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Jean-Philippe Terreaux, L. Jeandupeux

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Jean-Philippe TERREAUX & Ludivine JEANDUPEUX

The systematic study of interdependencies between activity fields in the French economy led to two articles, Montfort (1983) and Montfort & Dutailly (1983), describing the partition of the French economy in 19 fields - amongst them, the timber field.

In their articles, Montfort and Dutailly present some data on employment, imports and exports for the years 1970 and 1981. The aim of our article is twofold. First, based on the work of Montfort and Dutailly, we provide an objective definition of the timber field. Second, by supplementing their data with the most recent available statistics (for the year 1992), our ambition is to learn about the evolution of the timber field between the years 1970 to 1981, and 1981 to 1992.

In as much as the second task is concerned, our approach is mainly methodological and we present the difficulties encountered in such a seemingly simple task. For detailed quantitative results, the interested reader can refer to Jeandupeux & Terreaux (1994 and 1995).

Also worth mentioning is the fact that, due to European integration, National Accountancy nomenclature has been substantially modified as of 1st January 1993. It is therefore unclear whether extending the study post-1992 would be possible without drastic adjustments.

DEFINITION OF THE TIMBER FIELD

Unlike the terms 'branch' and 'sector',[1] the word 'field' is often used without any reference to a particular definition (Bussy, 1983). By 'field', one usually means the operational process leading to a final product, or conversely the various uses of the same raw material.

Bazire & Gadant (1991) define the timber field as "*the set of economic activities related to the management, forest exploitation, commercialisation and transformation of timber. The sector of activities thus far defined is vast; it stretches from the grain harvested for nursery seedbeds purposes, to newspaper printing with timber-based paper.*" But in their 'radiography of the timber field', sylviculture and forest exploitation only are considered.

As noted by Margerie (1976), this concept of field, built from the "*feeling of a continuous flux of raw materials*" [...] "*has widely been used by administrations and the professions to assemble an exhaustive file in support of a demand for coherence, for specificity in public policy with regards to the concerned activities.*" Nevertheless, he has not convinced the whole of his audience, particularly in the search for grants to reduce the deficit of foreign trade in the said field. As a result, the very actuality of the notion, when it is so defined, is questioned.

More generally, a field is comprised of the amalgamation of various branches, which are complementary and linked together via different types of transactions. However, one often excludes from the definition of a field the construction of equipment goods and the final product distribution sector.

This article will briefly highlight the method adopted by Montfort and Dutailly in order to objectively define the term of 'field', and introduce the results obtained.

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[1] A sector is comprised of firms sharing the same main activity. A branch is the regrouping of units – or even fractions of firms – producing the same goods or final products. Working from the notion of sector may be problematic for our purposes, in as much as a firm taken over by a larger group, whose main activity differs, may disappear from the relevant sectoral data. Moreover, the notion of branch fits the goods and services nomenclature more closely.

Method

The definition stems from the links formed by the buying and selling of goods across branches, whereby buying/selling relationships are required to be strong within a given field, and weak across fields. The structure henceforth defined is all the more helpful in capturing problems regarding both the market and the integration (regrouping or buying-out) of firms.

Of course, it would be a vain exercise to try to construct fields altogether independent from one another.

The construction of the 19 fields was derived from the National Accountancy Entry-Exit table, distinguishing between 90 branches (*S90*). Results have later been refined by adopting the 600-post Activity and Products Nomenclature (*NAP600*).

Recall that there are two main nomenclature types in current use; the Activity Nomenclature and the Product Nomenclature.

To each post of the Activity Nomenclature, corresponds one or more posts of the Product Nomenclature, and vice versa, but each product and each activity are only mentioned once in their respective nomenclatures.[2]

The rule chosen for the downstream aggregation of branches stipulates that a branch is aggregated to another if the latter constitutes its main outlet in volume and value. Concurrently, upstream aggregation considers the main suppliers to a given branch. A third technique was to assemble branches with similar reactions to changes in final demand – either in absolute terms or in terms of elasticity, i.e. in terms of relative variations.

Remarkably, the three methods all led to the same definition of the timber field, which was henceforth adopted. Moreover, those results are stable across time since the calculations made for the years 1970 and 1981 led to the same result.

The number of fields depicting national activity is highly related to the 'internal level of dependency', which is arbitrarily chosen. The level finally selected for downstream integration is 0.3 – namely if the ratio of the amount of sales from branch A to branch B and the total amount of sales achieved by branch A is greater than 0.3, then branches A and B belong to the same field. The chosen coefficient for upstream integration is 0.25.

Result: The Timber Field

The 19 fields thus defined are as follows:- Agro-alimentary / Energy / Metallurgy / Non-ferrous / Chemical / Mechanical / Electronic / Motor Vehicle / Railway / Sailing / Aeronautical / Textile / Leather / Timber / Building – Civil Engineering / Bank – Insurance / Communication / Health / Leisure - Tourism

- *Segments*

Each field is divided in three segments:- upstream, centre, downstream. The boundaries of the segments are ill-defined. The upstream segment essentially refers to the extraction of raw materials and the manufacturing of the equipment goods required. The central segment corresponds to transformation activities, whilst the downstream segment concerns the distribution of related products and services.

- *Sub-fields*

As far as the timber field is concerned, three sub-fields (timber, paper - cardboard, furniture and miscellaneous) were later derived using the same method.

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[2] The *NAP* contains two levels of precision; level 100 (*NAP100*) corresponding to main activity classes and their associated products, and level 600 (*NAP600*) which defines elementary activities. With specific uses in mind, further more aggregated nomenclature levels have been introduced: Level 40 (*T40*) for micro-economists, level 16 (*U16*) describing the main functions. Level *S90*, close to the *NAP100*, is used here for a synthetic presentation of production fields. There also exist nomenclatures more detailed than the *NAP600*.

With reference to the 90-branch *S90* nomenclature, the timber field is constituted as such:-

S90 Nomenclature	Activity	Segment
S 02	. sylviculture	upstream
S 48	. mechanical woodwork	centre
S 49	. furniture	centre
S 50	. paper – cardboard	centre
S 54	. miscellaneous industries	centre
S 57-4..	. Retail	downstream

and with reference to the 600-post *NAP600* nomenclature:-

NAP600	Activities	Segment	Sub-field
210	Sylviculture and forest services	upstream	timber
220	Forest exploitation	upstream	timber
2302	Manufacturing of woodwork machinery	upstream	timber
4801	Sawmill	upstream	timber
4802	Manufacturing of carpentry and building joinery elements	centre	timber
4803	Manufacturing of wooden floors, mouldings and baguettes	centre	timber
4804	Manufacturing and transformation of panelling, veneering and improved timber	centre	timber
4805	Manufacturing of timber packing	centre	timber
4807	Manufacturing of miscellaneous timber objects	centre	timber
5001	Manufacturing of paper paste	centre	paper-cardboard
5002	Manufacturing of paper and cardboard	centre	paper-cardboard
5003	Manufacturing of stationery items	centre	paper-cardboard
5004	Transformation of paper	centre	paper-cardboard
5006	Manufacturing of undulated cardboard and undulated cardboard products	centre	paper-cardboard
5007	Manufacturing of cardboard packing	centre	paper-cardboard
4901	Manufacturing of furniture	centre	furniture and misc.
4902	Manufacturing of seats	centre	furniture and misc.
4903	Manufacturing of kitchen furniture and whitewood furniture	centre	furniture and misc.
4904	Manufacturing of bedding	centre	furniture and misc.
4905	Manufacturing of miscellaneous furniture and connected industries	centre	furniture and misc.
4906	Manufacturing of non-metallic functional furniture	centre	furniture and misc.
5407	Manufacturing of accessories for copper and wrought iron furnishing	centre	furniture and misc.
5907	Timber trade	downstream	timber
6003	Intermediary trade of timber and construction materials	downstream	timber
5914	Paper and cardboard trade	downstream	paper-cardboard
6443	Retail trade of books, stationery and office supplies	downstream	paper-cardboard
6005	Intermediary trade of furniture and household items…	downstream	furniture and misc.
6421	Retail trade of furniture	downstream	furniture and misc.

EVOLUTION OF THE TIMBER FIELD BETWEEN 1970 AND 1992

Difficulties Encountered

When attempting to supplement the data from the years 1970 and 1981 with data from the most recent available years (1991 and 1992), several types of difficulties arose:-

- *Sector vs. Branch Data*

As far as some activities are concerned, only sectoral data are available (for instance; sales, imports and exports relating to downstream activities).

- *Missing Data*

For example, there is no foreign trade data for posts 6003 and 6005 (retail and intermediary trade). However, in this particular instance, the effect on international performance indicators is expected to be negligible.

- *Changes in the minimum level of reporting*

All statistical sources do not share the same level of reporting. For instance, some only consider firms with 10 or more people, others 20...
Similarly, we would expect to be able to use data collected by the SESSI[3] to deduce an estimate of the value of exports, since both the amount of sales and the rate of exportation as a percentage of these sales are known. However, the values for exports hence obtained would often vary from those provided by the Customs statistical services. In fact, the amount of sales concerns firms with 10 people or more, whereas the rate of exportation regards firms with 20 people or more. On the other hand, exports reported by the Customs Office refer to all firms, without any size threshold.

- *Conjuncturally exceptional years for one or several observed variables*

The selected years (1970, 1981, 1992) may also be exceptional for various reasons: Macro-economic reasons (general activity level, rate of change...), or timber field-specific fluctuations (timber harvest, variation of international stocks of paper paste...). To counter this effect, and acting as a comparison, we also present results for the year 1991.

Foreign Trade Figures

- *Definition of the indicators in value*

We revert to the following definitions of the five follow-up indicators of foreign trade performance:-

1. Domestic demand = domestic production + imports – exports
2. Degree of internationalisation = (exports + imports) / (production + imports – exports)
3. Exterior performance = (exports – imports) / (production + imports – exports)
4. Rate of foreign products penetration
   = imports / (distributed production + imports – exports + commercial margins on exports)
5. Share of domestic demand satisfied by domestic production
   = (domestic demand + exports – imports) / domestic demand
   = 1 + foreign performance

[3] SESSI: *Service d'Étude des Stratégies et des Statistiques Industrielles* (Service for the Study of Industrial Strategies and Statistics), Ministry of Industry.

To summarise, if we denote imports by *a*, production minus exports by *b*, and exports by *c*, we obtain:-

1. Domestic demand: $a + b$
2. Degree of internationalisation: $(a + c) / (a + b)$
3. Exterior performance: $(c - a) / (a + b)$
4. Rate of foreign products penetration: $a / (a + b)$
5. Share of domestic demand satisfied by domestic production: $(b + c) / (b + a)$

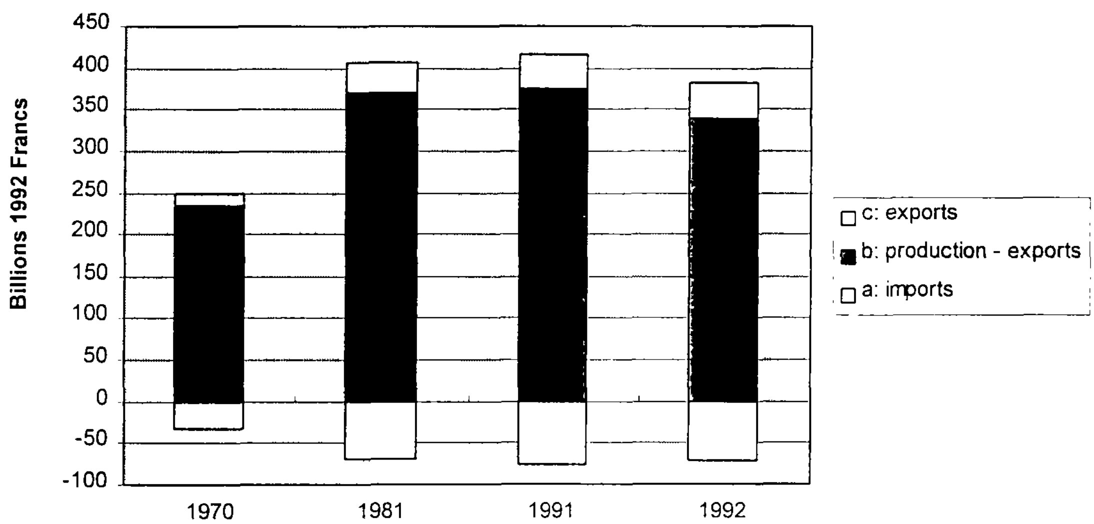
- *Results obtained*

Indicator	1970	1981	1991	1992
Domestic demand (billion of 1992 Francs)	201	303	299	268
Degree of internationalisation (%)	23.4	34.3	39.3	42.6
Exterior performance (%)	- 9.1	- 11.6	- 11.5	- 10.8
Rate of foreign products penetration (%)	16.1	22.4	25.4	26.7
Share of domestic demand satisfied by domestic production (%)	90.9	88.4	88.5	89.2

- *Comments*

The above quantitative results can be used to compute the values of parameters a, b and c for each of the years considered. Those values are represented in the graph below. We will remain cautious as to the interpretation of those results, due to the reservations already expressed in the paragraph 'Difficulties Encountered'.

Detailed results, by activity branch, or grouped in segments, are exposed in the technical documents by Jeandupeux & Terreaux (1994 and 1995).



Example: In 1970, exports amounted to 14 billion 1992 Francs, imports 32 billion 1992 Francs, and production minus exports 169 billion 1992 Francs.

Employment Data

The figure of 650,000 jobs in the timber field is often mentioned (for example Duroure, 1981, or Gadant, 1982). But different results can be found in other analytical reports, which demonstrates the benefits to be gained from a detailed definition of such a concept: For instance 550,000 jobs for Cranney (1986) who also notes that "*almost 1,400,000 people would earn their living from the timber field via the income it provides in work remuneration*". Guillon (1975) counts 628,000 jobs. Lévêque & Péguret (1988) 870,000 posts, 400,000 of which in the distribution. Finally Montfort (1983) reports 799,000 jobs in 1970 and 945,000 in 1981, the variation being greatly due to an increase of 174,000 jobs in the downstream segment.

Unfortunately, we can neither validate nor invalidate any of these figures, for the various reasons mentioned in the paragraph 'Difficulties Encountered', and in particular due to the large number of small firms not accounted for in the statistics.

The only conclusion we can provide, which remains qualitative and not quantitative, regards the upstream segment, for which we have the following figures:-

Upstream Segment	1970	1981	1991	1992
Employment (thousands of workers)......................................	37	33	42	44

This segment, which has known a fall in employment between the years 1970 and 1981, shows a clear improvement for the years 1991 and 1992. However, this may cover different actualities, between, on the one hand, sylviculture and forest exploitation, and on the other hand, the manufacturing of woodwork equipment. The remaining reservations on the reliability of the results are, however, maintained.

Conclusion

First, this study has allowed the objective definition of what is commonly known as the timber field.

The difficulties encountered in following but a few, very general, economic indicators not only show how much improvement would be achieved by better co-ordinating the definition of the variables collected by the various statistical services, but also shed light on the problems generated by frequent changes in nomenclature. Furthermore, it is likely that this work cannot be extended with figures collected after 1st January 1993.

As P. Guillon remarked in 1975, the disparity in the dataset forces us to consider our results in terms of size indication only, and to consider conclusions on the evolution of the field during the last few years from an essentially qualitative point of view, and not quantitatively.

Finally, it would be beneficial to follow many other variables than those mentioned here; for instance the internationalisation of capital within the field, which appears to be even faster than the internationalisation of the physical flux.

This definition of the timber field may act as the basis for the set up of homogeneous indicators on the whole field – which should then be organised in collaboration with the main users of statistical data. Outside any conflict of interests, this would allow the gauging of the well-being of the timber field. Moreover, the follow-up of its evolution – either directly, or indirectly using the tools of econometrics – would allow the determination of where public intervention is necessary and where it is most efficient.

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