûts variables à l'exportation pour les deux marges, tout en contrôlant de l'hétérogénéité inobservée des flux commerciaux. Ceci est rendu possible par une structure de données en panel et des tarifs douaniers qui varient au cours de la période.

Les résultats montrent que le nombre d'entreprises exportant dans un secteur vers une destination donnée est corrélé négativement au niveau du tarif douanier. Cependant, une baisse des tarifs douaniers liée à l'Uruguay Round n'a pas entraîné une augmentation du nombre d'exportateurs, mais a seulement induit une augmentation des volumes moyens exportés par entreprise. La stratégie économétrique prend ensuite en compte deux écueils : la possible endogénéité des tarifs douaniers et le traitement des flux nuls. Nos résultats précédents restent valides : même lorsque l'effet sur la marge extensive est significatif, il reste économiquement très faible.

Mots-clés : Tarifs douaniers, marges du commerce, Uruguay Round

Classification JEL : F10, F13, F14

Contents

1 Introduction **4**

2 Data and descriptive analysis **7**

2.1 The Uruguay Round 8

2.2 French exports 11

3 Econometric strategy and results **12**

3.1 Standard gravity regressions 12

3.2 Within regressions 15

4 Robustness checks **17**

4.1 Endogeneity 17

4.2 Zero flows 20

4.3 Other robustness checks 23

4.4 Synthesis of the results 24

5 Conclusion **24**

A Countries' specific variables **27**

B List of countries **27**

C List of sectors **28**

D Other regressions **28**

1. Introduction

What is the effect of trade cost reductions on the intensive and extensive margins of trade? In this work we address this issue by analyzing the impact of trade costs through a policy variable, tariffs, and using the worldwide multilateral tariff reduction resulting from the Uruguay Round (UR), as a policy change.

Answering the previous question is at the core of recent results in trade literature. By introducing heterogeneity across firms, recent trade models (Melitz 2003 and Chaney 2008) show that only some firms are able to export. This, in turn, generates two margins of trade: the extensive and intensive margins. The first one is defined by the number of firms that export, the second one by the average export flow by firm. The main predictions of these models are related to the effects of variable and fixed trade costs on both margins. Our question is particularly interesting from a policy point of view. Recent contributions (Bustos (2009)) have shown that, after a trade liberalization, exporters tend to adopt a more efficient technology. This may create a new channel for productivity upgrading. Eaton *et al.* (2008) find that new Colombian exporters start exporting by shipping very low volumes. However, those who survive expand very rapidly and, after a few years, account for almost half of total export expansion in that country. Those findings suggest that, if a reduction in tariffs affects aggregate trade mainly through the extensive margin, its long-term effect can be magnified. On the other hand, if the effect channels more through the intensive margin, the economy experiences a reallocation of resources toward the incumbent exporters. In this case a relevant policy could be to allow for a higher degree of flexibility in the labour market in order to ease the reallocation process.

Some recent papers, like Crozet & Koenig (2007), address the relation between trade costs and trade margins empirically, relying on distance to assess the impact of variable costs. The main novelty of our work is to use tariffs to study the effect of variable trade costs in a micro data context. Thereby, we can address interesting econometric as well as trade-related issues. First, considering tariffs instead of simply distance, we are able to implement econometric panel methods. By controlling for country-sector specific fixed effects, we measure the within effect of a change in tariffs on both trade flows and their margins, whereas previous studies could only use cross-section estimation. Thereby, it allows us to get rid of the well-known problem that distance can also proxy for taste or cultural dissimilarity and a range of other cultural or historical considerations. Second, tariffs are one of the main trade policy instruments in the hand of governments and effort is devoted to policy programmes aimed at reducing tariffs. Thus, the parameter of interest is the elasticity of trade flows and trade margins to tariffs, rather than to distance. Third, most theoretical trade models introduce trade costs through tariffs

and perform comparative static analysis by letting tariffs change. In this perspective, our analysis keeps up with the theoretical literature to a larger extent than previous ones.

We study the response of French firms to the worldwide reduction in tariffs implemented within the framework of the Uruguay Round in the end of 1994. We study France among European countries due to the availability of detailed firm-level data, from the French Customs (Douanes), which allow us to address this issue using a 3-dimensional panel. We use information on the exports of French firms for 57 sectors to 147 destinations in a time period ranging from 1993 to 2002. We use the multilateral agreement promoted by the Uruguay Round because it has been the only large scale multilateral tariff reduction in the last decades.

Merging the French firm-level dataset with TRAINS tariff data (collected by WTO, IDB (Inter-American Development Bank) and the World Bank), we can exploit the tariffs imposed on French products to identify the elasticity of trade flows with respect to tariffs on both margins of trade. In fact, the structure of the Douanes dataset, which specifies the export destination by firm and product, allows us to precisely match a flow with its tariff. While a few studies did it on the import side, we are the first, up to our knowledge, to examine the export side, which is made possible by the structure of the Douanes database. This feature is particularly relevant in the case of France since tariff reductions in the 1990s were less significant on the import side than on the export side.

We use a gravity equation approach and show gradually how our results are modified as we depart from the standard specification. We show that the panel dimension is crucial for the results. When we ignore it and perform an OLS pooled cross-section estimation we find that both margins are significant and that each explains half of the total effect of tariffs on trade. We show that this result is robust to the introduction of a full set of country and sector unobserved heterogeneity effects as well as time macro-shocks. However, when we take the panel dimension of the data into account (within regressions), the effect on the extensive margin disappears. Thus, more firms export where tariffs are lower (pooled OLS). However, the decrease in tariffs (within regressions) induced by the implementation of the Uruguay Round did not push more firms into exporting, while it increased the shipments of incumbent exporters. This result reveals that using the average effect of tariffs to deduct the effect of a trade liberalization episode may be highly misleading. In fact a reduction in tariffs seems to help only those firms that already export, leaving small non-exporters aside. The reason may be that small firms are not able to cover the sunk costs of exporting with the gains from tariffs reduction. Whether this is the result of the (big) magnitude of sunk costs, the (small) magnitude of the UR tariffs reduction, or other impediments to the firm growth, is an interesting issue which we leave to further research.

We address two potential biases which may affect our results. First, tariff growth rates may be endogenous. After the implementation of the UR, tariffs decreased without being completely eliminated (and without reaching a predetermined level). Hence, even if tariff reductions were induced by the UR implementation, we cannot be sure that their patterns has not been shaped by other factors. A way of controlling for this bias is to instrument the growth rate of tariffs. A good instrument for the growth rate in tariffs is its pre-policy (pre-UR) level interacted with a WTO participation dummy. In fact, at the sector-country level, the higher tariffs were before the policy event, the more they decreased. Moreover pre-UR tariff levels do not affect the subsequent French export growth rate since they are predetermined. When we instrument tariffs this way, our results do not change much, however. Second, we discuss the incidence of the omission of zero-trade flows in our results. We propose two different methodologies to deal with it: a Tobit-Honoré (1992) model and a Poisson Pseudo-Maximum Likelihood estimation proposed by Santos-Silva and Tenreyro (2006). The extensive margin coefficient becomes significant, albeit it explains less than 20% of the effect. Moreover, and in contrast with previous findings, this result is not robust to the inclusion of further control variables.

Our overall results suggest that the tariff reductions, partly due to the Uruguay Round, are responsible for increases in aggregate French exports ranging from 3.4% to 4.7% between 1993 and 2002, depending on the different econometric specifications. This expansion channels mainly through the intensive margin, the extensive margin coefficient being either insignificant or very low.

Our paper is mainly related to the empirical literature on extensive and intensive margins. Eaton, Kortum and Kramarz (2004), using French firm-level data for 1986, find that the extensive margin explains much of the variations in French firm exports over all possible destinations. Crozet and Koenig (2007), using a similar approach to ours, estimate the effect of distance on French trade flows and on both margins. They use their estimates to recover the structural parameters of Chaney's (2008) model. Bernard, Jensen, Redding and Schott (2007) (hereafter BJRS), using US disaggregated export flows for 2000, find that higher distance implies lower extensive margin but higher intensive margin. Moreover, their findings suggest that aggregate trade relationships are more influenced by their extensive margin than by their intensive one. We depart from these papers insofar as we use a panel framework that allows us to control for sector and country unobserved heterogeneity.

Surprisingly few papers have explored the impact of tariff reductions on trade growth. The first example we are aware of is Baier & Bergstrand (2001). They estimate on bilateral trade flows at the country level that the elasticity to tariffs is between -2 and -4. Using data at the product level, Haveman, Nair-Reichert & Thursby (2003) find an average elasticity of -1.6. Hence, our estimate for the reaction of total trade to tariff reductions lies in the usual range.

The decomposition of the effect into margins has been estimated by Debaere & Mostashari (2005), but for the import side and using macroeconomic product margins (number of products versus shipments per product). The closest paper to ours is Feinberg & Keane (2009) that estimate a structural model for export decision on firm level data for multinational corporations in US and Canada. They find no effect of tariffs on the export decision of firms.

This paper also contributes to the lively debate on the effect of WTO on world trade, originated by Rose (2004). Applying a standard gravity approach to a set of bilateral trade flows in long time series, Rose finds that GATT/WTO membership *does not* explain world bilateral trade volumes. Since then, many papers have explored this issue, trying to figure out what was driving these surprising findings. Felbermayr and Kohler (2007) show that, by controlling Rose's regression for zero flows, the GATT/WTO membership dummy turns out to be significant. Our results are consistent with theirs, but our main innovation with respect to previous literature consists in using tariffs instead of a dummy indicating participation in WTO. The scope of our results is different from that of previous studies since we do not consider *bilateral* trade flows and since the time-span in our analysis is much shorter. Nevertheless, our analysis is the first to address the impact of tariff reductions using a continuous variable instead of a membership dummy and relying directly on a well-defined policy change induced by GATT/WTO. Clearly, our results refer to France only. Since the Uruguay Round affected mostly developing countries, the impact on world trade may be even bigger. This analysis and its results are relevant as the discussion on the Doha Round is becoming crucial in the international policy debate. In fact, we show that the previous multilateral tariff reductions have been significantly beneficial even for a developed economy.

The remainder of the paper is organized as follows. Section 2 describes the extent of the tariff reductions induced by the Uruguay Round and the patterns of French exports between 1993 and 2002. Section 3 presents the main econometric strategy. Section 4 deals with robustness checks. Section 5 concludes.

2. Data and descriptive analysis

In this section, we first describe the Uruguay Round negotiation and report descriptive evidence to claim that it is a convenient policy change for our analysis. Then, we briefly describe the Douanes data and report preliminary evidence on the effects of gravity determinants on aggregate French exports.

2.1. The Uruguay Round

The Uruguay Round of multilateral trade negotiations, promoted by the GATT, began in 1986 and ended in 1994 with the signature of the "Marrakesh Declaration" by 117 countries. The content of the agreement includes many topics like lowering trade barriers, establishing a more effective dispute settlement system, giving new rules on trade in services, on intellectual property rights and on anti-dumping, subsidies and import safeguards. Thus, according to the signed Declaration, this negotiation *" marked a historic step towards a more balanced and integrated global trade partnership"*.

In this paper we focus on the reduction in tariffs endorsed by the UR. The agreement refers to the *bound tariffs* which are the maximum allowed level of import duties. These are the level of tariffs on a product that a country commits not to increase. In fact, once a rate has been officially bound, it can only be raised through a further negotiation with the most concerned countries and could result in a compensation for their loss of trade. In particular, during UR negotiations, each country agreed either to bind a tariff rate at a certain level or to reduce the already existing bound.[1]

However in practice many countries, expecially developed ones, do not apply their bound tariff rates but much lower duties, which are called *applied tariffs*. In this paper we measure the extent of tariffs reduction induced by the UR directly with *applied tariffs*. There are many reasons to do this. First, many developing countries committed to bound rates that were not bounded before the negotiation. Thus, for these countries, it is not possible to evaluate the effect of the UR considering *bound tariffs*. Second, even if the UR was the result of individual country commitments with each trading partner,[2] the reduction of *bound tariffs* was in most cases similar across countries and products, being in the range of 30% of the initial level. This would not allow us to have an important variation for the econometric analysis.[3]

The timing of tariff reductions agreed upon by each Member was implemented, on average, in five equal rate reductions from 1995 to 2000.[4]

We measure tariff reductions faced by the European Union using *applied ad-valorem tariffs* at the product-country-time level contained in the TRAINS-WTO database.[5] The relevant tariff data for this

[1]The documents in the WTO official web page report that "developed countries increased the number of imports whose tariff rates are 'bound' (committed and difficult to increase) from 78% of product lines to 99%. For developing countries, the increase was considerable: from 21% to 73%."

[2]There is no legal agreement that sets out the targets for tariff reductions (e.g. by what percentage they were to be cut as a result of the Uruguay Round).

[3]In fact we find that the correlation among the change in applied and in bound tariffs is positive, but not big enough to allow for a further analysis using bound tariffs.

[4]Except if it is otherwise stated in a Member's Schedule. In section 4 we use more carefully the different countries' timing of implementation of the UR.

[5]In TRAINS data set disaggregate product-line tariffs are averaged out at the correspondent sector level. The average

paper cover 147 countries, 57 manufacturing products and years ranging from 1993 to 2002.[6] Therefore the covered time period begins 2 years before the UR and ends 2 years after its implementation. Products are classified according to the French 3-digit NES (Nomenclature Économique de Synthèse). The data, however, are not available for all the country-product-year observations: therefore the panel is unbalanced.[7] In what follows we provide a detailed description of the variation of tariffs data before and after the implementation of the UR.

Figure 1 shows the change in tariffs induced by the UR plotted against their initial level in 1993-1994.[8] Each point represents the tariff set by a French trade partner on a specific sector. The left-hand side panel shows the relation for all available country-sector pairs for which the TRAINS data set reports the observation before 1994.

We observe several interesting features. First, initial tariff levels show a high dispersion, ranging between 0 to a maximum of 100%, with a median observation below 20%. Second, Figure 1 suggests a downward sloped relation between tariff changes and their initial levels. Not only tariffs decreased, but they decreased more where they were higher. Thus the initial level of tariffs may be a good predictor of their decrease. However the tariffs did not simultaneously drop to zero, nor to a predetermined level. In fact, the observations do not strictly lie on a line going through the origin. This could weaken the interpretation of UR as an exogenous policy experiment since each country strategically decreased its tariffs in order to keep the desired protection structure. This observation strongly inspires our econometric analysis. Third, there are some country-sector pairs for which tariffs actually increased. Over 2,699 country-sector tariff observations reported both for the initial and final periods, 416 increased between 1993 and 2002, suggesting that, in some cases, the UR did not actually manage to enforce their reductions.

Deeper investigation shows an interesting pattern: tariff increases mainly concern countries which do not belong to the WTO, countries in Mercosur and the "Processed Agricultural" sectors. While the first pattern is not surprising, the last two deserve some explanation. By signing the Mercosur agreement in 1991, Argentina, Brazil, Uruguay, Paraguay and Venezuela agreed on reducing tariffs

may be either simple either weighted by the country export/import share. Here we use simple average tariffs not to incorporate a further source of endogeneity, being total French exports the dependent variable in the analysis. From now on we refer to these simply as "tariffs".

[6] Agricultural sectors are excluded from the analysis since they received a particular treatment from the UR negotiations. It consists in converting import quotas (which at the time were particularly widespread in these sectors) into tariff equivalent levels and then reducing those levels by an average of 36% in the following 6 years.

[7] Table 8 (in appendix) reports the countries used in the analysis and indicates for which of them tariff data are available both before and after the UR. In C all sector are reported.

[8] Here we have either average tariff in 1993 and 1994 (when they are both available), or tariffs in 1993 or in 1994 (when they are not available for both years).

among themselves and on setting a common external tariff against third countries. Our database suggests that tariffs set by Mercosur countries against the European Union correlate among them much more at the end of the period than at the beginning. Moreover, this correlation is higher than the average one among all countries. This reveals some kind of coordination among these countries in setting tariffs against other countries, in conformity with the Mercosur agreement. The tariff increases decided by these countries may also be a consequence of that agreement itself. Finally, the average increase in tariffs in "Processed Agricultural" sectors is also noticed by previous works that discussed the impact of the UR in tariff escalation for agricultural products,[9] and concluded that a high level of protection in this sector still remains after the UR tariff concession. Once we eliminate these groups of observations, we are left with the right-hand side panel of Figure 1, where the number of increased tariffs observations decreases by 71% (from 416 to 163). We define the observations that are not in the 3 above-mentioned categories (non-WTO members, Mercosur, "Processed Agricultural" sector) as the UR sub-sample and we use the latter to run some robustness checks in section 4.

Figure 2 shows a sector-aggregate version of Figure 1 for some countries. The top panel represents two countries which are WTO-members, a less-developed and a developed one, while the bottom panel displays respectively a country that is not a WTO-member and a country that is a Mercosur-member. We notice how, for the Philippines and Australia, the reduction in tariffs is much more in line with the UR concession scheme than for Vietnam and Argentina. For the latter countries, on the contrary, most of the observations lie above the 0-line. This Figure also shows how countries set higher tariffs on different sectors. The Philippines, for example, protects sectors C (manufacture of consumers goods) to a larger extent, while Australia sets higher tariffs in FE (Preparation and spinning of textile fibres, weaving and finishing of textiles) and FG (Manufacture of knitted and crocheted fabrics and articles).

A more formal way to show the effect of the UR on world tariffs is provided by Table 1. This table reports the average tariffs before and after 1995 for the countries that adopted (or not) the UR concessions (respectively countries in WTO in 1995 and outside WTO in that year). This table displays why we can use the UR as a policy experiment: the reduction in tariffs between the last year in the data and the pre-reform year was significantly higher for the countries that formally signed the UR concession scheme than for the others. Thus, even if we cannot assume that the UR was the only cause for tariff reductions in our sample, we have a clear indication of its influence on it.

[9] Tariff escalation consists in setting higher tariffs on processed agricultural components than on their input products. Since one of the provision of the UR has been to transform import quotas in agricultural sectors into more transparent tariffs, many countries counterbalanced the lower protection in agricultural sectors with an increase in protectionism in "Processed Agricultural" ones.

2.2. French exports

We use data from the Douanes database. The latter reports import and export flows of French firms by partner country, year, firm and sector (at the 3-digit NES level).[10]

Since we want to keep track of the sectors where firms export, our margins are constructed in a non-standard way. For instance, BJRS (2007) construct their margins such that a firm exporting two different products counts twice in the extensive margin. Here, it also counts twice but in two different sectors,[11] so that our extensive margin is more narrowly defined.

The Douanes data contain all flows that are above 1,000 euros for extra-EU trade and above 200 euros for intra-EU trade. However, total reported flows must cover more than 97% of the value of the national trade.[12] Hence, we do not believe that these characteristics of the data are likely to bias the results in a systematic way. We have restricted our sample to manufacturing sectors, excluding agricultural ones, which are often treated as special cases in tariff setting and multilateral discussions. Services are also excluded since trade strategies may differ substantially from those in manufacturing sectors.[13]

The first thing to notice is that France does not export for all sectors to all destinations. Figure 3 reports for each year the proportion of flows (sector $\times$ country) that are strictly positive.[14] The share of zero-flows seems to be stable in French exports across our time-span, remaining at about 20% of the potential flows.

We now turn to the descriptive analysis of the strictly positive flows. First, in Table 2 we present some descriptive statistics on the growth rates of each margin to show that there is indeed much variation in their evolutions over time. The first column of this table shows that both margins and total trade grew over time for France. The standard deviation and the various percentiles presented here demonstrate that, beyond the average, our sample exhibits significant variation in growth rates. A considerable amount of variation remains once we control for sector and country fixed effects. This is crucial since the identification of the effects of declining tariffs, in the panel specifications, will depend on this variation. Second, to show that the main predictions of a gravity model apply to both trade

[10] This decomposition represents 60 manufacturing sectors.

[11] It counts once in each sector if the products are considered as pertaining to different sectors and once if both products are pertaining to the same sector.

[12] These are the current data requirements according to Eurostat. The actual coverage was higher for the period under analysis. We control for potential coverage variations in the empirical analysis by introducing time fixed effects. The number of exporters is understated because small flows are not reported.

[13] We keep only those firms that are considered as exporters in both Douanes and Bénéfices Réels Normaux (BRN) - which report firms' balance-sheet data.

[14] To some extent, zero flows depend on the sector disaggregation level and on the legal threshold for reporting a flow to the Douanes administration.

margins, in Figure 4 we plot the log of the total and extensive margins against GDP and distance (in log). Gravity predictions are confirmed. We conclude that our aggregated micro-data follow the usual pattern of macro trade flows.

3. Econometric strategy and results

In this section, we present the main results of the paper. In the first sub-section, we estimate the usual gravity equation. We add our main variable, tariffs, and show that its effect channels through both margins in repeated cross-sections. In the second sub-section, we exploit the panel dimension of our data and show that the effect on the extensive margin disappears.

3.1. Standard gravity regressions

We follow the decomposition used by various authors, which is hereafter reported in logs and with all the necessary subscripts:

$$x_{jts} = n_{jts} + \overline{x}_{jts}$$

where j denotes partner country,[15] s sector and t time. x_{jts} is the log of total export, n_{jts} the log of the number of exporters and $\overline{x}_{jts}$ the log of average exports per firm. Our strategy is more comparable to Crozet & Koenig (2007) than to BJRS (2007) and Mayer & Ottaviano (2007) since the latter authors use this framework only to give a broad description of the way trade margins move with GDP and distance, rather than to estimate the elasticity of exports to trade costs. They thus use aggregate data at the country level (not at the sector one) for one year, and they further decompose the intensive margin into the number of exported products (the 'product-extensive margin') and the average export flow by product and by firm (their 'intensive margin').

Let $\Lambda_{j,t,s}$ be our variable of interest (either x, n or $\overline{x}$). The previous authors relied on the following regressions:

$$\Lambda_{jts} = \beta_0 + \beta_1 d_j + \beta_2 GDP_{jt} + \beta_3 Z_j + \beta_4 Y_{jt} + \delta_s + \delta_t + \epsilon_{jts} \tag{1}$$

The main variable of interest, the proxy for variable trade costs, is d_j, which measures distance. As usual, the previous gravity equation includes the GDP of trading partners, whereas French GDP is collinear to the time fixed effects δ_t. The specification also includes a set of country-time and country-specific covariates, $Y_{j,t}$ and Z_j, respectively. The first set contains a WTO membership and

[15] Notice that it is not possible to carry out this analysis using bilateral trade between countries, unless one relies on firm-level data that are comparable across countries.

a Generalized System of Preferences (GSP) dummy.[16] The second set of controls contains a dummy for former colonies of France, a dummy for islands and another one for landlocked countries. Finally, product and time fixed effects are included.

The main problem in interpreting the distance coefficient as the elasticity of trade to variable trade costs is that one cannot control for country fixed effects along with distance. Hence, this variable may capture consumer tastes, for instance. The second problem is that distance is only a geographic proxy for trade cost. Thus, it gives only indirect evidence on the response of exports to changes in variable trade costs.

In this paper the measure of trade costs that we consider is, thus, tariffs. This allows us to obtain the elasticity of trade (and/or of its margins) on a more proper (policy) variable. The previous specification introducing tariffs becomes:

$$\Lambda_{jts} = \beta_0 + \beta_1 \theta_{jts} + \beta_2 d_j + \beta_3 GDP_{jt} + \beta_4 Z_j + \beta_5 Y_{jt} + \delta_s + \delta_t + \epsilon_{jts} \tag{2}$$

where the main variable of interest, in our analysis, is θ_{jts}, the log of $(1 + t_{jts})$,[17] where t_{jts} is the tariff applied in sector s from the European Union at time t by country j.

Using the fact that our variable trade costs measure varies along three dimensions, we can further replace all time-invariant country characteristics by country fixed-effects, δ_j:

$$\Lambda_{jts} = \gamma_0 + \gamma_1 \theta_{jts} + \gamma_2 GDP_{jt} + \gamma_3 Y_{jt} + \delta_j + \delta_s + \delta_t + \epsilon_{jts} \tag{3}$$

For a matter of comparison, we report results for each of the 3 previous specifications (without tariffs, with tariffs, with tariffs and country fixed-effects) and for each of the margins (total, extensive and intensive) in table 3. First, in columns (1) to (3), we find the usual results of the gravity equation for total trade, as well as for the intensive and extensive margins. These results are in line with expectations: partner GDP has a positive effect on French trade, while distance has a negative impact on it. Being an ex-French colony or an island increases French exports, while being landlocked decreases them. The WTO membership dummy coefficient is positive and significant, like in Mayer & Ottaviano (2007) and in Helpman *et al.* (2008). Interestingly, having a GSP agreement with France decreases

[16] GSP consists in a special unilateral tariff concession that industrialized countries grant to developing countries and that is not subject to the "Most Favored Nation" (MFN) clause of the WTO. Thus GSP exempts WTO member countries from MFN for the purpose of lowering tariffs for the least developed countries without having to do so for richer ones. Since countries joined WTO and obtained GSP status at various times, both variables are time-varying.

[17] The parameter τ_{jts} that enters multiplicatively in the usual model, e.g. Chaney (2008), is equal to $(1 + t_{jts})$ where t denotes the ad-valorem tariff.

total trade.[18]

When we introduce tariffs (column (4) to (6)) we find that the elasticity of distance does not change much, and the elasticities to tariff are negative and significant at the 1% level. The effect of tariffs on exports channels slightly more through the extensive margin than through the intensive margin. All the coefficient estimates have similar magnitudes and signs except for that on GSP, which is now positively related to the intensive margin.[19] Finally notice that, in this specification, the R^2 is higher (since we have included a significant variable) but the number of observations is definitely lower since, in the TRAINS dataset, many tariffs are not reported.

Once we control for country fixed effects, in columns (7) to (9), the tariff coefficients are still negative and significant but of a lower magnitude. The reason may be that we now control for the effect of some omitted country-level variable, which could be negatively linked with tariffs and positively linked with exports (for instance, diplomacy, tastes, preferences, ...). However, in this specification, WTO membership positively explains trade only through the extensive margin. Results in columns (7) to (9) suggest that a reduction in tariffs of 1 p.p. from 10% to 9% increases total trade by 1.5%,[20] the extensive margin by 0.8% and the intensive margin by 0.7%. These coefficients imply that the contribution of tariff reductions to the growth rate of total French exports is 3.4%.[21]

In columns (10) to (12) we control for the average tariff that each country sets toward the rest of the world (in each sector and year).[22] This variable aims to solve a potential bias in our regressions coming from trade diversion. In fact, since the liberalization considered here is a multilateral one, we expect that each country decreased its tariffs not only toward France but also toward all its other trade partners. Moreover, it is likely that French exports toward a country rise if this country increases its tariffs toward the rest of the world (as a consequence of trade diversion). Thus, our coefficient of interest may be downward-biased (in absolute value) in regressions where average tariffs toward the rest of the world are omitted. Nonetheless the coefficients of average world tariffs are nil and the results are unchanged. It seems that the trade diversion effect associated with the worldwide reduction in tariffs was small compared to the trade creation effect. From now on, the regressions including average

[18] This seems to be the case because GSP is a good proxy for less developed countries. When we run the same regression considering GDP per capita, the effect of GSP becomes positive for the total and the intensive margin and not significant for the extensive one.

[19] As before, if we include GDP per capita then the effect of GSP on total and intensive margins is positive, while it becomes insignificant for the extensive one.

[20] The effect on the total margin, when tariffs go from 10% to 9% is calculated as $[ln(1+0.09)-ln(1+0.10)]\times(-1.59) = 0.015$.

[21] This is calculated as the variation of exports induced by tariffs over the actual export variation in the data.

[22] These data come from the TRAINS data set. The different number of observations in the regressions reflect the missing data on world average tariffs in that data set.

world tariffs are relegated to D.

Reporting Table 3 is useful in order to compare our results with standard ones on gravity equations. However, our main interest lies in obtaining unbiased coefficient for tariffs. In the next sub-sections, we discuss potential biases on the tariff coefficient in the baseline regressions corresponding to the columns (7)-(9) of Table 3 and we exploit more intensively our 3-dimensional panel, as well as the timing of the UR implementation, to obtain reliable unbiased estimates.

3.2. Within regressions

The specification in equation (3) includes one-dimensional fixed effects on country, sector and time. Country-specific fixed effects control for all country characteristics that may jointly determine the average country tariffs and its imports from France. Sector fixed effects capture the factors at the sector level which may influence both tariffs and exports, for example the French level of productivity in a specific sector. Finally, time fixed effects control for all macro-shocks that can explain French exports and be spuriously correlated with tariffs. However, some potential concerns remain.

The first problem concerns the omitted variables that may explain the evolution of the levels of exports along with the levels of tariffs. Suppose, for example, that France started to export more to middle-income countries and that these are exactly the countries that reduced the most their average tariffs for a reason that is not specific to the WTO formation (for example since they were facing "integration" during the 90's). This would bias our results because of an omitted "integration" variable. The same argument holds for time-varying and sector-specific omitted variables: for example, if the French economy grew more in a specific sector (and, therefore, is exporting more in this sector) and this sector at the same time experienced a liberalization of trade due to increased demand in foreign markets. To take those biases into account, we add a full set of interactions between country and time as well as sector and time fixed-effects. Results do not change much: all three margins significantly increase as tariffs decrease, as can be seen from the first row of Panel A in Table 4.[23]

The second problem with the specification in equation (3) is that it controls for sector and country fixed-effects separately. In other words, it captures the effect of variables that influence the average setting of tariffs in a given country or in a given sector. Conversely, it does not control for the unobserved variables at the country-sector level that may explain both the setting of tariffs and the imports from France. Such unobserved variables matter in shaping the levels of tariffs set at each period by French trade partners in each sector. This term mainly captures comparative advantage.

[23] In this specific regression, time-varying country fixed effects cannot be included because the number of fixed effects becomes untractable.

One of the main concept in trade literature is that trade patterns are determined by the structure of comparative advantage. Also the way protection policies are chosen is mainly dependent on it. It is implausible that a country would set a uniform tariff to all its products, or that the same product would be protected in the same way throughout the world. It is much more likely that each country sets higher tariffs on the sectors that it wants to protect from French (and European) competition.

To take this bias into account, we exploit the panel dimension of the dataset and run within regressions where the source of variation is the change in tariff level applied to France within each country-sector line (i.e. we include country-sector fixed effects). The results are reported in Panel B of Table 4. They suggest that no margin significantly responds to a variation in tariffs. The relationship between exports and tariffs now seems to be very noisy. In fact, this estimation only relies on the effect of tariff reductions on contemporaneous export increases. However, it is highly probable that firms react only with some delays to the tariff reductions, resulting in an insignificant contemporaneous correlation.

To obtain reliable "within" results, we perform our analysis on a sub-sample of our data restricted to the observations pre-UR and post-UR. Since the implementation of the UR concessions took 5 years from 1995 to 2000, we only consider the observations in our data base for the pre-UR period (either 1993 or 1994) and those for the post-UR period (either 2001 or 2002). Our aim is to capture the medium run reaction of firms to the tariff reductions. The results for the cross-section and the within regression for the pre-post subsample are reported in Panels C and D of Table 4. The cross-section version does not change our results: the extensive margin explains around 50% of the total effect as in the previous specifications (e.g. columns (7) to (9) of Table 3). Moreover, the results are very similar to those in Panel A. In the "within" specification, instead, the extensive margin is no longer significant and the whole effect of tariff reductions within a country-sector pair channels through the change in exported quantities per firm.[24]

This is the main result of the paper. First, notice that the difference between Panels C and D of Table 4 depends exclusively on the introduction of country-sector fixed effects. Second, from an econometric perspective, this means that the bias generated from the omission of joint fixed effects is important enough to change the significance of the results. In fact, even if there are more exporters where tariffs are lower, the decrease in tariffs does not push firms into exporting.[25] The economic

[24] We also ran regressions in Panels C and D without crossed fixed effects δ_{jt} and results do not change. Thus, we can conclude that the difference between the results in Panels B and D does not come from the inclusion of δ_{jt}. It rather reveals the inappropriateness of regressing contemporaneous increases in exports on contemporaneous decreases in protection.

[25] There may be entry of some firms and exits of others. However, we show in the companion paper (Buono & Lalanne,

reasons behind this result may be numerous. First, tariffs may already be very low, so that their reduction is not sufficient to help new firms to export. This could be related to some non-linearity or to the existence of a threshold for the effect of variable trade costs on the decision to export. Second, some market imperfections may, as well, rationalize this finding (barriers to entry in domestic or foreign market, credit constraints, and so on). If this was the case a policy intervention on these markets in the aftermath of a trade liberalization (or a tariff reduction event) could be important to maximize its positive effects on the total exports of a country. Third, the discrepancy in results may be attributed to the different effect of trade barriers in the short and in the long run. Probably in the long run (cross-section) the number of exporters increases where tariffs are low, but this needs time to be achieved. Thus, in the aftermath of a liberalization, firms are only able to change the quantities they export but not to enter in a new market.[26]

To sum up, even if theoretically, decreasing variable trade costs should lead some new firms to overcome the sunk cost of exporting, this prediction is not supported by the data. It may be due to an empirical pattern that is inherent to the exporting decision (medium-run decision) or to the particular economic and legal environment faced by the French firms at home or abroad.

4. Robustness checks

In this section, we perform two important robustness checks while keeping the panel specification: endogeneity of tariff changes and omission of zero flows. We again find that the effect of tariffs on the extensive margin is either nil or very small in magnitude. Finally, we discuss the results obtained with the various specifications.

4.1. Endogeneity

In this subsection, we discuss a fundamental empirical concern in our basic specification analysis. As noticed in the previous sections, after the implementation of the UR, tariffs decreased without being completely eliminated (and without reaching a predetermined level). This means that, even if the tariff reductions were induced by the UR implementation, we cannot be sure that this was the only reason for their reductions. In other words, we cannot rule out the hypothesis that unobservable

2009) that entry of new exporters is limited.

[26] Another explanation could be that non-exporters have been disproportionately hit by the increase in import competition associated with the contemporaneous reduction of European import tariffs. However this effect should have been rather small, since EU tariffs were already very low before the UR (except for agricultural sectors, that are not included in the analysis).

joint country-sector time-varying characteristics simultaneously affected tariff formation and imports from France in our time-span.[27]

A way to control for this bias is to instrument the *growth rate of tariffs*.[28] The descriptive analysis displayed in the first section clearly indicates a variable that affects the *growth rate in tariffs*: the *pre-UR level* of tariffs.[29] Moreover, pre-UR tariff levels should not affect by any other channel the French *export growth rate* since they are predetermined. Those two considerations imply that the pre-UR tariff level is a good instrument for its (negative) growth rate in subsequent years.

This instrument was first used in the Goldberg and Pavcnik (2005) analysis of the effect of trade liberalization in Colombia on sectoral wage premia. As the authors explain in their paper, political-economy models explain the patterns of protection only in a static framework and not in a dynamic one. Thus, there is no suggestion, on the theoretical side, on the kind of instrument one should use to address this issue. Like us, Goldberg & Pavcnik (2005) have many periods of time at their disposal and show how the change in tariffs between the initial and final periods in their sample is strongly correlated with their initial levels. Moreover, they argue that, in each period, the Colombian government sets the tariff levels looking at some time-varying macroeconomic variables like the world price of coffee or the exchange rate. Thus, the authors instrument the change in tariffs with either the pre-reform level of tariffs or its interaction with coffee price or the exchange rate.

Following this approach, we estimate a regression in difference using a 2SLS procedure. As in the previous analysis, we consider the pre-post UR sub-sample.[30] In a first step, we instrument tariff changes with their pre-UR levels, i.e. their levels in 1993. Notice that, since we run our regressions considering only two periods of time (pre and post-UR), the instrument and the variable to be instrumented are both country-sector specific.

To use more extensively our specific policy change, we also use a second instrument, which is based on the countries and sectors subject to the higher UR concessions. The UR, in fact, did not apply to all countries and products simultaneously. First, as previously mentioned, our dataset contains both

[27] Here we have in mind the perspective of French trade-partners. Suppose, for example, that the pattern of comparative advantage changes through time in our sample. Then both the import from France and the way tariffs are set against French products may vary, partially, for that reason.

[28] If all the tariffs had dropped to zero after the UR, then their initial levels would have been a measure of the change in tariffs. In this case, by controlling for all the variables that determine the level of tariffs, we would have solved the problem. See Bustos (2009) for a policy change in which this scenario happens.

[29] Figure 1 illustrates the relation between the initial level of tariffs and their changes. This pattern hold if we consider the relation between the log of the initial level of tariffs and their growth rates between 1993 and 2002.

[30] We also tried a specification regressing the bi-annual growth rate of export over the bi-annual growth rate of tariffs, thus using all the time-variation in our data. That specification, however, provides insignificant results for the same reason as the regression in level. For this reason we do not report them.

countries that participated in the multilateral negotiations and countries that did not. Moreover, some countries joined the WTO after the entry into force of the Uruguay Round concessions. For these countries the tariff reduction path was postponed depending on the year of accession. Hence, we procede in the following way: we instrument the tariff growth rate (with the pre-UR tariff level) only for the countries which participated in the negotiations before 1995. We use as an instrument a variable derived from the interaction of a WTO-participation dummy and the pre-UR tariff level for each country and sector, in order to isolate the exogenous component of the variation in tariffs that is closely related to the implementation of the UR concessions.

The regression that we run is the following:

$$\Delta\Lambda_{j,s} = \beta_0 + \beta_1 \widehat{\Delta\theta_{j,s}} + \delta_j + \delta_s + \epsilon_{j,s} \tag{4}$$

where, at the first stage of the regression $\Delta\theta_{j,s}$ is instrumented with either $\theta_{j,s}^{1993}$ (IV1), the pre-UR level of tariffs,[31] or $\theta_{j,s}^{1993} \times WTO_j$ (IV2), where WTO_j is a dummy equal to 1 when a country is a member of the GATT/WTO at the beginning of the period.

The results for regression (4) performed with OLS and 2SLS are reported in Panels A-C of Table 5.[32] The results in Panel A refer to the OLS regression for the differentiated model. First, notice that the coefficients of this regression coincide with those of Panel D in Table 4. Second, note that we run regressions with only two periods: thus, both methods (adding fixed effects in level or differentiating), yield exactly the same results. Column (2) in Panel A suggests that a reduction in tariffs by 1 percentage point, starting from 10%, increases total French exports by 1.82%. This increase is completely explained by the movement in the intensive margin, the extensive margin being insignificant.

In the second round of regressions, we instrument the difference in tariffs with their initial levels before the UR. As shown in column (1), which reports the result of the first-stage regression, the initial level of tariffs significantly impacts their variations. The coefficient is negative and the R^2 is very high, as expected: we already noticed that the sector-country pairs that had higher tariffs in 1993 are those who experienced the largest cuts. Moreover, the F-statistic of the first stage (reported in column (6)) is much higher than 10, suggesting that our instrument is not weak. At the second-stage, we obtain negative estimates for the tariff elasticities when instrumenting by IV1. The magnitude of the

[31] The level in 1994 is used when the information relating to 1993 is not available in the dataset.

[32] Notice that in these regressions the number of observations is 2526 while, in the descriptive part, we obtained Figure 1 using 2699 observations. The difference in the number of observations arises from the fact that 173 sector-country couples display 0-flows in the French export data (i.e. no firm exports in those sectors and to those countries and thus the dependent observation in regression (4) is not defined for those 173 observations).

coefficient estimates is slightly higher than in the previous regressions. However the tariff coefficient, like in Panel A, is significant for the intensive margin only. A reduction in tariffs by 1 percentage point, starting from a level of 10%, increases the average exports of French products by 2.21% compared with the previous 1.82%. The estimates are not significantly different. Coefficients estimated using the alternative instrument IV2, reported in Panel C of table 5, confirm the results.

4.2. Zero flows

In the previous analysis, we considered positive flows only, since zero flows cannot be included in a log-log specification. Moreover, the intensive margin is not defined for sector-country pairs without trade. Doing so, we implicitely assumed that export flows were strictly positive. This assumption, however, is likely to downward bias our estimates due to the usual censoring problem. Recently, many papers argued that estimating the gravity equation without taking zero flows into account can lead to biased results.[33]

In the literature, this censoring problem is usually addressed using a Tobit model. However, to apply this model to our panel gravity equation, we must solve three main issues. First, to disentangle the effect of tariffs on both margins with a Tobit model, we must apply a proper decomposition since the intensive margin exists only conditionally on the positiveness of trade flows.[34] Second, we need to transform our dependent variables to include zero flows in a log-log specification. Third, since our specification includes fixed effects, we must take care of the usual incidental parameter problem affecting fixed-effect non-linear models like the Tobit model.

To address the first issue, we apply the following decomposition of elasticities:

$$\begin{aligned} \frac{\partial \mathbb{E}[x|Z]}{\partial \theta} = & \quad \frac{\partial \mathbb{E}[n|Z]}{\partial \theta} && \text{Extensive margin} \\ & + \frac{\partial \mathbb{E}[\overline{x}|Z, X>0]\mathbb{P}[X>0]}{\partial \theta} && \text{Intensive margin} \end{aligned}$$

where x denotes the log of the total flow, Z the vector of covariates and $\mathbb{P}(X > 0)$ the probability that the flow is not nil.[35] Estimating a Tobit model on the total and extensive margins allows us to obtain the full decomposition of the elasticity of trade to tariffs as described above. Therefore, our

[33] Felbermayr & Kohler (2007), by allowing for zero flows, overturned the results of Rose (2004) on the absence of effect of the WTO membership on bilateral trade; Santos-Silva and Tenreyro (2006) show that the elasticity of trade to distance changes dramatically once zero flows are taken into account. Helpman *et al.* (2008) argue that omitting zero flows results in biased estimation of gravity equations.

[34] If the trade flow is nil, then the number of exporters is nil and the intensive margin is undefined.

[35] This probability equals the actual proportion of non-zero trade flows in our data base, which is around 80%.

basic specification is:

$$\Lambda^*_{jts} = \beta_0 + \beta_1 \theta_{jts} + \delta_{jt} + \delta_{st} + \delta_{js} + \epsilon_{jts}$$
$$\Lambda_{jts} = \mathbb{1}[\Lambda^*_{jts} > 0]$$

where Λ denotes the total margin $x' = \ln(1 + X)$ or the extensive margin $n' = \ln(1 + N)$. The definition of the margins has been slightly modified[36] to include zero flows in the log-log gravity. This is commonly used in the literature to perform a Tobit analysis with a log-log specification. We use this methodology to obtain results that are comparable to the within-OLS specification.[37]

Finally, country-sector fixed effects are necessary in our framework and notably influence the results. On the other hand, the Tobit model with fixed effects provides biased coefficients, due to the incidental parameter problem. We address this problem using the estimator suggested by Honoré (1992). The idea is to consider that the variation in the latent variable has a zero mean conditional on the variation of the dependent variable. This does not require any distributional assumption on the disturbances nor homoscedasticity, since the estimator is semi-parametric.

The estimates derived from this specification, reported in columns (1) and (2) of Table 6, are of the expected signs and of a magnitude in line with the OLS estimates despite their low significances.[38] The coefficient estimates for the total margin are insignificantly different from the OLS estimates. The coefficient estimates for the extensive margin are hardly significant, suggesting a role for zero flows in channeling the growth of the extensive margin in response to tariff cuts. This is more accurately showed by the marginal effects of tariffs, which are obtained using the formula in Greene (1999) and Honoré (2008). The elasticity of the total margin with respect to tariff is -2.78, which can be decomposed in -0.30 for the extensive margin and -2.48 for the intensive margin.

We conclude that the results obtained by introducing zero flows are not very different from our main within-OLS regressions of section 3. At our aggregation level, the bias induced by ignoring zero flows is limited:[39] the effect of tariffs on the extensive margin is very low, even after controlling for zero flows.

However, the Tobit specification may not be the best way to assess the effect of zero flows on our results. As we already noticed, the threshold for censoring is obtained through an artefact (using

[36] We underline this by calling the margins x' and n'.

[37] To check how the new definition of the margins affect the results, we performed the previous analysis using x' and n'. The results are unchanged. We also performed this same Tobit analysis using an alternative specification for the dependent variable: we directly took the variable in logs for strictly positive flows and specify the censoring threshold to be equal to the lowest value in the sample. The results are unchanged.

[38] Note that the number of observations is now 5,398, that is twice 2,699 (=2,526 positive flows + 173 zero flows).

[39] This is in line with the results obtained by Helpman *et al.* (2008).

$\ln(1+X)$ or defining the threshold as the lowest value in the sample). But, even more worrisome, the estimation of gravity equations in logs heavily rests on the homoskedasticity assumption, which may not be satisfied. As an alternative, we follow Santos Silva & Tenreyro (2006) who recognized the failure of the homoskedasticity assumption in gravity models in logs.[40] They suggest to handle the problem by using Poisson Pseudo-Maximum Likelihood (PPML) estimation. Following them, we estimate this Poisson model:

$$\Gamma_{jts} = \exp\left(\beta_0 + \beta_1 \theta_{jts} + \delta_{jt} + \delta_{st} + \delta_{js} + \epsilon_{jts}\right)$$

where Γ denotes the total margin X (in level) or the extensive margin N (in level).

Notice that we simultaneously solve the above-mentioned concerns: fixed effects are not a problem in this context since they can easily be conditioned out of the likelihood, zero flows are included in the regression without resorting to an artefact since we do not use a log specification, heteroskedasticity in the error term is taken into account.[41]

The results are presented in columns (3) and (4) of Table 6. The elasticities obtained are slightly higher than those in the within-OLS benchmark regression. The main insight of this specification is the highly significant coefficient on the extensive margin. However, the extensive margin accounts for at most 19% of the total effect. It is hard to state if this result comes from the inclusion of zero flows or from the new conditional variance assumption on the residuals. The Tobit specification was performed as an intermediate step between the within OLS and the Poisson specifications. We noticed that zero flows did not change significantly the extensive margin coefficient. Here, instead, this margin becomes significant in the fourth column of Table 6. Although we cannot be sure of what is behind this result, we can consider these coefficient estimates as the upper bound of the effect of tariff on trade flows, both on the total and extensive margin. Moreover, the significance of the estimates on the extensive margin does not seem to be robust (see Table 11 in appendix).

[40] Assume that the true model is: $\Gamma_{jts} = \exp(\alpha Z_{jts})\mu_{jts}$ where α is the vector of parameters to be estimated, Z_{jts} the vector of explanatory variables in logs and μ_{jts} the error term. The error term is assumed to be centered and heteroskedastic: $\mathbb{E}[\mu_{jts}|Z_{jts}] = 1$ and $\mathbb{V}[\mu_{jts}|Z_{jts}] = f(Z_{jts})$. If the error term follows a log-normal distribution, then the error term of the log equation is given by:$\epsilon_{jts} = \ln(\mu_{jts})$ with $\mathbb{E}[\epsilon_{jts}|Z_{jts}] = -\frac{1}{2}\ln(1+f(Z_{jts})^2)$. Thus, estimating the equation in logs leads to an omitted-variable bias.

[41] Another way to deal with zero flows is suggested by Helpman *et al.* (2008). Their aim is to identify the effects of their explanatory variable on the intensive margin of trade relying on bilateral trade flows. They estimate a bilateral gravity equation adding the estimated number of exporters among regressors. To do so, they use a Heckman selection model. In this way, they consider zero flows as arising from the decision of firms not to export. However, this methodology does not take heteroskedasticity into account. In our exercise, we do not need to implement this methodology since we know the actual number of exporters, thus we face a censoring problem rather than an incidental truncation one.

4.3. Other robustness checks

The TRAINS dataset provides a significant amount of tariffs, albeit there are a number of missing country-year-sector values. This sample selection may be endogenous. In fact, the selection is likely to be driven by factors also affecting the size of the flows between countries.For instance, less developed countries may have more missing tariffs because of lower resources devoted to their statistical systems. If this were the case, the dataset would be subject to incidental truncation. If tariffs are not reported for small flows, everything else being equal (including the values of tariffs), then the selection of observations leads to underestimating the elasticity of trade with respect to tariffs.

We tried to address this bias using a Heckman selection model. To identify the elasticities without relying on the specific structure of the error term, we need to introduce an exclusion variable in the selection equation. Here, we consider the Generalized System of Preferences (GSP) dummy. This variable is likely to affect the probability of reporting tariffs applied to France positively. First, since the country is involved in an official trade agreement with the European Union, we expect it to be more careful in reporting tariffs. Second, since GSP programs are not reciprocal, there is no reason to expect France to export more to these countries once tariffs, the level of development (as proxied by country-year fixed effects) and the WTO membership (also proxied by country-year fixed-effects) are controlled for. However, the results do not show any evidence of sample selection since the inverse Mills ratio turns out to be insignificant.[42] Sample selection may have no effect on the estimates since we already control for a significant amount of heterogeneity. But we cannot rule out that the weakness of our identification variable drives the insignificance of the Mills ratio.

We performed other robustness checks by replicating the results on the following sub-samples: withdrawing the European Union data (since its tariffs did not change before and after the UR, while their imports did); considering only the *UR-subset* (as defined in the descriptive section) to focus exclusively on the countries and sectors affected by the UR concessions; excluding the processed-food sector; excluding the weapon sector (which is likely to be misreported). The previous results hold whatever the sub-sample taken into account. We, thus, conclude that, although there are more exporters in destination-sectors where tariffs are lower, decreasing tariffs caused by the implementation of the Uruguay Round did not push firms into exporting, but induced incumbent exporters to increase their flows to those destination-sectors associated with the steepest drops in tariffs.

[42] Results are available upon request.

4.4. Synthesis of the results

Table 7 summarizes the elasticities to tariffs derived from the various econometric specifications used in the paper. By ignoring the panel dimension of our dataset, we obtain that 50% of the effect of tariff reductions channels through the extensive margin.[43] However, the results dramatically change when we control for unobserved heterogeneity. The magnitude of the total elasticity is then a bit lower, but almost all the effect channels through the intensive margin, the extensive margin being insignificant in the benchmark within-OLS regression.

The main insight of our empirical analysis suggests that, while there are more exporters on average where tariffs are low, the number of exporters does not react to a reduction in tariffs. Note that our 3-dimensional panel, as well as our policy experiment with tariffs decreasing over time in each sector, are essential to obtain this result.[44]

Table 7 also reports, for each margin, the share of the French export growth at current prices that can be attributed to tariff changes. According to our estimations, tariffs are a key variable, as they contribute to a range between 3.4% and 4.7% of the total French export growth between 1993 and 2002. Interestingly, when we split the effect into both margins, we find that tariffs have a much larger impact on average sales per firm, explaining between 12% and 13.3% of the intensive margin growth. Our results suggest that tariffs affect the number of new exporters only slightly. Since some studies find virtuous effects of being an exporter on firm performance, this issue deserves further research to assess the reason why the number of exporters reacts so little to significant reductions in worldwide tariffs, and whether this result is specific to France.

5. Conclusion

In this paper, we study the response of French export margins to the tariff reductions implemented after the Uruguay Round in 1995. Tariffs are shown to have a noticeable impact on exports: the estimated elasticity ranges between -1.78 and -2.78 and we can explain up to 4.7% of the total French export growth between 1993 and 2002. The breaking down into margins reveals that the tariff reductions due to the implementation of the Uruguay Round concessions increased aggregate exports mainly by inducing incumbent exporters to ship higher volumes to their trade partners and for the products for which tariffs decreased. The effect on the extensive margin is smaller and not robust.

[43] A similar percentage is found by Eaton, Kortum & Kramarz (2004) who consider the effect of distance on the exports of a cross-section of French firms.

[44] In a cross section or in a pooled cross section, one only captures the average effect. In a time-series framework, one is not able to distinguish between the effect of tariffs and that of macro-shocks. Only with a panel one can extrapolate the effect of tariff decreases on the propensity to export.

Our conclusions are robust to many specifications, which are meant to capture potential biases in the baseline regression (endogeneity, zero flows, biases stemming from the transformation of a level regression into a log one in the presence of heteroskedasticity). Our findings also suggest that WTO has an influential role in affecting world trade. In the lively debate on this issue, we provide evidence by using a continuous variable which varies as a consequence of a policy change event.

From a policy viewpoint, our results can be interpreted in two distinct ways. On the one hand, they suggest that policies aimed at reducing variable costs to trade only impact the existing exporters. Such policies would not permit new firms to overcome the fixed costs of exporting and induce higher competition in the destination markets. This finding may have various reasons: these variable costs are too small to matter for the firm decision, the entry into a new export market is mainly a strategic and intertemporal issue, and so on. On the other hand, one can think of this result as coming from frictions in some market. For example, the variable trade costs reduction may have not resulted in new exporters because the destination markets exhibit significant barriers to entry, or because the potential entrants are credit constrained and cannot borrow to pay the sunk cost. Discriminating between those diagnoses requires further work at the firm level.

References

[1] Baier, S.L., Bergstrand, J.H., 2001. The Growth of World Trade: Tariffs, Transport Costs, and Income Similarity. Journal of International Economics 53, 1–27.

[2] Bernard, A., Jensen, J.B., Redding, S., Schott, P., 2007. Firms in International Trade. Journal of Economic Perspectives 21, 105–130.

[3] Buono, I., Lalanne, G., 2009. La réaction des entreprises françaises à la baisse des tarifs douaniers étrangers. mimeo.

[4] Bustos, P., 2009. Multilateral Trade Liberalization, Exports and Technology Upgrading: Evidence on the Impact of Mercosur on Argentinean Firms. American Economic Review, forthcoming.

[5] Chaney, T., 2008. Distorted Gravity: The Intensive and the Extensive Margins of International Trade. American Economic Review 98, 1707–1721.

[6] Crozet, M., Koenig, P., 2007. Structural Gravity Equations with Intensive and Extensive Margins. EconomiX Working Paper 2007-36.

[7] Debaere, P., Mostashari, S., 2005. Do Tariffs Matter for the Extensive Margin of International Trade? An Empirical Analysis. CEPR Discussion Paper 5260.

[8] Eaton, J., Eslava, M., Kugler, M., Tybout, J., 2008. Exports Dynamics in Colombia: Firm-Level Evidence. NBER Working Paper 13531.

[9] Eaton, J., Kortum, S., Kramarz, F., 2004. Dissecting Trade: Firms, Industries and Export Destinations. American Economic Review 94, 150–154.

[10] Feinberg, S.E., Keane, M.P., 2009. Tariff Effects on MNC Decisions to Engage in Intra-Firm and Arm's-Length Trade. Canadian Journal of Economics 42, 900–929.

[11] Felbermayr, G., Kohler, W., 2007. Does WTO Membership make a Difference at the Extensive Margin of World Trade? CESIFO Working Paper 1898.

[12] Goldberg, P.K., Pavcnik, N., 2005. Trade, Wages and the Political Economy of Trade Protection: Evidence from the Colombian Trade Reforms. Journal of International Economics 66, 75–105.

[13] Greene, W., 1999. Marginal Effects in the Censored Regression Model. Economics Letters 64, 43–49.

[14] Haveman, J.D., Nair-Reichert, U., Thursby, J.G., 2003. How Effective Are Trade Barriers? An Empirical Analysis of Trade Reduction, Diversion, and Compression. Review of Economics and Statistics 85, 480–485.

[15] Helpman, E., Melitz, M., Rubinstein, Y., 2008. Estimating Trade Flows: Trading Partners and Trading Volumes. Quarterly Journal of Economics 123, 441–487.

[16] Honoré, B.E., 1992. Trimmed LAD and Least Squares Estimation of Truncated and Censored Regression Models with Fixed Effects. Econometrica 60, 533–565.

[17] Honoré, B.E., 2008. On Marginal Effects in Semiparametric Censored Regression Models. mimeo.

[18] Mayer, T. and Ottaviano, G., 2007. The Happy Few: the Internationalisation of European Firms. Bruegel Blueprint Series.

[19] Melitz, M., 2003. The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity. Econometrica 71, 1695–1725.

[20] Rose, A., 2004. Do We Really Know That the WTO Increases Trade?. American Economic Review 94, 98–114.

[21] Santos Silva, J.M.C., Tenreyro, S., 2006. The Log of Gravity. Review of Economics and Statistics 88, 641–658.

[22] Santos Silva, J.M.C., Tenreyro, S., 2008. Complete-Separation in Poisson Regression. mimeo.

[23] Santos Silva, J.M.C., Tenreyro, S., 2009. Trading Partners and Trading Volumes: implementing the Helpman Melitz Rubinstein Model Empirically. Center for Economic Performance (LSE) Discussion Paper 0935.

A. Countries' specific variables

Country specific variables come from the Rose database, except the GDP, which is from the Penn World Tables. In particular, we use the following variables as controls:

- Trade partner's GDP in logarithm (ln GDP)
- Distance of trade partner capital from Paris in logarithm (ln dist)
- A binary variable equal to unity if the trade partner is a GATT or WTO member (WTO) and to zero otherwise
- A binary variable equal to unity if the trade partner is a French former colony (Colony) and to zero otherwise
- A binary variable equal to unity if the trade partner is an island (Island) and to zero otherwise
- A binary variable equal to unity if the trade partner is landlocked (landlocked) and to zero otherwise
- A binary variable equal to unity if the trade partner benefits from a Generalyzed System of Preferences (GSP) and to zero otherwise

B. List of countries

In table 8 we report all the countries in the analysis and, for each of them, we specify a "Tariff Coverage" indicator, which is set to YES if the information on tariffs before and after the Uruguay Round is available for that country, and set to NO if tariffs data are available after the Uruguay Round only. When nothing is specified, it means that we do not have any information on tariffs. However, the country is a French commercial partner, since export flows at least for some firms in some products are different from 0.

C. List of sectors

All the 3-digit NES manufacturing sectors included in the analysis:

Production, processing and preserving of meat and meat products (BA);Manufacture of dairy products (BB); Manufacture of beverages(BC); Manufacture of grain mill products, starches and starch products, prepared animal feeds (BD); Manufacture of other food products (BE); Manufacture of tobacco products (BF); Manufacture of wearing apparel; dressing and dyeing of fur (CA); Manufacture of leather and leather products and footwear (CB); Publishing, printing and reproduction of recorded media (CC); Manufacture of pharmaceuticals, medicinal chemicals and botanical products (CD); Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations (CE); Manufacture of furniture (CF); Manufacture of jewellery and musical instruments (CG); Manufacture of sports goods, games, toys and others n.e.c. (CH); Manufacture of domestic appliances (CI); Manufacture of television and radio receivers, sound or video recording or reproducing apparatus and associated goods (CJ); Manufacture of optical instruments, photographic equipment, watches and clocks (CK);Manufacture of motor vehicles, bodies and trailers (DA); Manufacture of parts and accessories for motor vehicles (DB); Building and repairing of ships and boats (EA); Manufacture of railway and tramway locomotives and rolling stock (EB); Manufacture of aircraft and spacecraft (EC); Manufacture of motorcycles, bicycles and other transport equipment n.e.c. (ED); Manufacture of structural metal products (EE); Manufacture of tanks, reservoirs, containers of metal ; manufacture of central heating radiators and boilers and steam generators (EF); Manufacture of machinery for the production and use of mechanical power (EG); Manufacture of other general purpose machinery (EH); Manufacture of agricultural and forestry machinery (EI); Manufacture of machine tools (EJ); Manufacture of other special purpose machinery (EK); Manufacture of weapons and ammunition (EL); Manufacture of office machinery and computers (EM); Manufacture of electric motors, generators and transformers (EN); Manufacture of television and radio transmitters and apparatus for line telephony and line telegraphy (EO); Manufacture of medical and surgical equipment and orthopaedic appliances (EP); Manufacture of industrial process control equipment, instruments and appliances for measuring, checking, testing, navigating (EQ); Mining of metal ores (FA); Other mining and quarrying (FB); Manufacture of glass and glass products (FC); Manufacture of ceramic goods, products for construction purposes and other non-metallic mineral products (FD); Preparation and spinning of textile fibres, weaving and finishing of textiles (FE); Manufacture of textile articles, except apparel (FF); Manufacture of knitted and crocheted fabrics and articles (FG); Manufacture of wood and wood products (FH); Manufacture of pulp, paper and paperboard (FI); Manufacture of articles of paper and paperboard (FJ); Manufacture of basic inorganic chemicals (FK); Manufacture of basic organic chemicals (FL); Manufacture of agro-chemical products, paints and other chemical products (FM); Manufacture of man-made fibres (FN); Manufacture of rubber products (FO); Manufacture of plastic products (FP); First processing of iron and steel (FQ); Manufacture of basic precious and non-ferrous metals (FR); Manufacture of fabricated metal products (FU); Manufacture of electrical equipments and apparatus n.e.c. (FW); Manufacture of electronic valves, tubes and other electronic components (FX).

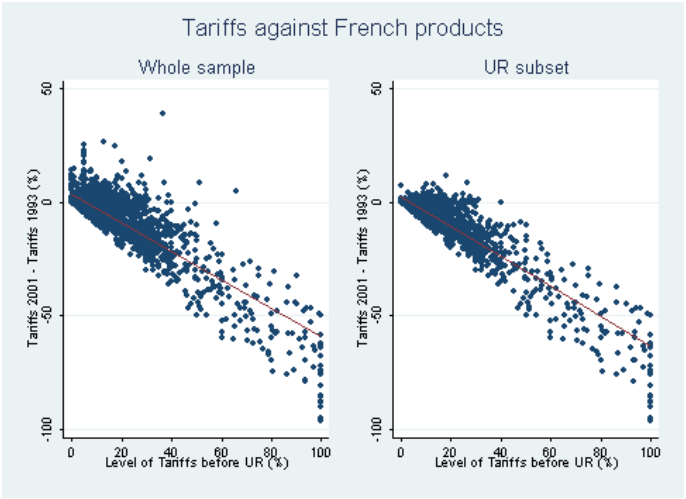
D. Other regressions

We report Tables 9, 10, and 11 (corresponding respectively to Tables 4, 5, and 6). These regressions control for the average world tariffs.[45] There are three major observations to report. First, our main result on the asymmetric effect of tariffs in the cross-section and in the panel, is confirmed here. Second, as we already noticed, the effect on total exports may be downward biased (in absolute terms) when countries total openness is not taken into account. This is confirmed here, since total export coefficients are bigger than in the correspondent regressions in the main text. Third, average world tariffs are most of the time insignificant, signalling the absence of trade diversion. However, the effect on the extensive margin is sometimes negative, although only marginally and very low. A plausible interpretation is that, by reducing average wordwide tariffs, a country signals future opening (also towards the EU), inducing the entry of French firms in these markets for strategic motives.

[45]The number of observations is different since average world tariffs are not available for all countries, sectors and years.

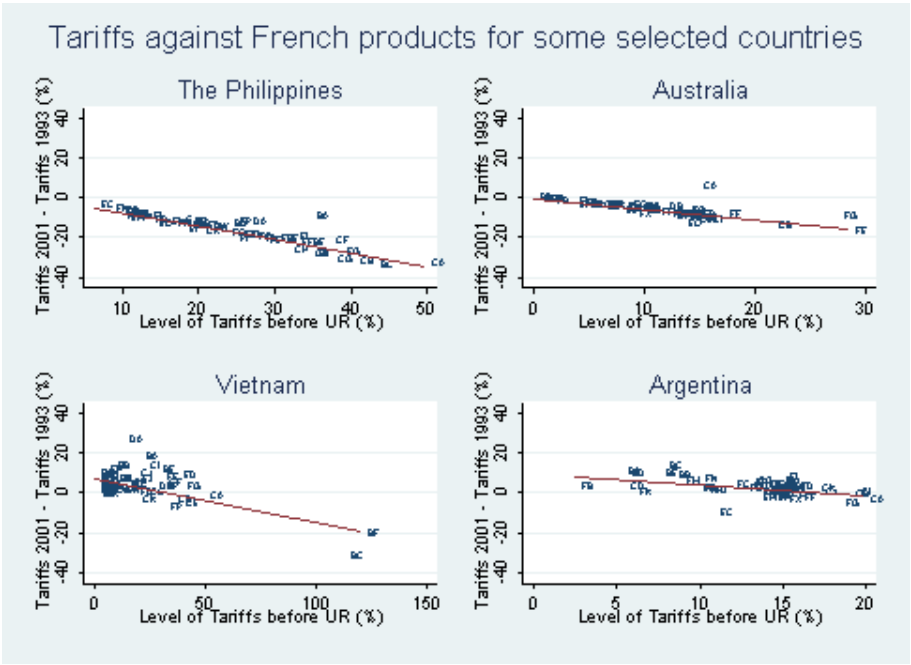
Figures

Figure 1: Reduction of tariffs as a function of their initial levels



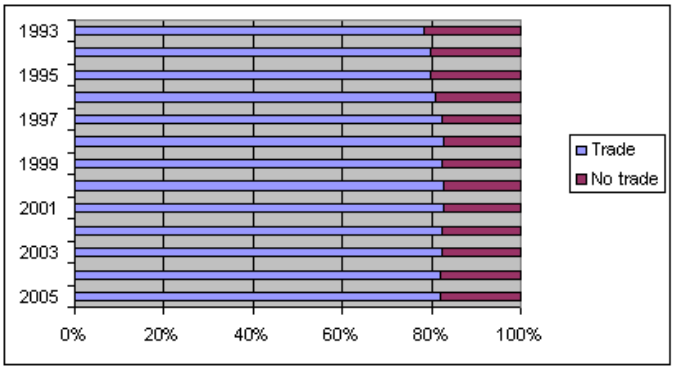
Source: TRAINS-WTO and authors' calculations.
Notes: The UR subset excludes observations for non-WTO member countries, countries belonging to Mercosur and "Processed Agricultural" sectors.

Figure 2: Reduction in tariffs as a function of their initial levels for some selected countries



Source: TRAINS-WTO and authors' calculations.
Notes: The Philippines, Australia and Argentina are WTO members. Argentina is also a member of the Mercosur. Vietnam has not participated in the Uruguay Round.

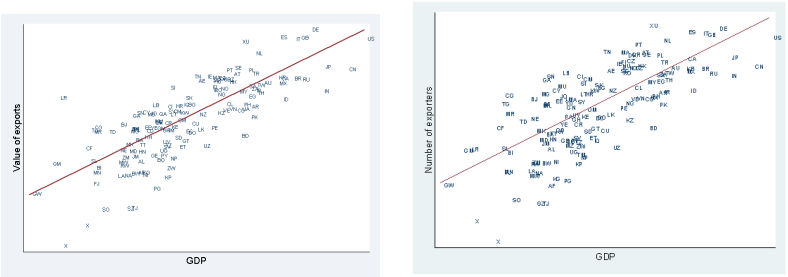
Figure 3: Macroeconomic extensive margin



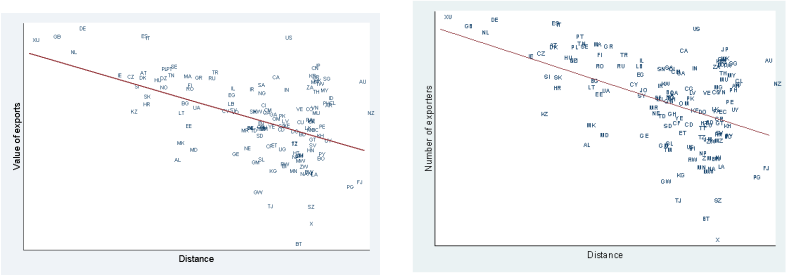
Source: Douanes data and authors' calculations.

Figure 4: Total and extensive margins, GDP and distance (2002)

GDP



Distance



Source: Douanes data, Penn World Tables, Andrew Rose's data and authors' calculations.

Tables

Table 1: Average tariffs by country-groups before and after the UR

	Non WTO countries (A)	WTO countries (B)	(A)-(B)
Before UR (1)	17.57	14.38	3.19**
	(16.70)	(20.11)	(1.47)
After UR (2)	16.48	8.01	8.47***
	(12.55)	(9.53)	(0.72)
(1)-(2)	1.09	6.37***	-5.28***
	(1.49)	(0.44)	(0.11)

Source: TRAINS-WTO and authors' calculations.
Notes: Tariffs for non WTO members have decreased by 1.09 percentage point but this number is not significant. For WTO members, tariffs have decreased by 6.37 p.p. and it is significant. Tariffs in WTO members decreased significantly more in WTO members than in non WTO members.

Table 2: Growth rates of each margin between 1994 and 2001: Descriptive statistics

Margin	Average	s.d.	s.d. with FE	10th percentile	Median	90th percentile
Total	55%	1.25	1.16	-64%	48%	192%
Extensive	23%	0.45	0.39	-22%	18%	75%
Intensive	33%	1.11	1.05	-80%	28%	151%

Based on 2526 observations. s.d. = standard deviation. FE: fixed effects for the destination country and the sector.

Table 3: Gravity equations with tariffs and control variables

Dependent variable: Log of each trade margin

Margin	Total (1)	Extensive (2)	Intensive (3)	Total (4)	Extensive (5)	Intensive (6)	Total (7)	Extensive (8)	Intensive (9)	Total (10)	Extensive (11)	Intensive (12)
ln(tariffs)				**-2.87*** **	**-1.73*** **	**-1.13*** **	**-1.59*** **	**-0.85*** **	**-0.73*** **	**-1.61*** **	**-0.83*** **	**-0.78*** **
				(0.13)	**(0.07)**	**(0.09)**	**(0.12)**	**(0.06)**	**(0.10)**	**(0.18)**	**(0.09)**	**(0.15)**
ln(GDP)	0.98***	0.54***	0.44***	1.02***	0.55***	0.46***	1.14***	0.63***	0.51***	1.12***	0.61***	0.51***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.13)	(0.05)	(0.11)	(0.13)	(0.06)	(0.11)
ln(distance)	-1.12***	-0.71***	-0.40***	-1.05***	-0.65***	-0.40***						
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)						
WTO	1.01***	0.83***	0.17***	1.07***	0.89***	0.17***	0.32***	0.22***	0.09	0.26***	0.20***	0.06
	(0.01)	(0.01)	(0.01)	(0.03)	(0.01)	(0.02)	(0.08)	(0.04)	(0.06)	(0.10)	(0.04)	(0.08)
GSP	-0.20***	-0.18***	-0.02***	-0.20***	-0.27***	0.06***						
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)						
Colony	1.32***	1.20***	0.11***	1.65***	1.44***	0.21***						
	(0.01)	(0.01)	(0.01)	(0.03)	(0.01)	(0.02)						
Island	0.90***	0.62***	0.28***	0.62***	0.37***	0.24***						
	(0.02)	(0.01)	(0.01)	(0.03)	(0.02)	(0.02)						
Landlocked	-0.98***	-0.66***	-0.32***	-0.91***	-0.62***	-0.28***						
	(0.02)	(0.01)	(0.01)	(0.03)	(0.01)	(0.02)						
ln(average world tariffs)										0.01	-0.00	0.01
										(0.02)	(0.01)	(0.02)
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Product FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES
R^2	0.66	0.73	0.48	0.74	0.80	0.57	0.83	0.90	0.60	0.81	0.90	0.60
N obs	60,359	60,359	60,359	27,057	27,057	27,057	30,189	30,189	30,189	29,090	29,090	29,090

***: significant at the 1% level; **: significant at the 5% level; *: significant at the 10% level.

FE: Fixed Effects. Robust White standard errors are the ones reported in parentheses. The intercept and the fixed effects are not reported.

Table 4: Gravity equations with tariffs: within regressions

Dependent variable: Log of each trade margin

	Total	Extensive	Intensive	N. of observations
Panel A: Specification with Country-Year and Sector-Year FE (not within), whole sample				
ln(tariffs)	-2.05***	-1.08***	-0.97***	30,189
	(0.11)	(0.04)	(0.09)	
R^2	0.90	0.97	0.71	
Panel B: Specification with Sector-Year and Country-Sector FE (within), whole sample				
ln(tariffs)	-0.13	0.03	-0.16	30,189
	(0.12)	(0.04)	(0.10)	
R^2	0.94	0.97	0.84	
Panel C: Specification with Country-Year and Sector-Year FE (not within), pre and post UR sample				
ln(tariffs)	-1.79 ***	-0.94***	-0.85***	5,052
	(0.30)	(0.18)	(0.27)	
R^2	0.82	0.90	0.64	
Panel D: Specification with Country-Sector, Country-Year and Sector-Year FE (within), pre and post UR sample				
ln(tariffs)	-1.99***	-0.18	-1.81***	5,052
	(0.47)	(0.15)	(0.43)	
R^2	0.94	0.98	0.84	

***: significant at the 1% level; **: significant at the 5% level; *: significant at the 10% level.

FE: Fixed Effects. Robust White standard errors are the ones reported in parentheses. The intercept and the fixed effects are not reported.

Table 5: Gravity equations with tariffs: models in difference, IV regressions

	1st stage (1)	Total (2)	Extensive (3)	Intensive (4)	No obs (5)	1st-stage F (6)
Panel A: OLS, eq 4						
ln(tariffs)		-1.99***	-0.18	-1.81***	2,526	
		(0.65)	(0.17)	(0.60)		
R^2		0.14	0.27	0.10		
Panel B: 2SLS, eq 4**, IV1**						
ln(tariffs)	-0.56***	-2.56***	-0.22	-2.43**	2,526	F=140***
	(0.012)	(1.05)	(0.23)	(0.99)		
R^2	0.86	0.15	0.27	0.10		
Panel C: 2SLS, eq 4**, IV2**						
ln(tariffs)	-0.52***	-1.78*	0.19	-1.97**	2,526	F=100***
	(0.27)	(1.06)	(0.99)	(0.95)		
R^2	0.81	0.15	0.27	0.10		

***: significant at the 1% level; **: significant at the 5% level; *: significant at the 10% level.

All regressions include country and sector dummies

Robust White standard errors are the ones reported in parentheses. The intercept and the fixed effects are not reported.

Table 6: Tobit and Poisson specifications

	Tobit		Poisson	
	Total Margin (1)	Extensive margin (2)	Total Margin (3)	Extensive margin (4)
ln(tariff)	-2.97**	-0.31*	-2.31***	-0.44***
	(1.41)	(0.18)	(0.00)	(0.11)
$Product-Country\ FE$	YES	YES	YES	YES
$Country-Year\ FE$	YES	YES	YES	YES
$Product-Year\ FE$	YES	YES	YES	YES
$Number\ observations$	5,398	5,398	5,398	5,398

*: significant at the 10% level, **: significant at the 5% level, ***: significant at the 1% level. FE = fixed effects.

Table 7: Summary of the main results : elasticity to tariffs

	Total	Extensive	Intensive	Number of observations
OLS (Panel C, Table 4)	-1.79***	-0.94***	-0.85***	5,052
OLS-within (Panel A, Table 5)	-1.99***	-0.18	-1.81***	2,526
IV-within (Panel C, Table 5)	-1.78*	0.19	-1.97**	2,526
Tobit-within (Table 6 (1)-(2))	-2.78**	-0.30*	-2.48**	5,398
Poisson-within (Table 6 (3)-(4))	-2.31***	-0.44***	-1.87***	5,398
Contribution (in %)	3.4-4.7	2.1-5.2	12.0-13.3	

Table 8: List of countries

Code	Country name	Tariff cov.	Code	Country name	Tariff cov.	Code	Country name	Tariff cov.
AE	United Arab Emirates		GW	Guinea-Bissau	no	NZ	New Zealand	yes
AF	Afghanistan		HK	Hong Kong, China		OM	Oman	no
AL	Albania	no	HN	Honduras	no	PA	Panama	no
AR	Argentina	yes	HR	Croatia	no	PE	Peru	yes
AT	Austria	yes	HT	Haiti		PG	Papua New Guinea	no
AU	Australia	yes	HU	Hungary	no	PH	Philippines	yes
BA	Bosnia and Herzegovina	no	ID	Indonesia	yes	PK	Pakistan	no
BD	Bangladesh	yes	IE	Ireland	yes	PL	Poland	no
BF	Burkina Faso	yes	IL	Israel	no	PT	Portugal	yes
BG	Bulgaria	no	IN	India	no	PY	Paraguay	yes
BH	Bahrain	no	IR	Iran, Islamic Rep.	no	QA	Qatar	no
BI	Burundi	no	IQ	Iraq		RO	Romania	no
BJ	Benin		IT	Italy	yes	RU	Russian Federation	yes
BO	Bolivia	yes	JM	Jamaica	no	RW	Rwanda	yes
BR	Brazil	yes	JO	Jordan	no	SA	Saudi Arabia	yes
BT	Bhutan		JP	Japan	yes	SD	Sudan	no
BW	Botswana	no	KE	Kenya	yes	SE	Sweden	yes
CA	Canada	yes	KG	Kyrgyz Republic	no	SG	Singapore	no
CD	Congo, Dem. Rep.		KH	Cambodia	no	SI	Slovenia	no
CF	Central African Republic	yes	KP	Korea, Dem. Rep.		SK	Slovak Republic	no
CG	Congo, Rep.	yes	KR	Korea, Rep.	no	SL	Sierra Leone	
CI	Cote d'Ivoire	no	KW	Kuwait	no	SN	Senegal	no
CL	Chile	yes	KZ	Kazakhstan	no	SO	Somalia	
CM	Cameroon	yes	LA	Lao PDR	no	SV	El Salvador	no
CN	China	yes	LB	Lebanon	no	SY	Syrian Arab Republic	no
CO	Colombia	yes	LK	Sri Lanka	yes	SZ	Swaziland	
CR	Costa Rica	no	LR	Liberia		TD	Chad	no
CU	Cuba	yes	LS	Lesotho		TG	Togo	no
CY	Cyprus	no	LT	Lithuania	no	TH	Thailand	yes
CZ	Czech Republic	no	LV	Latvia	no	TJ	Tajikistan	
DE	Germany	yes	MA	Morocco	yes	TM	Turkmenistan	no
DK	Denmark	yes	MD	Moldova	no	TN	Tunisia	no
DO	Dominican Republic	no	MG	Madagascar	no	TR	Turkey	yes
DZ	Algeria	yes	MK	Macedonia, FYR	no	TT	Trinidad and Tobago	no
EC	Ecuador	yes	ML	Mali	no	TW	Taiwan, China	no
EE	Estonia	no	MN	Mongolia		TZ	Tanzania	yes
EG	Egypt, Arab Rep.	no	MR	Mauritania	no	UA	Ukraine	no
ES	Spain	yes	MU	Mauritius	no	UG	Uganda	yes
ET	Ethiopia(no Eritrea)	no	MW	Malawi	yes	US	United States	yes
FI	Finland	yes	MX	Mexico	no	UY	Uruguay	no
FJ	Fiji		MY	Malaysia	yes	UZ	Uzbekistan	no
GA	Gabon	no	MZ	Mozambique	yes	VE	Venezuela	no
GB	United Kingdom	yes	NA	Namibia	no	VN	Vietnam	yes
GE	Georgia	no	NE	Niger	no	XU	Belgium and Luxemburg	yes
GH	Ghana	yes	NG	Nigeria	yes	YE	Yemen	no
GM	Gambia, The		NI	Nicaragua	no	YU	Yugoslavia	no
GN	Guinea		NL	Netherlands	yes	ZA	South Africa	yes
GR	Greece	yes	NO	Norway	yes	ZM	Zambia	yes
GT	Guatemala	no	NP	Nepal	yes	ZW	Zimbabwe	no

Table 9: Gravity equations with tariffs: within regressions

Dependent variable: Log of each trade margin

	Total	Extensive	Intensive	N. of observations
Panel A: Specification with Country-Year and Sector-Year FE (not within), whole sample				
ln(tariffs)	-2.10***	-1.09***	-1.01***	29,090
	(0.11)	(0.07)	(0.13)	
ln(average world tariffs)	0.01	-0.00	0.01	
	(0.02)	(0.00)	(0.01)	
R^2	0.91	0.97	0.71	
Panel B: Specification with Sector-Year and Country-Sector FE (within), whole sample				
ln(tariffs)	0.01	0.14**	-0.13***	29,090
	(0.17)	(0.06)	(0.15)	
ln(average world tariffs)	-0.03	-0.03	-0.00	
	(0.02)	(0.00)	(0.02)	
R^2	0.93	0.98	0.84	
Panel C: Specification with Country-Year and Sector-Year FE (not within), pre and post UR sample				
ln(tariffs)	-2.66***	-1.23***	-1.43***	4,732
	(0.45)	(0.19)	(0.38)	
ln(average world tariffs)	0.00	-0.04	0.04	
	(0.05)	(0.02)	(0.04)	
R^2	0.83	0.91	0.66	
Panel D: Specification with Country-Sector, Country-Year and Sector-Year FE (within), pre and post UR sample				
ln(tariffs)	-2.08***	0.01	-2.09***	4,732
	(0.60)	(0.19)	(0.54)	
ln(average world tariffs)	-0.00	-0.05*	0.05	
	(0.08)	(0.02)	(0.08)	
R^2	0.93	0.98	0.86	

***: significant at the 1% level; **: significant at the 5% level; *: significant at the 10% level.

FE: Fixed Effects. Robust White standard errors are the ones reported in parentheses. The intercept and the fixed effects are not reported.

Table 10: Gravity equations with tariffs: models in difference, IV regressions

	1st stage (1)	Total (2)	Extensive (3)	Intensive (4)	No obs (5)	1st-stage F (6)
Panel A: OLS, eq 4						
ln(tariffs)		-2.08***	0.02	-2.10***	2,366	
		(0.85)	(0.21)	(0.79)		
ln(average world tariffs)		-0.00	-0.05*	0.05		
		(0.10)	(0.03)	(0.09)		
R^2		0.14	0.28	0.10		
Panel B: 2SLS, eq 4, IV1						
ln(tariffs)	-0.48***	-3.60***	-0.22	-3.38***	2,366	F=257***
	(0.09)	(1.21)	(0.28)	(1.16)		
ln(average world tariffs)		0.13	-0.03*	0.16		
		(0.12)	(0.03)	(0.11)		
R^2	0.92	0.14	0.27	0.10		
Panel C: 2SLS, eq 4, IV2						
ln(tariffs)	-0.48***	-2.74***	0.20	-2.94***	2,366	F=198***
	(0.01)	(1.03)	(0.29)	(0.93)		
ln(average world tariffs)		0.05	-0.07*	0.12		
		(0.11)	(0.03)	(0.10)		
R^2	0.90	0.14	0.27	0.10		

***: significant at the 1% level; **: significant at the 5% level; *: significant at the 10% level.

All regressions include country and sector dummies

Robust White standard errors are the ones reported in parentheses. The intercept and the fixed effects are not reported.

Table 11: Tobit and Poisson specifications

	Tobit		Poisson	
	Total Margin	Extensive margin	Total Margin	Extensive margin
	(1)	(2)	(3)	(4)
ln(tariff)	-1.45	-0.05	-2.52***	-0.16
	(1.76)	(0.23)	(0.00)	(0.14)
ln(av world tariff)	-0.31	-0.06*	0.04***	-0.06***
	(0.25)	(0.03)	(0.00)	(0.02)
$Product - Country\ FE$	YES	YES	YES	YES
$Country - Year\ FE$	YES	YES	YES	YES
$Product - Year\ FE$	YES	YES	YES	YES
$Number\ observations$	4,916	4,916	4,916	4,916

*: significant at the 10% level, **: significant at the 5% level, ***: significant at the 1% level. FE = fixed effects.

G 9001 J. FAYOLLE et M. FLEURBAEY
Accumulation, profitabilité et endettement des entreprises

G 9002 H. ROUSSE
Détection et effets de la multicolinéarité dans les modèles linéaires ordinaires - Un prolongement de la réflexion de BELSLEY, KUH et WELSCH

G 9003 P. RALLE et J. TOUJAS-BERNATE
Indexation des salaires : la rupture de 1983

G 9004 D. GUELLEC et P. RALLE
Compétitivité, croissance et innovation de produit

G 9005 P. RALLE et J. TOUJAS-BERNATE
Les conséquences de la désindexation. Analyse dans une maquette prix-salaires

G 9101 Equipe AMADEUS
Le modèle AMADEUS - Première partie - Présentation générale

G 9102 J.L. BRILLET
Le modèle AMADEUS - Deuxième partie - Propriétés variantielles

G 9103 D. GUELLEC et P. RALLE
Endogenous growth and product innovation

G 9104 H. ROUSSE
Le modèle AMADEUS - Troisième partie - Le commerce extérieur et l'environnement international

G 9105 H. ROUSSE
Effets de demande et d'offre dans les résultats du commerce extérieur manufacturé de la France au cours des deux dernières décennies

G 9106 B. CREPON
Innovation, taille et concentration : causalités et dynamiques

G 9107 B. AMABLE et D. GUELLEC
Un panorama des théories de la croissance endogène

G 9108 M. GLAUDE et M. MOUTARDIER
Une évaluation du coût direct de l'enfant de 1979 à 1989

G 9109 P. RALLE et alii
France - Allemagne : performances économiques comparées

G 9110 J.L. BRILLET
Micro-DMS ***NON PARU***

G 9111 A. MAGNIER
Effets accélérateur et multiplicateur en France depuis 1970 : quelques résultats empiriques

G 9112 B. CREPON et G. DUREAU
Investissement en recherche-développement : analyse de causalités dans un modèle d'accélérateur généralisé

G 9113 J.L. BRILLET, H. ERKEL-ROUSSE, J. TOUJAS-BERNATE
"France-Allemagne Couplées" - Deux économies vues par une maquette macro-économétrique

G 9201 W.J. ADAMS, B. CREPON, D. ENCAOUA
Choix technologiques et stratégies de dissuasion d'entrée

G 9202 J. OLIVEIRA-MARTINS,
J. TOUJAS-BERNATE
Macro-economic import functions with imperfect competition - An application to the E.C. Trade

G 9203 I. STAPIC
Les échanges internationaux de services de la France dans le cadre des négociations multilatérales du GATT
Juin 1992 (1ère version)
Novembre 1992 (version finale)

G 9204 P. SEVESTRE
L'économétrie sur données individuelles-temporelles. Une note introductive

G 9205 H. ERKEL-ROUSSE
Le commerce extérieur et l'environnement international dans le modèle AMADEUS (réestimation 1992)

G 9206 N. GREENAN et D. GUELLEC
Coordination within the firm and endogenous growth

G 9207 A. MAGNIER et J. TOUJAS-BERNATE
Technology and trade : empirical evidences for the major five industrialized countries

G 9208 B. CREPON, E. DUGUET, D. ENCAOUA et P. MOHNEN
Cooperative, non cooperative R & D and optimal patent life

G 9209 B. CREPON et E. DUGUET
Research and development, competition and innovation : an application of pseudo maximum likelihood methods to Poisson models with heterogeneity

G 9301 J. TOUJAS-BERNATE
Commerce international et concurrence imparfaite : développements récents et implications pour la politique commerciale

G 9302 Ch. CASES
Durées de chômage et comportements d'offre de travail : une revue de la littérature

G 9303 H. ERKEL-ROUSSE
Union économique et monétaire : le débat économique

G 9304 N. GREENAN - D. GUELLEC /
G. BROUSSAUDIER - L. MIOTTI
Innovation organisationnelle, dynamisme technologique et performances des entreprises

G 9305 P. JAILLARD
Le traité de Maastricht : présentation juridique et historique

G 9306 J.L. BRILLET
Micro-DMS : présentation et propriétés

G 9307 J.L. BRILLET
Micro-DMS - variantes : les tableaux

G 9308 S. JACOBZONE
Les grands réseaux publics français dans une perspective européenne

G 9309 L. BLOCH - B. CŒURE
Profitabilité de l'investissement productif et transmission des chocs financiers

G 9310 J. BOURDIEU - B. COLIN-SEDILLOT
Les théories sur la structure optimal du capital : quelques points de repère

G 9311 J. BOURDIEU - B. COLIN-SEDILLOT
Les décisions de financement des entreprises françaises : une évaluation empirique des théories de la structure optimale du capital

G 9312 L. BLOCH - B. CŒURÉ
Q de Tobin marginal et transmission des chocs financiers

G 9313 Equipes Amadeus (INSEE), Banque de France, Métric (DP)
Présentation des propriétés des principaux modèles macroéconomiques du Service Public

G 9314 B. CREPON - E. DUGUET
Research & Development, competition and innovation

G 9315 B. DORMONT
Quelle est l'influence du coût du travail sur l'emploi ?

G 9316 D. BLANCHET - C. BROUSSE
Deux études sur l'âge de la retraite

G 9317 D. BLANCHET
Répartition du travail dans une population hétérogène : deux notes

G 9318 D. EYSSARTIER - N. PONTY
AMADEUS - an annual macro-economic model for the medium and long term

G 9319 G. CETTE - Ph. CUNÉO - D. EYSSARTIER - J. GAUTIÉ
Les effets sur l'emploi d'un abaissement du coût du travail des jeunes

G 9401 D. BLANCHET
Les structures par âge importent-elles ?

G 9402 J. GAUTIÉ
Le chômage des jeunes en France : problème de formation ou phénomène de file d'attente ? Quelques éléments du débat

G 9403 P. QUIRION
Les déchets en France : éléments statistiques et économiques

G 9404 D. LADIRAY - M. GRUN-REHOMME
Lissage par moyennes mobiles - Le problème des extrémités de série

G 9405 V. MAILLARD
Théorie et pratique de la correction des effets de jours ouvrables

G 9406 F. ROSENWALD
La décision d'investir

G 9407 S. JACOBZONE
Les apports de l'économie industrielle pour définir la stratégie économique de l'hôpital public

G 9408 L. BLOCH, J. BOURDIEU,
B. COLIN-SEDILLOT, G. LONGUEVILLE
Du défaut de paiement au dépôt de bilan : les banquiers face aux PME en difficulté

G 9409 D. EYSSARTIER, P. MAIRE
Impacts macro-économiques de mesures d'aide au logement - quelques éléments d'évaluation

G 9410 F. ROSENWALD
Suivi conjoncturel de l'investissement

G 9411 C. DEFEUILLEY - Ph. QUIRION
Les déchets d'emballages ménagers : une analyse économique des politiques française et allemande

G 9412 J. BOURDIEU - B. CŒURÉ -
B. COLIN-SEDILLOT
Investissement, incertitude et irréversibilité
Quelques développements récents de la théorie de l'investissement

G 9413 B. DORMONT - M. PAUCHET
L'évaluation de l'élasticité emploi-salaire dépend-elle des structures de qualification ?

G 9414 I. KABLA
Le Choix de breveter une invention

G 9501 J. BOURDIEU - B. CŒURÉ - B. SEDILLOT
Irreversible Investment and Uncertainty :
When is there a Value of Waiting ?

G 9502 L. BLOCH - B. CŒURÉ
Imperfections du marché du crédit, investissement des entreprises et cycle économique

G 9503 D. GOUX - E. MAURIN
Les transformations de la demande de travail par qualification en France
Une étude sur la période 1970-1993

G 9504 N. GREENAN
Technologie, changement organisationnel, qualifications et emploi : une étude empirique sur l'industrie manufacturière

G 9505 D. GOUX - E. MAURIN
Persistance des hiérarchies sectorielles de salaires: un réexamen sur données françaises

G 9505 Bis D. GOUX - E. MAURIN
Persistence of inter-industry wages differentials: a reexamination on matched worker-firm panel data

G 9506 S. JACOBZONE
Les liens entre RMI et chômage, une mise en perspective
NON PARU - article sorti dans Economie et Prévision n°122 (1996) - pages 95 à 113

G 9507 G. CETTE - S. MAHFOUZ
Le partage primaire du revenu
Constat descriptif sur longue période

G 9601 Banque de France - CEPREMAP - Direction de la Prévision - Erasme - INSEE - OFCE
Structures et propriétés de cinq modèles macroéconomiques français

G 9602 Rapport d'activité de la DESE de l'année 1995

G 9603 J. BOURDIEU - A. DRAZNIEKS
L'octroi de crédit aux PME : une analyse à partir d'informations bancaires

G 9604 A. TOPIOL-BENSAÏD
Les implantations japonaises en France

G 9605 P. GENIER - S. JACOBZONE
Comportements de prévention, consommation d'alcool et tabagie : peut-on parler d'une gestion globale du capital santé ?
Une modélisation microéconométrique empirique

G 9606 C. DOZ - F. LENGLART
Factor analysis and unobserved component models: an application to the study of French business surveys

G 9607 N. GREENAN - D. GUELLEC
La théorie coopérative de la firme

G 9608 N. GREENAN - D. GUELLEC
Technological innovation and employment reallocation

G 9609 Ph. COUR - F. RUPPRECHT
L'intégration asymétrique au sein du continent américain : un essai de modélisation

G 9610 S. DUCHENE - G. FORGEOT - A. JACQUOT
Analyse des évolutions récentes de la productivité apparente du travail

G 9611 X. BONNET - S. MAHFOUZ
The influence of different specifications of wages-prices spirals on the measure of the NAIRU : the case of France

G 9612 PH. COUR - E. DUBOIS, S. MAHFOUZ, J. PISANI-FERRY
The cost of fiscal retrenchment revisited: how strong is the evidence ?

G 9613 A. JACQUOT
Les flexions des taux d'activité sont-elles seulement conjoncturelles ?

G 9614 ZHANG Yingxiang - SONG Xueqing
Lexique macroéconomique Français-Chinois

G 9701 J.L. SCHNEIDER
La taxe professionnelle : éléments de cadrage économique

G 9702 J.L. SCHNEIDER
Transition et stabilité politique d'un système redistributif

G 9703 D. GOUX - E. MAURIN
Train or Pay: Does it Reduce Inequalities to Encourage Firms to Train their Workers?

G 9704 P. GENIER
Deux contributions sur dépendance et équité

G 9705 E. DUGUET - N. IUNG
R & D Investment, Patent Life and Patent Value
An Econometric Analysis at the Firm Level

G 9706 M. HOUDEBINE - A. TOPIOL-BENSAÏD
Les entreprises internationales en France : une analyse à partir de données individuelles

G 9707 M. HOUDEBINE
Polarisation des activités et spécialisation des départements en France

G 9708 E. DUGUET - N. GREENAN
Le biais technologique : une analyse sur données individuelles

G 9709 J.L. BRILLET
Analyzing a small French ECM Model

G 9710 J.L. BRILLET
Formalizing the transition process : scenarios for capital accumulation

G 9711 G. FORGEOT - J. GAUTIÉ
Insertion professionnelle des jeunes et processus de déclassement

G 9712 E. DUBOIS
High Real Interest Rates: the Consequence of a Saving Investment Disequilibrium or of an insufficient Credibility of Monetary Authorities?

G 9713 Bilan des activités de la Direction des Etudes et Synthèses Economiques - 1996

G 9714 F. LEQUILLER
Does the French Consumer Price Index Overstate Inflation?

G 9715 X. BONNET
Peut-on mettre en évidence les rigidités à la baisse des salaires nominaux ?
Une étude sur quelques grands pays de l'OCDE

G 9716 N. IUNG - F. RUPPRECHT
Productivité de la recherche et rendements d'échelle dans le secteur pharmaceutique français

G 9717 E. DUGUET - I. KABLA
Appropriation strategy and the motivations to use the patent system in France - An econometric analysis at the firm level

G 9718 L.P. PELÉ - P. RALLE
Âge de la retraite : les aspects incitatifs du régime général

G 9719 ZHANG Yingxiang - SONG Xueqing
Lexique macroéconomique français-chinois, chinois-français

G 9720 M. HOUDEBINE - J.L. SCHNEIDER
Mesurer l'influence de la fiscalité sur la localisation des entreprises

G 9721 A. MOUROUGANE
Crédibilité, indépendance et politique monétaire
Une revue de la littérature

G 9722 P. AUGERAUD - L. BRIOT
Les données comptables d'entreprises
Le système intermédiaire d'entreprises
Passage des données individuelles aux données sectorielles

G 9723 P. AUGERAUD - J.E. CHAPRON
Using Business Accounts for Compiling National Accounts: the French Experience

G 9724 P. AUGERAUD
Les comptes d'entreprise par activités - Le passage aux comptes - De la comptabilité d'entreprise à la comptabilité nationale - *A paraître*

G 9801 H. MICHAUDON - C. PRIGENT
Présentation du modèle AMADEUS

G 9802 J. ACCARDO
Une étude de comptabilité générationnelle pour la France en 1996

G 9803 X. BONNET - S. DUCHÊNE
Apports et limites de la modélisation « Real Business Cycles »

G 9804 C. BARLET - C. DUGUET - D. ENCAOUA - J. PRADEL
The Commercial Sucess of Innovations
An econometric analysis at the firm level in French manufacturing

G 9805 P. CAHUC - Ch. GIANELLA - D. GOUX - A. ZILBERBERG
Equalizing Wage Differences and Bargaining Power - Evidence form a Panel of French Firms

G 9806 J. ACCARDO - M. JLASSI
La productivité globale des facteurs entre 1975 et 1996

G 9807 Bilan des activités de la Direction des Etudes et Synthèses Economiques - 1997

G 9808 A. MOUROUGANE
Can a Conservative Governor Conduct an Accomodative Monetary Policy ?

G 9809 X. BONNET - E. DUBOIS - L. FAUVET
Asymétrie des inflations relatives et menus costs : tests sur l'inflation française

G 9810 E. DUGUET - N. IUNG
Sales and Advertising with Spillovers at the firm level: Estimation of a Dynamic Structural Model on Panel Data

G 9811 J.P. BERTHIER
Congestion urbaine : un modèle de trafic de pointe à courbe débit-vitesse et demande élastique

G 9812 C. PRIGENT
La part des salaires dans la valeur ajoutée : une approche macroéconomique

G 9813 A.Th. AERTS
L'évolution de la part des salaires dans la valeur ajoutée en France reflète-t-elle les évolutions individuelles sur la période 1979-1994 ?

G 9814 B. SALANIÉ
Guide pratique des séries non-stationnaires

G 9901 S. DUCHÊNE - A. JACQUOT
Une croissance plus riche en emplois depuis le début de la décennie ? Une analyse en comparaison internationale

G 9902 Ch. COLIN
Modélisation des carrières dans Destinie

G 9903 Ch. COLIN
Evolution de la dispersion des salaires : un essai de prospective par microsimulation

G 9904 B. CREPON - N. IUNG
Innovation, emploi et performances

G 9905 B. CREPON - Ch. GIANELLA
Wages inequalities in France 1969-1992
An application of quantile regression techniques

G 9906 C. BONNET - R. MAHIEU
Microsimulation techniques applied to intergenerational transfers - Pensions in a dynamic framework: the case of France

G 9907 F. ROSENWALD
L'impact des contraintes financières dans la décision d'investissement

G 9908 Bilan des activités de la DESE - 1998

G 9909 J.P. ZOYEM
Contrat d'insertion et sortie du RMI
Evaluation des effets d'une politique sociale

G 9910 Ch. COLIN - Fl. LEGROS - R. MAHIEU
Bilans contributifs comparés des régimes de retraite du secteur privé et de la fonction publique

G 9911 G. LAROQUE - B. SALANIÉ
Une décomposition du non-emploi en France

G 9912 B. SALANIÉ
Une maquette analytique de long terme du marché du travail

G 9912 Bis Ch. GIANELLA
Une estimation de l'élasticité de l'emploi peu qualifié à son coût

G 9913 Division « Redistribution et Politiques Sociales »
Le modèle de microsimulation dynamique DESTINIE

G 9914 E. DUGUET
Macro-commandes SAS pour l'économétrie des panels et des variables qualitatives

G 9915 R. DUHAUTOIS
Evolution des flux d'emplois en France entre 1990 et 1996 : une étude empirique à partir du fichier des bénéfices réels normaux (BRN)

G 9916 J.Y. FOURNIER
Extraction du cycle des affaires : la méthode de Baxter et King

G 9917 B. CRÉPON - R. DESPLATZ - J. MAIRESSE
Estimating price cost margins, scale economies and workers' bargaining power at the firm level

G 9918 Ch. GIANELLA - Ph. LAGARDE
Productivity of hours in the aggregate production function: an evaluation on a panel of French firms from the manufacturing sector

G 9919 S. AUDRIC - P. GIVORD - C. PROST
Evolution de l'emploi et des coûts par qualification entre 1982 et 1996

G 2000/01 R. MAHIEU
Les déterminants des dépenses de santé : une approche macroéconomique

G 2000/02 C. ALLARD-PRIGENT - H. GUILMEAU - A. QUINET
The real exchange rate as the relative price of nontrables in terms of tradables: theoretical investigation and empirical study on French data

G 2000/03 J.-Y. FOURNIER
L'approximation du filtre passe-bande proposée par Christiano et Fitzgerald

G 2000/04 Bilan des activités de la DESE - 1999

G 2000/05 B. CREPON - F. ROSENWALD
Investissement et contraintes de financement : le poids du cycle
Une estimation sur données françaises

G 2000/06 A. FLIPO
Les comportements matrimoniaux de fait

G 2000/07 R. MAHIEU - B. SÉDILLOT
Microsimulations of the retirement decision: a supply side approach

G 2000/08 C. AUDENIS - C. PROST
Déficit conjoncturel : une prise en compte des conjonctures passées

G 2000/09 R. MAHIEU - B. SÉDILLOT
Equivalent patrimonial de la rente et souscription de retraite complémentaire

G 2000/10 R. DUHAUTOIS
Ralentissement de l'investissement : petites ou grandes entreprises ? industrie ou tertiaire ?

G 2000/11 G. LAROQUE - B. SALANIÉ
Temps partiel féminin et incitations financières à l'emploi

G2000/12 Ch. GIANELLA
Local unemployment and wages

G2000/13 B. CREPON - Th. HECKEL
- Informatisation en France : une évaluation à partir de données individuelles

- Computerization in France: an evaluation based on individual company data

G2001/01 F. LEQUILLER
- La nouvelle économie et la mesure de la croissance du PIB
- The new economy and the measure ment of GDP growth

G2001/02 S. AUDRIC
La reprise de la croissance de l'emploi profite-t-elle aussi aux non-diplômés ?

G2001/03 I. BRAUN-LEMAIRE
Evolution et répartition du surplus de productivité

G2001/04 A. BEAUDU - Th. HECKEL
Le canal du crédit fonctionne-t-il en Europe ? Une étude de l'hétérogénéité des comportements d'investissement à partir de données de bilan agrégées

G2001/05 C. AUDENIS - P. BISCOURP - N. FOURCADE - O. LOISEL
Testing the augmented Solow growth model : An empirical reassessment using panel data

G2001/06 R. MAHIEU - B. SÉDILLOT
Départ à la retraite, irréversibilité et incertitude

G2001/07 Bilan des activités de la DESE - 2000

G2001/08 J. Ph. GAUDEMET
Les dispositifs d'acquisition à titre facultatif d'annuités viagères de retraite

G2001/09 B. CRÉPON - Ch. GIANELLA
Fiscalité, coût d'usage du capital et demande de facteurs : une analyse sur données individuelles

G2001/10 B. CRÉPON - R. DESPLATZ
Evaluation des effets des dispositifs d'allégements de charges sociales sur les bas salaires

G2001/11 J.-Y. FOURNIER
Comparaison des salaires des secteurs public et privé

G2001/12 J.-P. BERTHIER - C. JAULENT - R. CONVENEVOLE - S. PISANI
Une méthodologie de comparaison entre consommations intermédiaires de source fiscale et de comptabilité nationale

G2001/13 P. BISCOURP - Ch. GIANELLA
Substitution and complementarity between capital, skilled and less skilled workers: an analysis at the firm level in the French manufacturing industry

G2001/14 I. ROBERT-BOBEE
Modelling demographic behaviours in the French microsimulation model Destinie: An analysis of future change in completed fertility

G2001/15 J.-P. ZOYEM
Diagnostic sur la pauvreté et calendrier de revenus : le cas du "Panel européen des ménages »

G2001/16 J.-Y. FOURNIER - P. GIVORD
La réduction des taux d'activité aux âges extrêmes, une spécificité française ?

G2001/17 C. AUDENIS - P. BISCOURP - N. RIEDINGER
Existe-t-il une asymétrie dans la transmission du prix du brut aux prix des carburants ?

G2002/01 F. MAGNIEN - J.-L. TAVERNIER - D. THESMAR
Les statistiques internationales de PIB par habitant en standard de pouvoir d'achat : une analyse des résultats

G2002/02 Bilan des activités de la DESE - 2001

G2002/03 B. SÉDILLOT - E. WALRAET
La cessation d'activité au sein des couples : y a-t-il interdépendance des choix ?

G2002/04 G. BRILHAULT
- Rétropolation des séries de FBCF et calcul du capital fixe en SEC-95 dans les comptes nationaux français
- Retropolation of the investment series (GFCF) and estimation of fixed capital stocks on the ESA-95 basis for the French balance sheets

G2002/05 P. BISCOURP - B. CRÉPON - T. HECKEL - N. RIEDINGER
How do firms respond to cheaper computers? Microeconometric evidence for France based on a production function approach

G2002/06 C. AUDENIS - J. DEROYON - N. FOURCADE
L'impact des nouvelles technologies de l'information et de la communication sur l'économie française - un bouclage macro-économique

G2002/07 J. BARDAJI - B. SÉDILLOT - E. WALRAET
Évaluation de trois réformes du Régime Général d'assurance vieillesse à l'aide du modèle de microsimulation DESTINIE

G2002/08 J.-P. BERTHIER
Réflexions sur les différentes notions de volume dans les comptes nationaux : comptes aux prix d'une année fixe ou aux prix de l'année précédente, séries chaînées

G2002/09 F. HILD
Les soldes d'opinion résument-ils au mieux les réponses des entreprises aux enquêtes de conjoncture ?

G2002/10 I. ROBERT-BOBÉE
Les comportements démographiques dans le modèle de microsimulation Destinie - Une comparaison des estimations issues des enquêtes Jeunes et Carrières 1997 et Histoire Familiale 1999

G2002/11 J.-P. ZOYEM
La dynamique des bas revenus : une analyse des entrées-sorties de pauvreté

G2002/12 F. HILD
Prévisions d'inflation pour la France

G2002/13 M. LECLAIR
Réduction du temps de travail et tensions sur les facteurs de production

G2002/14 E. WALRAET - A. VINCENT
- Analyse de la redistribution intragénérationnelle dans le système de retraite des salariés du privé - Une approche par microsimulation
- Intragenerational distributional analysis in the french private sector pension scheme - A microsimulation approach

G2002/15 P. CHONE - D. LE BLANC - I. ROBERT-BOBEE
Offre de travail féminine et garde des jeunes enfants

G2002/16 F. MAUREL - S. GREGOIR
Les indices de compétitivité des pays : interprétation et limites

G2003/01 N. RIEDINGER - E.HAUVY
Le coût de dépollution atmosphérique pour les entreprises françaises : Une estimation à partir de données individuelles

G2003/02 P. BISCOURP et F. KRAMARZ
Création d'emplois, destruction d'emplois et internationalisation des entreprises industrielles françaises : une analyse sur la période 1986-1992

G2003/03 Bilan des activités de la DESE - 2002

G2003/04 P.-O. BEFFY - J. DEROYON - N. FOURCADE - S. GREGOIR - N. LAÏB - B. MONFORT
Évolutions démographiques et croissance : une projection macro-économique à l'horizon 2020

G2003/05 P. AUBERT
La situation des salariés de plus de cinquante ans dans le secteur privé

G2003/06 P. AUBERT - B. CRÉPON
Age, salaire et productivité
La productivité des salariés décline-t-elle en fin de carrière ?

G2003/07 H. BARON - P.O. BEFFY - N. FOURCADE - R. MAHIEU
Le ralentissement de la productivité du travail au cours des années 1990

G2003/08 P.-O. BEFFY - B. MONFORT
Patrimoine des ménages, dynamique d'allocation et comportement de consommation

G2003/09 P. BISCOURP - N. FOURCADE
Peut-on mettre en évidence l'existence de rigidités à la baisse des salaires à partir de données individulles ? Le cas de la France à la fin des années 90

G2003/10 M. LECLAIR - P. PETIT
Présence syndicale dans les firmes : quel impact sur les inégalités salariales entre les hommes et les femmes ?

G2003/11 P.-O. BEFFY - X. BONNET - M. DARRACQ-PARIES - B. MONFORT
MZE: a small macro-model for the euro area

G2004/01 P. AUBERT - M. LECLAIR
La compétitivité exprimée dans les enquêtes trimestrielles sur la situation et les perspectives dans l'industrie

G2004/02 M. DUÉE - C. REBILLARD
La dépendance des personnes âgées : une projection à long terme

G2004/03 S. RASPILLER - N. RIEDINGER
Régulation environnementale et choix de localisation des groupes français

G2004/04 A. NABOULET - S. RASPILLER
Les déterminants de la décision d'investir : une approche par les perceptions subjectives des firmes

G2004/05 N. RAGACHE
La déclaration des enfants par les couples non mariés est-elle fiscalement optimale ?

G2004/06 M. DUÉE
L'impact du chômage des parents sur le devenir scolaire des enfants

G2004/07 P. AUBERT - E. CAROLI - M. ROGER
New Techlologies, Workplace Organisation and the Age Structure of the Workforce: Firm-Level Evidence

G2004/08 E. DUGUET - C. LELARGE
Les brevets accroissent-ils les incitations privées à innover ? Un examen microéconométrique

G2004/09 S. RASPILLER - P. SILLARD
Affiliating versus Subcontracting: the Case of Multinationals

G2004/10 J. BOISSINOT - C. L'ANGEVIN - B. MONFORT
Public Debt Sustainability: Some Results on the French Case

G2004/11 S. ANANIAN - P. AUBERT
Travailleurs âgés, nouvelles technologies et changements organisationnels : un réexamen à partir de l'enquête « REPONSE »

G2004/12 X. BONNET - H. PONCET
Structures de revenus et propensions différentes à consommer - Vers une équation de consommation des ménages plus robuste en prévision pour la France

G2004/13 C. PICART
Évaluer la rentabilité des sociétés non financières

G2004/14 J. BARDAJI - B. SÉDILLOT - E. WALRAET
Les retraites du secteur public : projections à l'horizon 2040 à l'aide du modèle de microsimulation DESTINIE

G2005/01 S. BUFFETEAU - P. GODEFROY
Conditions de départ en retraite selon l'âge de fin d'études : analyse prospective pour les générations 1945 à1974

G2005/02 C. AFSA - S. BUFFETEAU
L'évolution de l'activité féminine en France : une approche par pseudo-panel

G2005/03 P. AUBERT - P. SILLARD
Délocalisations et réductions d'effectifs dans l'industrie française

G2005/04 M. LECLAIR - S. ROUX
Mesure et utilisation des emplois instables dans les entreprises

G2005/05 C. L'ANGEVIN - S. SERRAVALLE
Performances à l'exportation de la France et de l'Allemagne - Une analyse par secteur et destination géographique

G2005/06 Bilan des activités de la Direction des Études et Synthèses Économiques - 2004

G2005/07 S. RASPILLER
La concurrence fiscale : principaux enseignements de l'analyse économique

G2005/08 C. L'ANGEVIN - N. LAÏB
Éducation et croissance en France et dans un panel de 21 pays de l'OCDE

G2005/09 N. FERRARI
Prévoir l'investissement des entreprises
Un indicateur des révisions dans l'enquête de conjoncture sur les investissements dans l'industrie.

G2005/10 P.-O. BEFFY - C. L'ANGEVIN
Chômage et boucle prix-salaires :
apport d'un modèle « qualiifés/peu qualifiés »

G2005/11 B. HEITZ
A two-states Markov-switching model of inflation in France and the USA: credible target VS inflation spiral

G2005/12 O. BIAU - H. ERKEL-ROUSSE - N. FERRARI
Réponses individuelles aux enquêtes de conjoncture et prévision macroéconomiques :
Exemple de la prévision de la production manufacturière

G2005/13 P. AUBERT - D. BLANCHET - D. BLAU
The labour market after age 50: some elements of a Franco-American comparison

G2005/14 D. BLANCHET - T. DEBRAND -
P. DOURGNON - P. POLLET
L'enquête SHARE : présentation et premiers résultats de l'édition française

G2005/15 M. DUÉE
La modélisation des comportements démographiques dans le modèle de microsimulation DESTINIE

G2005/16 H. RAOUI - S. ROUX
Étude de simulation sur la participation versée aux salariés par les entreprises

G2006/01 C. BONNET - S. BUFFETEAU - P. GODEFROY
Disparités de retraite de droit direct entre hommes et femmes : quelles évolutions ?

G2006/02 C. PICART
Les gazelles en France

G2006/03 P. AUBERT - B. CRÉPON -P. ZAMORA
Le rendement apparent de la formation continue dans les entreprises : effets sur la productivité et les salaires

G2006/04 J.-F. OUVRARD - R. RATHELOT
Demographic change and unemployment:
what do macroeconometric models predict?

G2006/05 D. BLANCHET - J.-F. OUVRARD
Indicateurs d'engagements implicites des systèmes de retraite : chiffrages, propriétés analytiques et réactions à des chocs démographiques types

G2006/06 G. BIAU - O. BIAU - L. ROUVIERE
Nonparametric Forecasting of the Manufacturing Output Growth with Firm-level Survey Data

G2006/07 C. AFSA - P. GIVORD
Le rôle des conditions de travail dans les absences pour maladie

G2006/08 P. SILLARD - C. L'ANGEVIN - S. SERRAVALLE
Performances comparées à l'exportation de la France et de ses principaux partenaires
Une analyse structurelle sur 12 ans

G2006/09 X. BOUTIN - S. QUANTIN
Une méthodologie d'évaluation comptable du coût du capital des entreprises françaises : 1984-2002

G2006/10 C. AFSA
L'estimation d'un coût implicite de la pénibilité du travail chez les travailleurs âgés

G2006/11 C. LELARGE
Les entreprises (industrielles) françaises sont-elles à la frontière technologique ?

G2006/12 O. BIAU - N. FERRARI
Théorie de l'opinion
Faut-il pondérer les réponses individuelles ?

G2006/13 A. KOUBI - S. ROUX
Une réinterprétation de la relation entre productivité et inégalités salariales dans les entreprises

G2006/14 R. RATHELOT - P. SILLARD
The impact of local taxes on plants location decision

G2006/15 L. GONZALEZ - C. PICART
Diversification, recentrage et poids des activités de support dans les groupes (1993-2000)

G2007/01 D. SRAER
Allègements de cotisations patronales et dynamique salariale

G2007/02 V. ALBOUY - L. LEQUIEN
Les rendements non monétaires de l'éducation : le cas de la santé

G2007/03 D. BLANCHET - T. DEBRAND
Aspiration à la retraite, santé et satisfaction au travail : une comparaison européenne

G2007/04 M. BARLET - L. CRUSSON
Quel impact des variations du prix du pétrole sur la croissance française ?

G2007/05 C. PICART
Flux d'emploi et de main-d'œuvre en France : un réexamen

G2007/06 V. ALBOUY - C. TAVAN
Massification et démocratisation de l'enseignement supérieur en France

G2007/07 T. LE BARBANCHON
The Changing response to oil price shocks in France : a DSGE type approach

G2007/08 T. CHANEY - D. SRAER - D. THESMAR
Collateral Value and Corporate Investment
Evidence from the French Real Estate Market

G2007/09 J. BOISSINOT
Consumption over the Life Cycle: Facts for France

G2007/10 C. AFSA
Interpréter les variables de satisfaction : l'exemple de la durée du travail

G2007/11 R. RATHELOT - P. SILLARD
Zones Franches Urbaines : quels effets sur l'emploi salarié et les créations d'établissements ?

G2007/12 V. ALBOUY - B. CRÉPON
Aléa moral en santé : une évaluation dans le cadre du modèle causal de Rubin

G2008/01 C. PICART
Les PME françaises : rentables mais peu dynamiques

G2008/02 P. BISCOURP - X. BOUTIN - T. VERGÉ
The Effects of Retail Regulations on Prices
Evidence form the Loi Galland

G2008/03 Y. BARBESOL - A. BRIANT
Économies d'agglomération et productivité des entreprises : estimation sur données individuelles françaises

G2008/04 D. BLANCHET - F. LE GALLO
Les projections démographiques : principaux mécanismes et retour sur l'expérience française

G2008/05 D. BLANCHET - F. TOUTLEMONDE
Évolutions démographiques et déformation du cycle de vie active : quelles relations ?

G2008/06 M. BARLET - D. BLANCHET - L. CRUSSON
Internationalisation et flux d'emplois : que dit une approche comptable ?

G2008/07 C. LELARGE - D. SRAER - D. THESMAR
Entrepreurship and Credit Constraints - Evidence from a French Loan Guarantee Program

G2008/08 X. BOUTIN - L. JANIN
Are Prices Really Affected by Mergers?

G2008/09 M. BARLET - A. BRIANT - L. CRUSSON
Concentration géographique dans l'industrie manufacturière et dans les services en France : une approche par un indicateur en continu

G2008/10 M. BEFFY - É. COUDIN - R. RATHELOT
Who is confronted to insecure labor market histories? Some evidence based on the French labor market transition

G2008/11 M. ROGER - E. WALRAET
Social Security and Well-Being of the Elderly: the Case of France

G2008/12 C. AFSA
Analyser les composantes du bien-être et de son évolution
Une approche empirique sur données individuelles

G2008/13 M. BARLET - D. BLANCHET -
T. LE BARBANCHON
Microsimuler le marché du travail : un prototype

G2009/01 P.-A. PIONNIER
Le partage de la valeur ajoutée en France, 1949-2007

G2009/02 Laurent CLAVEL - Christelle MINODIER
A Monthly Indicator of the French Business Climate

G2009/03 H. ERKEL-ROUSSE - C. MINODIER
Do Business Tendency Surveys in Industry and Services Help in Forecasting GDP Growth?
A Real-Time Analysis on French Data

G2009/04 P. GIVORD - L. WILNER
Les contrats temporaires : trappe ou marchepied vers l'emploi stable ?

G2009/05 G. LALANNE - P.-A. PIONNIER - O. SIMON
Le partage des fruits de la croissance de 1950 à 2008 : une approche par les comptes de surplus

G2009/06 L. DAVEZIES - X. D'HAULTFOEUILLE
Faut-il pondérer ?… Ou l'éternelle question de l'économètre confronté à des données d'enquête

G2009/07 S. QUANTIN - S. RASPILLER - S. SERRAVALLE
Commerce intragroupe, fiscalité et prix de transferts : une analyse sur données françaises

G2009/08 M. CLERC - V. MARCUS
Élasticités-prix des consommations énergétiques des ménages

G2009/09 G. LALANNE - E. POULIQUEN - O. SIMON
Prix du pétrole et croisssance potentielle à long terme

G2009/10 D. BLANCHET - J. LE CACHEUX - V. MARCUS
Adjusted net savings and other approaches to sustaibability: some therotical backgroud

G2009/11 V. BELLAMY - G. CONSALES - M. FESSEAU -
S. LE LAIDIER - É. RAYNAUD
Une décomposition du compte des ménages de la comptabilité nationale par catégorie de ménage en 2003

G2009/12 J. BARDAJI - F. TALLET
Detecting Economic Regimes in France : a Qualitative Markov-Switching Indicator Using Mixed Frequency Data

G2009/13 R. AEBERHARDT - D. FOUGÈRE -
R. RATHELOT
Discrimination à l'embauche : comment exploiter les procédures de *testing* ?

G2009/14 Y. BARBESOL - P. GIVORD - S. QUANTIN
Partage de la valeur ajoutée, approche par données microéconomiques

G2009/15 I. BUONO - G. LALANNE
The Effect of the Uruguay round on the Intensive and Extensive Margins of Trade