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**ECONOMIC GAINS FROM 1992: Some notes
on the Cecchini report**

by
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November, 1990



Economic gains from 1992:


Some notes on the Cecchini report.

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1. Introduction.

The EC internal market is a massive effort to increase efficiency in European markets. Yet the 1992 programme is closely inter-linked with other policy issues; having consequences for monetary integration and macroeconomic policies, regional policy, trade policy, competition policy, and even social and environmental policies. The 1985 white paper by the EC Commission is clearly aware of such linkages, but states: "The presence of these problems does not imply that borders and border controls should not be abolished. On the contrary, it is our task to find solutions to the problems with the point of departure that borders will be abolished." ¹ Liberalisation comes first; macro-issues later. By this change of sequence, focusing on microeconomic efficiency first, the 1992 programme has received broad support from various political camps. It has worked as an engine for further integration. The 1992 project should be understood in this political context; economics are also politics.

The Cecchini report², initiated by the EC Commission, provides the documentation of economic benefits. Ranging from consultants' studies to advanced scientific contributions, it contains a massive amount of information and analysis of this process. The overall result from the microeconomic analysis in the Cecchini report is that realisation of the internal market implies potential welfare gains in the order of 4.3-6.4% of GNP for the EC as a whole. In the public debate on 1992, this figure has often been accepted as an undisputed fact. In spite of some critical comments from the academic side, the estimate has

¹ EC Commission (1985): KOM (85) 310, based on Danish version: "Gennemførelse av det indre marked".

² EC Commission: Research on the "cost of non-Europe", vol. 1-16, Brussels 1988. The overall calculations are to be found in EC Commission: The economics of 1992. European Economy no. 35, Brussels 1988. The term "Cecchini report" is here applied to both these documents. The basis of this survey is vol. 1, 2 and 10 of the main report, and "The economics of 1992".

provided a strong argument for the package of measures suggested in the 1985 white paper.

Due to its political importance, it should be of some interest to analyse how the Cecchini result was created and how reliable it is. That is the general purpose of this paper. The paper will focus on the overall estimate and its major building blocks, avoiding excessive detail. It examines the overall synthesis of the report and the most important aspects of methodology, and does not pretend to evaluate all parts of it. The paper does not evaluate to what extent the 1992 programme will be finally implemented; it assumes that it is fully realised.

The paper concentrates on the microeconomic analysis of the Cecchini report. In addition, the report contains macroeconomic simulations illustrating the effects of cost reductions on selected macro-variables. These calculations also add additional insights concerning the effects of accompanying economic policy and harmonisation of indirect taxes. In general, however, the macroeconomic calculations are based on the microeconomic background studies. In this perspective, it is not surprising that the overall results from the two parts of the analysis are of similar magnitude. For an assessment of the macroeconomic part; see Dornbusch: 1989.

2. Microeconomic estimates: Overall structure.

The overall microeconomic calculations constitute an enormous puzzle, combining information from several background studies in partial equilibrium calculations for more than 30 sectors. It is not always easy to get a precise picture of methodology; a lot of cross-checking of sources and their application is sometimes needed to clarify assumptions and methods.

There are three major inputs in the final result:

The study of Cawley and Davenport (1988) combines results from

several consultants' reports in a partial equilibrium framework assuming perfect competition. A small part of the calculations is based on a traditional customs union model; the rest is treating the EC as a whole - assuming lower production costs in the EC (a shift in the EC supply curve) based on results from consultants' reports.

The second major input in the final result is the evaluation of gains from economies of scale by Aujean (1988). Based on consultants' studies, expected changes in firm output are combined with available data for scale economies to produce estimates for cost reductions. Assuming that cost reductions are fully reflected in prices, the welfare gain is calculated. It is assumed that the output change is spread evenly across existing plants; and trade effects within the EC or with the rest of the world are not taken into consideration.

The third major contribution is the simulation study by Smith and Venables (1988a or b), estimating welfare gains from increased competition and economies of scale, assuming product differentiation, increasing returns and oligopoly. Their results are processed further by the EC Commission to obtain the final figures.

At this point, we should observe that different models have been applied for the same sectors at various stages of the calculations. At one stage there is perfect competition; at another there is oligopoly, product differentiation and scale economies. In spite of this, results from different models are added together in the overall estimate; thereby leading to an inconsistency.

Table 1 presents the main results from the microeconomic calculations of the Cecchini report³:

³ The abbreviations C/D and S/V are used for Cawley/Davenport and Smith/Venables, respectively. Values are in 1985 prices for 7 EC member states representing 88% of EC GDP.

Table 1: Microeconomic welfare gains from completing the internal market.

Type of effect	Source	Bill. ECU	% of GDP
Trade barriers	C/D	8-9	0.2-0.3
Cost reduction	C/D	57-71	2.0-2.4
Sum: "Direct effects"		65-80	2.2-2.7
Economies of scale	a) S/V^4	16-	0.5-
	b) Aujean	60-61	2.1
Competition	S/V	46	1.6
Sum: "Indirect eff."		62-107	2.1-3.7
Total effects		127-187	4.3-6.4

Source: EC Commission 1988a: 157.

The four types of effects are grouped into "direct effects", which are supposed to be essentially short-term, and "indirect effects", which are longer-term results of restructuring and increased competition. The conceptual distinction between the four types of effects (labelled "Stages 1-4" by the Commission) is not entirely consequent. For example; stage 2 (cost-reducing measures) includes scale and competition effects for the service sectors.

The table illustrates the importance of "indirect" effects, representing between 44 and 63% of the total gains. This is perhaps the most original feature of the Cecchini report; the inclusion of effects caused by economies of scale and imperfect

⁴ The figure of 16 bill. ECUs is not presented by the EC Commission. However, they present the figure of 62 bill. ECUs for scale and competition effects taken together, and the figure 46 bill. for competition effects only. This implies a figure of 16 bill. for scale effects.

competition. Even if such effects of integration were emphasized already by Lipsey: 1960, the argument has remained mainly a political one - lacking solid scientific evidence. Most empirical studies of integration have assumed perfect competition, and previous estimates of welfare gains from the EC customs union have been surprisingly small (less than 1% of GNP, see f.ex. Robson: 1986 for an overview). The inclusion of scale and imperfect competition effects is one of the reasons why the Cecchini estimates are dwarfing these results. In addition, table 1 shows that even the "direct effects" are higher than the estimates relating to EC tariff elimination.

3. Reduced trade barriers.

The gains from reduced trade barriers, amounting to 8-9 billion ECUs, is the smallest part of the overall figure. It is more or less equally divided between costs of barriers affecting trade directly and cheaper imports due to liberalised public procurement.

3.1. An inconsistent trade model.

The gains from eliminating direct trade barriers are mainly based on business surveys carried out by consultants. One of these is a survey related to border formalities, administrative costs and delays (Ernst and Whinney: 1988). From this, expected cost reductions varying between sectors and countries are derived, with an average of 1.6% of intra-EC trade values. The largest component is firms' internal administrative costs on border formalities.

Another survey (undertaken by Nerb: 1987 and not published in the Cecchini report) reports the perceptions of 20 000 EC firms regarding importance and costs of various trade barriers. From this survey, another set of cost reductions were derived. The difference from the first set is that costs of producing for standards in other EC countries are now included (Cawley/

Davenport 1988: 512). The average cost reduction is now 1.9% of intra-EC trade values, which implies that the perceived costs of satisfying product standards in other countries must be moderate. Taking into account that half of the 300 proposals of the White Paper relate to standards and regulations, this result is interesting.

Even if this part of the Cecchini results is small in comparison with the rest, it should be noted that a cost reduction of this magnitude is not insignificant. In the Smith/Venables study, for example, the whole 1992 effect is represented by a cost reduction of 2.5% (of trade value) in one of the scenarios.

On the basis of the assumed cost reductions, welfare gains are estimated in what looks like a traditional customs union model. Calculations are made for each one of 7 EC countries - where "the rest of the EC" and "the rest of the world" are the other two "countries" in the model. In the repeated calculations, however, all individual EC countries are assumed to have positive excess demand (Cawley/Davenport 1988: 509, 540), i.e. they are treated as importers. This implies that imports from the rest of the EC is increasing for all EC countries, but none of them appear individually as exporters. In this way, the authors are implicitly allowing intra-industry trade in a perfectly competitive model. In order to explain where intra-EC exports come from, there has to be intra-industry trade. Yet intra-industry trade is impossible under perfect competition. The method of repeated calculations for each country as importer thus makes the model inconsistent. The EC Commission is explicitly aware of the occurrence of two-way trade in the model (EC Commission 1988a: 174), but they do not indicate any reservations. It should be clear, however, that the method applied is unsatisfactory.

It should be noted at this point that only gains from eliminating border controls are calculated, and that costs of this measure are not taken into account. An obvious example is the administrative system regarding VAT, which may create additional costs

when border controls are eliminated. This would be the case for the original Commission proposal in this field, and it applies equally to the EC Council decision to implement a system purely based on the destination principle. As VAT will not be charged for exports, there has to be a system in order to control whether goods have been exported or sold domestically (if there was no control system, tax evasion would be simplified). The alternative costs of such measures should be taken into account in the welfare calculations.

Notwithstanding the methodological problems, and the exclusion of possible costs, it seems evident that the gains from abolishing border controls are small; amounting to less than 0.1% of GDP. They can hardly be the reason behind the dedicated approach by the EC Commission on this issue, particularly if we take into account VAT, drugs and the like. On this point, the "efficiency" approach is probably given less emphasis than the political arguments.

3.2. Public procurement.

Public procurement is an important part of the 1992 project. In 1986, public procurement contracts amounted to 240-340 bill. ECUs or between 7 and 10 % of EC GDP. They are particularly concentrated in certain sectors; such as petroleum products, transport equipment, telecommunication equipment and certain types of services. The EC national markets are relatively closed; only 2% of the contracts are given to firms in other member states (EC Commission 1988a: 55). The method of liberalisation is firstly to strengthen the execution of present regulations; and secondly to increase the coverage to important sectors not included previously (energy, water supply, transport and telecommunication). It should be emphasized that this is an area where EC Council decisions are not sufficient to give results; liberalisation in this field will surely be a long-lasting battle with national resistance and circumvention.

The Cecchini results relating to public procurement are directly taken from a consultant study (Atkins 1988). In stage 1 of the calculations (reduced trade barriers), only the direct gains from cheaper intra-EC imports are included. For a selected number of relevant product categories, it was assumed that

- a) 80 % of public procurement contracts were opened to imports;
- b) the import share became the same as in the private sector
- c) imports were only from other EC countries;
- d) the import price was equal to the lowest EC price for each category,
- e) domestic suppliers were able to maintain their present price level (in the short run), and
- f) the volume of public purchasing was unchanged.

The calculation is based on price comparisons for selected products between EC countries. It is noted that price comparisons are made difficult due to quality differences, and that there were also considerable price variations within countries (Atkins 1988: 96-97).

It should be noted that the expectation of all imports being intra-EC is hardly realistic. For the construction industry, for example, the U.S. share of public procurement in individual EC countries in 1986 was ten times higher than for other EC suppliers (EC Commission 1988a: 58). Even if EC will demand reciprocity from other countries regarding public procurement, existing trade patterns and GATT obligations imply that some "share of the pie" should go to third countries.

The assumption that all imports would take place at the lowest EC prices could also be questioned. An implicit assumption seems to be perfectly elastic supply. Regarding the demand side, it is stated that products are "differentiated goods with monopolistically competitive markets" (Atkins 1988: 112). It seems, however, that product differentiation is not modelled explicitly. In fact; it seems to be neglected - otherwise it would be hard to explain that all imports should take place at the lowest prices. The only role of product differentiation is to make it possible for other

prices to stay unchanged in the short run.

The result of the calculation is a gain of 4 bill. ECUs due to cheaper imports. An implicit consequence here seems to be that import penetration on average will exceed 50% in the sectors concerned⁵. This is certainly optimistic.

Due to the nature of the assumptions and the model, the calculations regarding short-term gains from public procurement are quite uncertain - and probably overvalued. This does not imply that the effects of liberalisation in this field are small; here the "indirect effects" (f.ex. for telecommunication and transport equipment) could be of greater importance.

The Atkins study contains additional calculations for the "indirect" effects. Later it is assumed that import competition will also drive domestic prices down to the lowest EC level⁶, due to reduced X-inefficiency or cost reductions resulting from scale economies. Total gains from liberalised public purchasing are estimated at 18 bill. ECUs (including a "restructuring effect" pushing prices further down plus additional savings in the defence sector, see EC Commission 1988a: 57).

3.3. Gains from cheaper services.

The "cost reduction" part of the Cawley/Davenport estimates is much more important than the results discussed above; with gains exceeding 2% of EC GDP. The precise type of effects included here is not so clear; in fact this part of the study is a blackbox for results from various consultant studies. In addition, the EC Commission (1988a: 174) has introduced "working hypotheses" for sectors not covered by consultant studies (agriculture, steel, energy). With these sources, a set of assumed cost reductions is

⁵ Derived indirectly from the results.

⁶ This only applies to sectors where there is not a substantial private sector market.

constructed, with an average of 2.4-3.0% of initial production costs (Cawley/Davenport 1988: 525).

These cost reductions are assumed to apply for the EC as a whole, being represented by a downward shift in the EC supply curve. In this part of the calculations there is no intra-EC trade; this is subsumed in the cost reduction figures. The model is simply one country (EC) trading with the rest of the world. Assuming that world supply is less than perfectly elastic, the EC supply shift leads to lower market price, reduced imports and a corresponding terms-of-trade gain, and an increased market share for domestic producers. The EC benefits from increased consumer and producer surplus and the terms-of-trade gain, and loses some tariff revenue. Prices decline by 1.5-1.8% on average, and EC output increases by 1.3-1.5%. Extra-EC imports are reduced by 6-8%, so there is some trade diversion.

In general, services play a prominent role in this part of the calculations. In fact, services alone represent more than half of the "stage 2" calculations, giving rise to a welfare gain of 1.3% of GDP. In addition, we shall see that cheaper services have important secondary effects due to their importance as inputs in other sectors.

An important feature of the "stage 2" calculations is that while the partial equilibrium approach still applies, the authors have quantified the gains resulting from cheaper inputs by using the Community input-output matrix. The assumed cost reductions include such effects, but the report does not include precise information on their magnitude. The authors state that the most significant cross-effects are caused by financial and business services, telecommunication services, freight and air transport (Cawley/Davenport 1988: 506). Det Økonomiske Råd (The Economic Council) in Denmark provides the information that "most of the savings in other sectors are derived from cheaper financial and transport services" (1989: 80) and furthermore that the cross-effects from cheaper services represent approximately 1% of GNP.

If this is true, most of the "direct" welfare gains are derived from cheaper services.

3.4. An example: Financial services.

For this reason it is of some interest to look closer into the assumptions regarding cost reductions for services. The single most important sector here is financial services; or credit and insurance, representing 10-11 bill. ECUs of the total welfare gain. We shall therefore look at how the gains for this sector were derived.

The source of the estimate for financial services is a consultant study (Price Waterhouse 1988). For selected products, the price level in each of 8 EC countries was compared to the average of the 4 lowest EC price observations. The consultant study then asks how much this price differential will be reduced due to the completion of the internal market. The benchmark assumption, which is applied in the Cecchini report, is that the price differential on average will be reduced by approximately one half (Price Waterhouse 1988: 280ff.). This leads to a price reduction of 10% on average (Cawley/Davenport 1988: 525).⁷ Basically, this is a "guesstimate"; there is no explicit model producing this result. It is pointed out that "extreme caution must be exercised in interpreting any quantification of the potential gains, as the results will of necessity be speculative" (Price Waterhouse 1988: 291).

The consultant study also underlines that the prices are not necessarily comparable, for example due to the existence of cross-subsidies within firms (ibid, 280). Different risks could also be of importance; explaining for example why car insurance is so expensive in Italy. If we look at the price dispersion for

⁷ It should be noted that "price" for some banking products here means "margin over wholesale money market rate" and the like (Price Waterhouse 1988: 280). This is different from the price facing consumers.

banking services, we find that the price ranking for each country is quite variable across products. Except for Spain and to some extent Italy, which are generally more expensive, all the other 6 countries have some cheap and some expensive products (Price Waterhouse 1988: 286). This may be explained by cross-subsidisation and different price-setting strategies of the banks. As noted by Grilli 1989a: 317, the price dispersion is not smaller for countries where financial markets are already completely liberalised (Germany, Be-Ne-Lux, UK). If cross-subsidisation is important, price reductions for some products might imply price increases for others. The EC Commission argues that this is taken into account by assuming 50 instead of 100% reduction of the price differential (1988a: 90). This is not very convincing; they could have chosen 10% instead.

In general, the assumed price reduction should therefore be considered as highly uncertain. Some sectoral studies conclude that the estimate probably errs on the high side (Grilli 1989a and b, Vives 1990, Davis and Smales 1989). As pointed out by the EC Commission itself (1988a: 89) and by Davis/Smales (1989: 110), there is already an ongoing process of financial market integration. This is especially the case for corporate or "pre-retail level" banking. It is therefore difficult to distinguish the 1992 effects from what would have happened anyway. Particularly for this reason, the estimate should be considered only as "illustrative and hypothetical" (EC Commission, *ibid*).

What are then the forces bringing down prices in the Commission scenario ? Is it economies of scale or scope, reduced X-inefficiency, greater variety or less oligopoly ? As there is no model clarifying this, it is impossible to say. We may note that competition is not perfect in the Commission scenario, only "half-perfect" (due to the price assumption). Cawley/Davenport states that 1/3 of the consumer surplus increase has been deducted as being only a transfer of monopoly rents from

producers to consumers (1988: 513).⁸ No reason is given for the choice of this figure. This must be the oligopoly part of it. The rest must be attributed to mainly scale or scope economies and reduced X-inefficiency (variety is not considered).

We may conclude that the estimate for the financial sector is highly uncertain and - supported by the above-mentioned sectoral studies - probably overvalued. This uncertainty and bias is particularly important due to the significant input-output effects caused by the estimated price reduction.

Which qualitative conclusion remain if we take this perspective? Firstly, the significant cross-effects are an argument on their own; demonstrating that cheaper financial services may be of great overall importance for the economy. Secondly, the Cecchini report highlights important differences across countries; implying that the most regulated markets (particularly Spain and Italy) may expect the largest price reductions due to fiercer competition. It seems that gains from national deregulation in some countries may be the most undisputed consequence of the internal market for financial services. To what extent the 1992 programme will produce general microeconomic gains apart from this, is more disputed. A general increase in competition and efficiency in certain market segments should be expected (f.ex. retail banking; see Vives 1990). It is outside the scope of this study to pursue this discussion further. The above-mentioned sectoral studies raise important issues in this field.

Some authors have emphasized the possibility of "competitive deregulation" in banking due to the new regulatory system created through the 1992 programme (Vives 1990). Whereas solvency criteria and approval of services of banking subsidiaries will be governed by the home country, the responsibility for deposit

⁸ Conversely, the EC Commission states that no such deduction was made (1988a: 177). Comparing figures, however, it seems that Cawley/Davenport is right. This reduction does not apply to the input-output effects, where the full price reductions have been applied (EC Commission, *ibid*).

insurance will rest in the host country. This may be an incentive for liberal regulations in order to improve the banks' competitiveness abroad. In case of bankruptcies, tax payers of the host country will pay the bill.

Another type of problems is related to the importance of tax incentives and secrecy for cross-border trade (see f.ex. Grilli 1989b). If the EC is unable to agree on capital tax harmonisation, liberalisation of capital movements may increase the possibilities of tax evasion. The Cecchini report does not focus on the problems mentioned here.

It should also be noted that the macroeconomic issues raised by perfect capital mobility may be equally important to the micro-issues discussed here. The financial sector is also a good example of the "political dynamics" implicit in the 1992 programme. Liberalisation comes first, even if free capital movements may create pressure in the EMS: The solution to this may be further monetary integration.

The financial sector illustrates problems of methodology in "stage 2" of the Cecchini result. Similar "guesstimates" on price reductions are made for some other sectors, for example business services. A general problem of some background studies is that they do not make any attempt to distinguish between "what would have happened anyway" and the 1992 effects. A more satisfactory approach to this is found in the studies by Müller/INSEAD: 1988 on telecommunication equipment and services. These studies start by defining an "anti-monde", taking into account current trends, and compares this with the 1992 scenario⁹ and a third variant assuming full market competition across the Community. An approach of this kind would certainly have been helpful also for other service sectors.

⁹ The internal market gain for telecommunication services is estimated at approximately 2 bill. ECUs, implying a price reduction of 5%.

It is beyond the scope of this study to make a complete assessment of all the assumed cost reductions. For that reason, it is impossible to draw any general conclusion on this point. We may note, however, that "guesstimates" applied for some vital sectors are quite uncertain. Furthermore, these uncertainties are magnified in the overall results due to input-output effects. For financial services, there is probably also an upward bias, influencing other sectors as well through the input-output effects.

4. The Smith/Venables model.

From a research point of view, the simulation study by Smith and Venables is the most interesting part of the Cecchini report. It meets the challenge of incorporating imperfect competition into the analysis of trade integration, and it links recent theoretical developments with reality in a way which is stimulating for research. The confrontation of classroom models with political reality makes it necessary to ask for the realism and relevance of theory.

Modern theories of trade under imperfect competition have developed along two different paths. The first of these is the industrial organisation approach - assuming oligopoly. The second is the monopolistic competition tradition - treating differentiated products. Following Dixit-Stiglitz: 1977, the Chamberlinian large-group assumption was supplemented with increasing returns to scale and a utility function assuming preference for variety. As an extreme case, welfare may increase because of larger variety even if costs and prices remain the same (Krugman 1980).

Both these types of theories may explain intra-industry trade. In the monopolistic competition case it is intuitively easy to see that product differentiation combined with economies of scale may lead to two-way trade, with large-scale firms located in different countries. Normally, the welfare gain will be partly due to cost reductions, and partly due to increased diversity.

The form of the utility function will be important for how diversity is translated into a measure of welfare.

The industrial organisation models normally also assume increasing returns, but this is not as such the reason for international trade in this case. Economies of scale secure that price is above marginal cost even with free entry. If this margin is higher than trade costs, it will be profitable to export to a market. The outcome depends on the behaviour of firms. With quantity or Cournot competition, where the firms adjust volumes assuming that other firms do not change their output levels, two-way trade may result even in the case of homogenous products. If there are barriers to entry, even high-cost firms may maintain some market share as long as the price-marginal cost differential is positive. With free entry this is no longer possible; the high-cost firms will be driven out. The market solution, however, will still be an oligopolistic one.

With the more aggressive Bertrand or price competition, where firms adjust prices taking other firms' prices as given, the low-cost supplier will take over the whole market even if there are barriers to entry. With free entry, the Bertrand case approaches perfect competition. However, if the products are differentiated, the difference between Cournot and Bertrand competition is qualitatively smaller; now high-cost suppliers may survive even in the Bertrand case.¹⁰

The Smith-Venables model combines oligopoly models with a particular way of modelling demand which is frequently applied in the Dixit-Stiglitz tradition. It is a partial equilibrium model where the sub-utility function¹¹ for the group of differen-

¹⁰ For a useful survey of such theories, see Norman: 1989a.

¹¹ It is also assumed that preferences are weakly separable between the group of differentiated products and other goods. This implies that the relative evaluation of products within the group is independent of the consumption levels for products outside the group. The further implications of this are discussed in Deaton and Muellbauer: 1980.

tiated products is of the CES form. It implies a strong symmetry assumption regarding price elasticities; the elasticity of substitution is assumed to be constant (independent of consumption levels) and the same between all pairs of products. If the price of Mercedes increases by some percentage, changes in demand should be relatively equal for Lada and Rolls Royce. Obviously, this is not necessarily true, and it is an empirical question whether it is or not.

It should be noted here that the symmetry assumption only applies to elasticities, and that the CES form still allows particular preferences for certain products. Written in the form $X = \{\sum_i a_i x_i^\beta\}^{1/\beta}$, where X is the subutility function for the group and x_i are the different products, we may notice that the weights a_i allows asymmetric preferences. We shall see that these weights play an important role in the process of fitting the Smith-Venables model to reality.

As a simulation exercise, the Smith-Venables model is not a piece of traditional empirical research. The construction of such a model departs from a given set of market data and known parameters, and the remaining parameters are "calibrated" to make the model correspond to the observed market data for a given period. The resulting model may then be exposed to "shocks" by analysing the effects of changes in certain parameters. The calibration process implies that some parameters are residually determined; on the assumption that the model is right. The world is fitted to the model and not vice versa. Richardson 1989: 22 has called calibration models "more art than science", maintaining that such models "provide less definitive results than data-intensive methods that characterise modern empirical research in industrial organisation". Sometimes there is a contrast between the elegance of the models and the uncertainty concerning crucial inputs; for example concerning firm behaviour, symmetry of demand, scale parameters, price elasticities and so on. Notwithstanding such weaknesses, calibration models may be useful for comparative analysis of changes in parameters. If simulations were made also

ex-post, and if further work is made in order to gain more information on the true nature of input parameters, the realism of the models could be enhanced.

4.1. The calibration of the model.

The nature of the calibration process is important in order to see how the Smith-Venables works. The question is: How is the existing pattern of market shares, profit margins and prices to be explained ? The explanation must be a combination of

- cost structure of production; scale economies and differences between firms and countries
- demand structure; degree of substitution between products and differences between national preferences
- market structure or assumptions on firm behaviour
- trade barriers.

The problem of calibration is to "distribute weights" to these various elements in order to fit the model to observed data. As there are alternative solutions to this problem, the "art" comes into play.

As noted above, Smith/Venables assume symmetry regarding elasticities of substitution between various products. It should be noted that they do not only assume this within each national market; in addition they assume that these elasticities are the same in all markets. This may be an even more crucial simplification than the symmetry assumption itself. Most research on demand elasticities confirm that they vary considerably between countries.

In order to make the model manageable, S/V also assume symmetry between national firms. All firms in a given country are of equal size. Combining output data and indices of concentration for each country, they obtain figures for the average firm size for each country. Assuming free entry and zero industry profits in the calibration of the model, the price figures derived from the firms' profit maximisation must be equal to average cost. The

free entry assumption is necessary in order to calibrate the model; also here it is an empirical question whether it is realistic. If we believe in the diagnosis of 1992, such an assumption should not be appropriate.

In the derivation of prices and marginal costs, the assumptions on scale economies come into play. It should be noted that the assumption of free entry/zero profits only applies to the EC as a whole, so that some country industries have losses and other excess profits. The authors assume that the cost function is the same across countries. This includes economies of scale as well as economies of scope. As a further simplifying device, due to lack of data, they assume (for the calibrated situation) that the length of production runs for each model is the same in all countries (1988a: 298). Size differences between firms in different countries are accordingly explained by the number of models produced; i.e. the only source of cost differences is economies of scope. As economies of scope for most sectors are assumed to be much less important than economies of scale, a possible consequence of this seems to be a down-grading of cost differences between countries. Such differences are of major importance for explaining market shares in an oligopoly model. The calibration here reduces the weight of cost differences in the explanation.

Given the cost function, it is then up to the rest of the parameters to explain differences in profit margins as well as differences in market shares. As illustrated by Norman and Orvedal 1990: 25 the outcome of the whole exercise is extremely sensitive to the assumptions regarding economies of scale. High scale economies imply high profit margins, and consequently trade barriers, less aggressive competition or higher product differentiation must be given more weight in the explanation. The fact that the information on scale economies is mostly based on data from the 1960s (Pratten 1988: 99), implies that there is considerable uncertainty regarding the scale parameters, and therefore also the overall result of the model.

Given cost functions and national firm sizes, the calibration has to determine demand functions (substitution elasticities and the national weights of the utility function), competitive structure and trade barriers. The issue of market structure is solved by Smith/Venables by alternatively assuming Cournot or Bertrand competition.¹² Then three parameters remain to be calibrated: Substitution elasticities, the weights of the sub-utility function and the parameters for trade barriers. However, it turns out to be impossible to solve for these three at the same time. The authors therefore instead ask: If preferences are the same in all countries (so that the weights of the utility functions are equal for all countries), how large would the trade barriers have to be in order to explain market shares? In this way, substitution elasticities and a set of "tariff equivalents" may be derived from the model. At the same time, national variations in prices and profit margins are derived. The outcome is different for the Cournot and Bertrand cases.

Since Bertrand competition is inherently more aggressive, this gives more weight to product differentiation; i.e. produces lower elasticities than in the Cournot case. Whereas the average individual product price elasticity is 13 for the Bertrand case, the Cournot figure is 22. The authors maintain that the elasticities in most cases take "intuitively appealing values" (1988a: 297). In this context, we may notice that the symmetry between national firms implies that the elasticities will apply for the whole national industry. They can therefore be compared with research results on industry-specific national elasticities. In this light, the elasticities seem very high indeed. That a price change of 1% should produce volume changes of 13 to 22% on average, seems to imply that the degree of product differentiation is in fact rather low. This applies particularly to the Cournot case, which is considered as the central case by the

¹² For the variant with variable number of products, they also apply the "conjectural variation" approach, where the parameters for firm behaviour are endogenously determined.

authors. Therefore it seems that these results understate the role of product differentiation in demand.

The final piece of the puzzle is to determine the role of trade barriers and national preferences. In fact, it is not possible to distinguish the separate influence of these two. For this reason, transport costs (i.e. cost-increasing trade barriers) are arbitrarily set at 10%, and the remaining part of the calculated tariff equivalents is put into the weights of the CES utility function. With tariff equivalents ranging from 0 to 70%, some of these weights become rather high. What is also important, they become arguments in the welfare calculation so that increased market shares for preferred products also influence welfare gains considerably. Norman: 1989b has demonstrated that the outcome of the welfare calculation is extremely sensitive to the choice made here. If the whole tariff equivalent is defined as trade barriers (so that national preferences are identical), some of the welfare gains of the S/V calculations would be drastically reduced.

Concluding this discussion, it may be asked whether the calibrated model

- 1) understates cost differences between countries as an explanation of market shares
- 2) understates the degree of product differentiation
- 3) overstates the importance of national preferences
- 4) overstates the welfare gains from increased market shares for preferred national products.

A final note regarding the calibration concerns the treatment of non-EC countries in the model. Having precise data for Germany, France, Italy and UK, data for "the rest of the EC" and "the rest of the world" were "estimated in a fairly arbitrary way" (Smith/Venables 1988a: 295). For the rest of the world, firm size (and also the ratio of production to exports to the EC) was assumed to be equal to the average for the 4 EC countries. Due to these data problems, the authors state that "great caution should be exercised in interpreting results relating to the rest

of the EC or the rest of the world" (ibid.). The question remains whether such problems could also influence the results for the 4 main countries. Evidently, the answer must be affirmative.

4.2. The simulation results.

The model is calibrated for 10 different sectors, with various degrees of concentration, scale economies and product differentiation. In the simulations, several variants of the model are considered. In addition to the alternative use of Cournot or Bertrand competition, the simulations also vary assumptions regarding entry (fixed/variable number of firms) and number of products per firm (fixed or variable). This produces $2 \times 2 \times 2 = 8$ variants of the model, which are exposed to changes in parameters.

Two different inputs are applied to illustrate the effects of the internal market. The first is that trade costs are reduced by 2.5% of trade value. In addition to this, a scenario of "integrated markets" is simulated (also assuming the same reduction in trade costs). Whereas the normal case of "segmented" markets allows price discrimination for the same product across countries, the "integrated" scenario simply assumes that such discrimination no longer exists. Prices for the same product must be the same in all countries, except as provided for by trade costs.

Noting the previous discussion on the "direct effects" of 1992, it seems that a 2.5% reduction in trade costs is a too modest input to represent the internal market effects. Furthermore, all evidence suggests that the reduction is quite variable across sectors, so that a common figure for all of them is not plausible. However, the authors suggest that the results may be scaled up to give an approximative measure of gains if cost reductions are larger (1988b: 1511).

The second input, integrated markets, is in a way a strange

construct. Having finally developed models explaining price discrimination, it is suddenly assumed away. Whereas preferences are still assumed to be nationally segmented, firms are prevented from discriminating by some invisible hand (called arbitrage). Even if firms still have an interest in discrimination, for example due to differences in national preferences, distance to markets etc., this is ad hoc no longer possible.

It is not very clear what the "integrated" scenario really tells us about the internal market. As pointed out by the authors themselves, it is "questionable to what extent it is a policy experiment in a meaningful sense. Existing national trade restrictions undoubtedly play a role in maintaining national price differences by preventing arbitrage, and their removal would tend to reduce such differences. Yet it seems unlikely that full market integration could be imposed merely by the removal of such restrictions." (1988b: 1502).

We may conclude, therefore, that the "model shocks" hardly give a realistic representation of the EC internal market. In order to describe the effects of 1992, the results would have to be modified in some way.

The following table shows the welfare gain in 8 variants of the Smith/Venables simulations (variants with fixed number of products per firm):

Table 2: Welfare gains (weighted average for all sectors) in the Smith/Venables model. Percentages of EC consumption.

	Firm number	Segmented	Integrated
Cournot	Fixed no.	0.63	2.61
	Free entry	0.98	6.15
Bertrand	Fixed no.	0.70	0.70
	Free entry	0.69	0.69

Source: Calculated from Smith/Venables 1988a.

We see that 6 of the 8 results are in the same order of magnitude, only the integrated scenario with Cournot competition stands out. The small variation between the 6 other results is interesting, but it is hard to say whether this "robustness" is real or if it is due to the assumptions of the calibration. For the segmented scenario, the table conceals that the qualitative results are different for Cournot and Bertrand competition. Under the more aggressive Bertrand competition, the demand functions are given more weight in the explanation of price/cost margins. Consequently, the effects from reduced trade costs on prices, costs and output is smaller in the Bertrand than in the Cournot case. On the other hand, a given price reductions gives a larger welfare gain in the Bertrand case due to the lower elasticities. So even if other effects are different, the welfare gain is similar.

In the segmented scenario, the integration effects are qualitatively similar to what we are used to from traditional customs union models. Intra-EC trade increases from 13 to 45% (trade creation), and imports from third countries decline by between 2 and 26% (trade diversion). The results vary considerably between sectors, with stronger effects for industries with higher

concentration and scale economies. The results are also influenced by the share of intra-EC trade in total trade.

For the "integrated" scenario, we may distinguish two different effects. The first is the reallocation effect due to the elimination of price discrimination. Where prices decline, market shares increase and vice versa. The second type of effect is the output effect; will the end of price discrimination on the whole lead to more aggressive competition and larger output ?

In the more competitive Bertrand case, there is no output effect - each firm's volume changes in the different markets will offset each other. The reallocation effect is also moderate because the more aggressive competition implies that the variations in price-cost margins are small in the calibrated situation.¹³ The emphasis on demand factors in the more competitive Bertrand case therefore explains why "integrated markets" do not give different results.

In the Cournot case, however, firms will exploit their market shares - which define their market power - so that variations in price-cost margins are higher in the calibrated situation. For a given firm, the price-cost margin will be highest where market power is largest, and in general this happens to be in the home markets. The general result in the Cournot case with integrated markets is therefore that home market prices are reduced. With the high price elasticities assumed, this leads to large increases in home market shares. When domestic products are more heavily weighted in the utility function, this is also translated into a considerable increase in welfare.¹⁴

¹³ It is not possible to see this directly from the S/V study, so some comments like this are based on my interpretation of the model.

¹⁴ It should be noted that this effect could work in the opposite direction in the segmented scenario, where the increase in imports will be "under-valued" due to the national preferences. More neutral national preferences would therefore reduce the difference between the two scenarios from both directions.

In addition to the large reallocation effect, there is also a considerable output effect in the Cournot case. This is a complex phenomenon (S/V 1988b: 1524). End of price discrimination implies generally that the dominating firms in each market behave more aggressively. The firms are deprived of their ability to exploit their market power in each market. The overall outcome is that competition becomes more aggressive, so that total volume increases.

The model therefore produces much larger welfare gains in the integrated Cournot case. We see that with fixed number of firms, the welfare gain is four times larger than in the segmented case. When free entry is also allowed, there is significant exit from the industries; the number of car producers is for example reduced from 14 to 6. This leads to increased exploitation of scale economies, a much stronger output effect and a further welfare gain. It should be noted that the strong effects in the integrated Cournot case do not apply to all sectors; they are particularly pronounced for industries with high concentration and significant scale economies. The polar cases are cars, where the welfare gain increases to 12%, and footwear, where the maximum gain is 0.6%.

The increased share for domestic producers leads to quite unorthodox effects on trade. In the integrated Cournot case, intra-EC trade is now reduced with up to more than 60%. Imports from third countries are also sharply reduced. This paradoxical result regarding intra-EC trade is so extreme that it raises some doubts about the realism of the model. In principle, however, it is an important result. Recalling the discussion on calibration, the question is whether this result is caused by understating the importance of product differentiation (assuming very high elasticities) and overstating national preferences. The robustness of the result should therefore be investigated further. Anyway, we may add trade reduction to our list of creation, diversion and modification effects of integration.

The Smith-Venables model is a stimulating study, opening new possibilities for the analysis of integration. The number of simplifying assumptions, the uncertainty on certain key parameters, and the unavoidable shortcuts of calibration, still imply that the quantitative results should be considered as very uncertain and that they should be "handled with care". This is particularly true if we want to say something about the internal market, because the "model shocks" hardly give a realistic representation of 1992.

4.3. How the results were used by the EC Commission.

How could the model results have been used in order to analyse the internal market ? One possible method, for example, would be to use the "segmented" case and scale the results up or down according to the assumed reductions in tariff equivalents. Instead, the EC Commission have used as their "base case" the most extreme variant of the simulations. Even if they state that the gains are to be considered as "potential and conditional" (EC Commission 1988a: 5), this choice implies that the EC Commission has hardly demonstrated the needed caution in interpreting the Smith-Venables results. The assumption of "integrated markets" with Cournot competition implies that the result will be upward biased.

In order to use the results, the Commission has made additional simplifying assumptions. By ranking the welfare gains in the Smith-Venables model according to scale economies and concentration, they are able to use the results for a larger number of industries (by comparing scale/concentration). Secondly, by comparing different variants of the Smith-Venables model¹⁵, they derive coefficients for the ratio between "direct" and "indirect"

¹⁵ The method is not precisely explained (EC Commission 1988a: 1983).

effects. This ratio varies from 1/1 (footwear) to 1/6 (cars). These ratios are then applied to blow up the previously calculated "direct" effects for the manufacturing sector. In this way, results from different types of models are mixed. It should also be noted that the direct effects here seem to include not only the cost of trade barriers (stage 1), which is approximately comparable to the "segmented" scenario, but also the "cost reduction gains" (stage 2). Recalling that these direct gains were heavily influenced by input-output effects from services, we see that the method implies that the uncertainty and possible bias of the "direct" effects is magnified in the total result.

The last step in the Commission procedure is to split gains from scale economies from competition effects in the Smith-Venables result. Even if the results in the "integrated" scenario are heavily influenced by scale economies, the scale effect is derived from the segmented scenario (EC Commission 1988a: 184). This is compared to the overall effect to give ratios of scale to competition effects varying from 1/0.5 to 1/5 between sectors. However, it seems that the method implies that the resulting competition effect is also including a fair amount of scale economies.

The welfare gain in all variants of the Smith-Venables model is a result of interaction between economies of scale, competition, reduced prices and changes in trade and consumption patterns. The result of $16+46=62$ bill. ECUs for stages 3 and 4 all comes from the same model, and the two parts of the result are mutually dependent on each other. The procedure of extracting the "competition effects" from this result, and adding it to the higher estimates for economies of scale by Aujean (based on different assumptions regarding competition), is therefore not entirely satisfactory. If it is correct that the competition figure includes scale effects, it also implies a double-counting.

It may be noted that the competition effects (stage 4) are presented by the EC Commission as "competition effects on X-

inefficiency and monopoly rents". As far as I can see, however, there is no X-inefficiency in the Smith-Venables model. Furthermore, there is free entry both in the calibrated base case and in the variant chosen by the Commission, so there are no excess profits (prices and costs are reduced by the same percentage).

5. More scale economies.

As noted, the upper bound of the Cecchini estimate include alternative estimates for scale effects, derived from Aujean: 1988. The method is to assume certain increases in firm size, and combine these with data on scale economies to derive the cost reductions. The assumed increases in firm sizes are primarily derived from a number of consultant studies, resulting in the assumption that average firm size may increase by 25% for the sectors covered (Aujean 1988: 553). Assumptions for various sectors are combined with the Pratten data on scale economies, resulting in cost reductions averaging 2.5% for the sectors studied. These results are aggregated to the level required for the Cecchini report, and input-output effects are included. Assuming that cost reductions are fully reflected in lower prices, the total welfare gain is estimated at 57 bill. ECUs. When this is added to short-term gains from scale economies due to increased production in existing plants (from the Cawley/Davenport study), we get the figure of 60-61 bill. ECUs in table 1.

Apart from the uncertainty concerning the Pratten data, a problem with such calculations is also to distinguish between internal market effects and what would have happened anyway. If the scale economies are so large, they should also be exploited independent of 1992. It is only in sectors where trade barriers are large that they can prevent the exploitation of scale economies of this size (Pelkmans/Winters 1988: 20). For some industries, for example telecommunication equipment and some types of transport equipment, this may be the case, but it is not possible to assume that the internal market will have such effects in general. As

long as the problem of the "anti-monde" is not addressed explicitly, it is difficult to accept these figures as measures of the 1992 effects.

Another problem of the calculations is the symmetric treatment of firms throughout the EC. If firms in some countries have already achieved the minimum efficient scale, the outcome would be different. More explicit consideration of this question is necessary.

We may note that both Aujean and Smith/Venables primarily rely on the same data on cost functions (the Pratten data), but that the results are different. Even with the extreme assumption of "integrated markets", scale effects in the Smith/Venables model are smaller. If we use the Commission "residual" of 16 bill. ECUs, it is only 1/4 of the Aujean result. If we instead say that a large part of the 62 bill. figure is due to scale economies (which is also possible), the figures become comparable; but in that case it is not possible to add the Aujean result on top of the other.

6. The use of partial models.

The use of partial equilibrium models throughout the whole exercise constitutes a problem when there are parallel changes in many sectors. This applies to inputs as well as final goods. If prices for all final goods are reduced at the same time, the partial models will overvalue the substitution effect and understate the income effect. If for example, all prices are reduced by 1% this implies a real income change of 1%. If the absolute value of the price elasticity is larger than the income elasticity (in the partial model), the partial analysis will lead to an upward bias. Cawley/Davenport seem to apply rather low price elasticities of demand, exceeding 1% only in a few cases. This choice reduces the possibility of a large bias due to the partial approach.

Regarding the demand for inputs, it is likely that the results would be dampened by using general equilibrium models. Tentative calculations by Norman: 1989b indicate that partial equilibrium results could be reduced by 40% when a general equilibrium model is applied. This will also depend on capacity utilisation at the outset. On the whole, it must be expected that the use of partial models leads to an upward bias.

7. Conclusions.

On the whole, it seems that the Cecchini estimate should be considered as highly uncertain and upward biased. The critical comments in the preceding discussion imply that the total figure should be considerably lower. It is difficult to say what the figure should be; this would require a study of the same size as Cecchini report. If we hypothetically - rather arbitrarily and for the sake of illustration - assume that the "cost reduction" figure should be $1/2$ to $2/3$ of the figure presented, and furthermore that indirect effects are calculated as half of the Commission result derived from the Smith-Venables "integrated" scenario, we get a total of 2-3% of GDP, i.e. approximately half of the Cecchini figure. We are then approaching a similar "guesstimate" made by Peck 1989: 289, saying that the microeconomic gains should be about 2% of GDP.

The uncertainty of the Cecchini result, also emphasized by Flam/Horn: 1989, is partly a necessary consequence of such a large project, implying hundreds of simplifying assumptions. It is also due to the use of "guesstimates" on price reductions in the background studies. The bias is mainly due to the upward bias of some price "guesstimates", the lack of an anti-monde in several background studies and also the Aujean calculation on scale, the far-reaching assumption of "integrated markets", and finally the method of extrapolating overall results from the Smith-Venables model.

The analysis here therefore supports the conclusion by Grossmann

1990: 385 that "the reader in search of serious applied analysis and ultimately a convincing and plausible measure of the potential welfare effects of completing the internal market in Europe will find himself or herself greatly disappointed".

This paper has examined the effects quantified by the EC Commission. It does not discuss additional effects that may come from dynamic effects on growth and innovation (Baldwin 1989), or "animal spirits" (Dornbusch 1989). The animal spirit argument may be important, noticing the change of firm behaviour induced by "europhoria" or fears of "fortress Europe". Even if such additional effects may be significant, however, they are not an argument for overstating other gains.

The point of a critique like the one made here is to approach a realistic assessment of the economic effects of the internal market. The excessive optimism by the EC Commission blurs the distinction between costs and benefits, between scale gains and concentration losses, between trade creation gains and trade diversion losses, between regional and global liberalisation, between X-inefficiency and sub-optimal scale, between diversity and scale (Geroski 1989) and so on. In spite of the overall bias, the Cecchini report contains a massive amount of analysis and information which is useful for evaluating such issues. As noted before, the introduction of modern trade theory in the analysis is also constructive; even if the results should have been treated with more caution by the EC Commission.

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