Courrier des Statistiques is published four times a year in French, but the topics it deals with are relevant to a broader audience. We have therefore decided to produce an annual supplement in English. This marks our contribution to the international exchange of information on statistical methods. We begin with a selection of articles focusing on a single theme. Later issues may address a more diversified range of subjects.

This issue—the first of its kind—is devoted to national accounting. Four decades ago, national accounting was a brand new instrument. Today, it has matured. It is often portrayed as a harmonious set of carefully interlinked concepts serving as a framework for statistics that have been rendered thoroughly consistent. Indeed, the main aim of national accounting is to offer an orderly set of aggregates describing the main features of the national economy.

One of the main drawbacks of such a seamless picture is that it masks the uncertainties resulting from adjustments between the highly diverse statistical sources used by national accountants. Another disadvantage is the implication that national-accounting methods, with all their refinement, are incapable of further progress.

The articles on national accounting in this issue provide an antidote to such an interpretation by showing how many avenues remain unexplored.

Edmond Malinvaud reminds us of the basic function of national accounts—namely, to make primary statistical observations intelligible, hence more useful. He also invites national accountants to exploit the theoretical advances achieved in the comprehension of price mechanisms. He concludes by recommending prudence on one point: national accounting is designed to structure large information systems, but it must not seek to fully incorporate the microeconomic data bases.

André Vanoli comments on the recent publication of the 1993 System of National Accounts by the leading international organizations. He appeals to national accountants to keep up their efforts. National accounting, he argues, is a provider of overall descriptions, a producer of conceptual reference frameworks, and an instrument for structuring statistical information in the economic, social, and environmental spheres. Today, it is far from
having exhausted its potential in those three roles. On the contrary, says Vanoli, it can and must forge ahead to meet new informational needs.

Jacques Boumay and René Isnard give a broad outline of the future base-1990 «central framework» of the French national accounts. Apart from the closer connection between annual and quarterly accounts, the main novelty is the compilation of wealth accounts in balance-sheet form, which should be concurrent with the preparation of flow accounts. Balance sheets are already compiled for the financial sector in the base-1980 system. Their extension to the accounts of the real economy will provide fuller coverage of the latter and thus help us better understand the mechanisms of the total French economy.

Michel Braibant reminds us that the most fruitful avenue of development will probably be the satellite accounts. Revolving around the central framework, they can offer ad hoc answers to specific questions while maintaining sufficiently close links to the main economic aggregates in standard use.

Michel Braibant and Jean-François Minder illustrate the benefits of constructing satellite accounts through the example of the research account.

Jean-Pierre Dupuis discusses the work on the French «intermediate system» of accounts for insurance corporations. His example illustrates an approach that is also being applied to non-financial enterprises and could be profitably extended to all institutional sectors whose units follow standardized bookkeeping practices.

From all these contributions, one certainty emerges: despite the appearance of relative maturity, much work remains to be done in national accounting.

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Economic theory and advances in national accounting

The title of this paper is open to many interpretations. Each approach to the topic could be dealt with in several ways. My choice of interpretation and approach was obviously dictated by the concerns of this meeting and the limits of my expertise. The ACN meeting has addressed the vast topic of "measure and value in national accounting." The context is also marked by the revision of the United Nations System of National Accounts—a system with which the accounts of all countries should aim to be consistent. In the new period until the next revision—at least a decade away—it is worth re-examining the logic and the constraints of national accounting to determine the adequacy of the principles applied today. At the first session of this meeting, A. de Michelis urged the ACN to undertake such a reassessment. In so doing, he deplored the fact that academic research had not contributed more actively during the past decade to the latest revision.

I must confess that this setting is highly appropriate for my purposes. The topic and the moment should prompt us to stand back and reflect on the issues from a broad perspective without paying too much attention to details. As you will doubtless observe later on, my distance from current national-accounting work means there are gaps in my knowledge and my competence in number of specific areas is weak indeed. My vantage point will therefore be even more remote than necessary. As the closing speaker, I shall suggest some pathways for research that might prove rewarding, although their exact outlines may not be entirely clear to me. To embark on such research projects is naturally no guarantee of success, but they are a suitable topic for discussion in these concluding remarks.

More specifically, I shall draw attention to two main issues in national accounting: valuation and aggregation. These issues are old and perennial, because they can never be fully resolved. In tackling them, we should ask whether we might find solutions offering a more satisfactory degree of approximation. My exploration of the research pathways that could lead to such solutions will be very fragmentary. Others may address aspects not mentioned here or develop different lines of inquiry than those offered below. Valuation and aggregation will be the focus of the second and third parts of the paper respectively. A discussion on the relationships between theorists and accountants may provide a useful starting point.

I - Theory and national accounting

My definition of theory—particularly in this paper—is a broad one. Theory consists of any intellectual, methodical, and organized construct that summarizes a corpus of knowledge on a phenomenon or topic. Theory is not just a relatively formalized model. It is also a set of concepts that spell out the correspondence between the model's entities and the world to which the theory is intended to apply. Theory also provides orders of magnitude for certain relationships. Lastly, theory offers an interpretative framework for the model and instructions on how to use the model to study certain actions.

The intellectual construct is typically the outcome of a long process during which the attempts at synthesis and modeling alternated with the search for, and the study of, observations. Indeed, any theory that is in the slightest way scientific possesses an empirical basis. The application of most theories also presupposes the collection of suitable data relevant to the specific issue at hand. Observation is thus required both "upstream" and "downstream."

A mediating function

National accounting deals with phenomena perceived at a meaningful level of aggregation and with issues that concern large communities if not the entire nation. Its domain is macroeconomic or macrosocial. The title of my talk could therefore have

1. Closing address by Edmond Malinvaud to the fifth meeting of the French Association for National Accounting (ACN), December 15, 1993. The header in italics is the author's own introduction.
been more specific and mentioned "macroeconomic theory." But that might have made us neglect the importance of the microeconomic foundations of macroeconomics. In any case, we shall examine national accounting principally as a useful empirical basis for developing and implementing macroeconomic theory.

National accounting is not a primary base of empirical information, but the result of a formating process designed to make the primary observations more intelligible—hence more useful. The discipline would lose its raison d'être if every researcher interested in theoretical constructs and every analyst preparing a situation diagnosis or a policy assessment had constantly to refer to primary data. But in practice these primary data are generally unknown to users of national accounts and of comparable aggregate statistics. In other words, national accountants act as intermediaries for those who seek to understand or influence macroeconomic reality.

In human society, service relationships are often tense—all the more so when they involve intermediaries. National accountants experience such pressure on two fronts. As service providers to theorists, they cannot always supply the exact measure of the entities to which theorists refer. The entities may be new and thus hitherto unestimated. Or they may be old but impossible to measure accurately for lack of reliable, relevant data from business accounts and statistical surveys.

On the second front, national accountants are service providers to analysts concerned with applications. In this capacity, accountants are the target of occasional criticism on one of two counts: the first is the deficiency I have just mentioned—namely, their inability to quickly adopt conceptual novelties and to cope with the shortcomings of the primary bases; the second is the non-relevance of the statistics they supply. In the latter case, the criticism should be most often directed instead against the theorists who shaped the choice of national-accounting frameworks and concepts.

In describing the methodology of national accounting, one could stress that mediating function—by showing its requirements, the constraints to which it is subjected, and the tensions it has to contend with. This approach involves recapitulating the history of economic theory, of the underlying principles of economic policy, of administrative practices in business firms and public institutions, and of statistical systems. The methodological presentation needs to explain the role of theory in determining the methods and programs of national accounting. It must point out the contradictions inherent in the notion of a single comprehensive framework. That notion is certainly of great value but hard to reconcile with the multiplicity of requirements to be met. Such multiplicity is all the more serious a problem as it is true not only of the goals of macroeconomic analysis but also of the goals of private and public managers—the prime audience for business and government accounts. The methodological presentation should also emphasize that an intermediary's intervention is probably not appropriate in all circumstances. Indeed, it may do more harm than good in some situations where direct access to primary data could be more effective for researchers and analysts than using data aggregated and processed to fit into the accounting frameworks.

So much for the pedagogics of national accounting, which is not my subject and deserves a far fuller discussion. My remarks did, however, touch upon two broad issues to which we shall return in more specific contexts later: (1) the influence of theory on national accounting methods; (2) the existence of issues for which national accounting is not necessarily the proper approach. For the moment, I'd like to underline one of the functions of national accounting as mediator: its influence on theorists' research programs. The analogy with the role of sales/marketing departments on firms' production programs is somewhat appropriate here.

Influencing research programs

The above-mentioned influence is exercised in three major areas: (1) conceptual development, (2) the identification of unexplained facts, and (3) the supply of data for empirical research. The senior members of this audience will recall how macroeconomic theory was stimulated by the introduction of the first national-accounting systems. These were supposed to apply to all transactions of any significance in "real" countries. Many of the transactions had not been explicitly recognized in the abstractions on which the theories were built. Real transactions consisted not only of consumption, investment, production, and income, but also taxes, bonuses, profit-sharing, research and development, capital gains, and so on. A deeper conceptualization was called for. Theorists had to find a link between their standard concepts and these somewhat unfamiliar flows. In some cases, it had to be shown that the existing concepts were still viable; in other cases, new concepts had to be introduced into the theoretical models and frameworks. In the former instance, theorists had to tighten up the definitions adopted earlier.
Identifying unexplained facts ... Supplying data bases for empirical research

Conceptual development—an intensive process forty years ago—has continued since, but perhaps without receiving as widespread an attention as it deserves. National accountants have re-examined the treatment of activities such as banking or have had to meet particular public demand for information, for example to quantify the concept of rate of compulsory contributions. Meanwhile, economists working in different fields have proposed aggregates or overall indicators that were considered particularly relevant in shedding light on certain issues such as full-employment budget, inflation-adjusted profits and losses, cost of capital, and effective rate of social protection. In my view, theorists have not paid enough attention to these numerous enhancements of their discipline's conceptual system. Likewise, national accountants have stayed too far away from developments not directly related to their own work. If my assessment is correct, the blame is obviously shared, but many of us are still too shy of theorists and other economists.

Timidity is even less justified in the second area of influence: the identification of unexplained facts. Such discoveries are crucial to the advancement of scientific knowledge, all the more so as they need to overcome the intrinsic resistance put up by the existing explanatory systems. Moreover, to deserve the attention of theorists, a fact needs to have been accurately observed and to occur in reasonably frequent cases. To make a useful contribution here, accountants must go beyond their usual provision of services. They should be careful to study from the right distance the figures they release. But accountants occupy too crucial a position for their responsibility to be overlooked. On this point, I would mention as examples the services rendered by those who identified the productivity cycle and the systematic deviations of exchange rates from purchasing power parities.

By contrast, there is scarcely any reluctance to overcome for the successful performance of the third task—namely, supplying empirical researchers with the data bases essential to their work. In principle, national accountants are well aware of this mission, and have repeatedly demonstrated that they take it very seriously. Let me just mention one aspect here: the choice of priorities from among the many duties of national accountants. In this connection, it should be remembered that economists have two important needs, among others, in their empirical research. First, they need long series, and thus rapid backward calculations when base-years are changed. Second, they need wealth accounts compiled at fairly regular intervals, even if not at annual ones.

II - Price system and value measurement in national accounting

In national accounts, valuations are based on prices. These are either effectively used in recorded transactions, or calculated with reference to other, directly observed prices. "Values are defined ... in relation to a set of transactions in which representative prices are supposed to appear." René Mercier wrote recently.² Often the value is actually observed in a transaction. But, often as well, the value is a potential one, when it applies to goods or claims whose possession entails potential revenues. The potential value of the holding is determined by "reference to those rights to future revenues [that are] liable to be traded." Naturally, the choice of reference is based on a subjective judgment. Mercier insists on this point and concludes: "The determination of perfectly objective potential values seems beyond reach. The only possible approach seems to be to admit that the choice of potential-value estimates must result from a compromise between several opinions." In another passage, the author speaks of "consensus."

These quotations leave the reader in doubt. Does the compromise emerge from a clash between conflicting interests? The notion of consensus rules out such an interpretation. But, if that is so, on what basis can a consensus be reached? The answer is implicit in the rest of Mercier's study. The basis resides in the internal relationships of a market-economy price system. These relationships form a bridge from observed prices to other prices that would have been observed if the use of markets had been more widespread or if certain obstacles to trade had not existed. In other words, it is price theory that should establish the rules for calculating potential values.

In fact, price theory has come a long way in the past forty years. National accountants seem insufficiently aware of this and, in my view, have

not tried to draw lessons from that progress. I should therefore like to examine the aspects that national accountants ought to consider. Let us begin with a brief summary of the theoretical advances, then define the central dilemma of valuation in accounting. I shall conclude by suggesting how to apply the extrapolation principle to bridge the gap between observed prices and non-observed prices. I must also alert you to the fact that recent price-theory research shows the extreme difficulty of certain valuation problems. In some cases, it even provides arguments for rejecting observed prices as a valuation reference.

Recent advances in price theory

Since about 1950, conceptual clarification and mathematical formalization have successfully incorporated into price theory two dimensions whose roles were previously somewhat unclear: time and uncertainty. Today, price theory makes systematic use of two postulates: (1) market participants have plans concerning their production, trade, and consumption; (2) accordingly, market participants seek to take the greatest advantage of market opportunities. As a rule, the plans are developed for a significant time span. They are generally flexible, not only to exploit trading opportunities but also to cope with favorable or unfavorable contingencies.

The price system that actually gives these plans an overall consistency is determined by the present state and by the future uncertain contingencies (according to the conventional theory, the past is a determining factor only through its effects on the present state). Some aspects of the passing of time and of the progressive resolution of uncertainties must well be taken into account—notably the succession of generations, the depletion of some natural resources, and the irreversibility of many transactions.

One of the goals of theoretical advances is to determine the relationships that ought to be fulfilled by the price system

Some features of the market economy also need to be considered, especially the incompleteness of markets—i.e. the fact that there are no markets, hence no prices, for some conceivable transactions.

One of the goals of theoretical advances is to determine the relationships that need to be fulfilled by the price system, namely, the compatibilities between prices, wage rates, and interest rates. The more numerous and efficient the markets, the more specific such relationships are. Knowing them is a help in determining how to extrapolate prices prevailing in a given market context to prices for transactions that cannot occur in that context. It would take long to describe the genesis, nature, form, and limits of these relationships between prices. Two examples will suffice here: (1) the research on "production prices"—a subject already explored by Karl Marx, and in greater detail during the 1950s and 1960s; (2) the research on financial-market prices. In particular, equilibrium in the financial markets requires the absence of arbitrage opportunities, a property with interesting implications in that setting.

Predictably, theoretical and econometric research has shown that the relationships were far more complex than some had imagined. Indeed, they depend on so many factors that it is impossible to compile numerical tables in which accountants would find the missing prices they need (on this, more later). Theoretical and econometric research has also shown that prices depend on expectations about future market conditions, and that the price system could experience distortions caused by speculative bubbles.

It may be objected that, in their investigations, theorists accepted too readily the hypothesis of perfect market competition. Indeed, researchers saw the assumption as a key to progress that they did not want all their work to be paralyzed by a concern for realism, which in this research would have been exaggerated. Studies of imperfect competition have abounded, today more than ever. But most of them are too diverse and display too much indeterminacy to provide useful lessons for accountants.

I must not, however, end my analysis here. First, there is a notable exception; second, there is an adjacent research pathway that can offer worthwhile insights into our subject. The exception concerns the study of some general equilibrium models of monopolistic competition. I am referring here to models that are convenient for computations but highly special in design. Their main value is as a testing-ground for intuitive ideas about the impact of increasing returns and other obstacles to perfect competition. They thus make it easier to establish when and how one should amend the results found in the study of cases where perfect competition prevails.

The logical systems developed by game theory allow us to examine not only the structures traditionally studied in the analysis of imperfect competition, such as oligopoly, but also the informational asymmetries found in many contract relationships. From this perspective, the contract ceases to be regarded as a simple exchange of a good or service at an agreed price. An additional source of complication in price theory must therefore be dealt with. If many
similar contracts exist, there may be a price for the complex object they constitute. By contrast, the price may be ambiguous if the customer-supplier relationship between the parties is highly specific—a fairly common occurrence.

**The dilemmas of accounting valuation**

As you well know, the two main causes of headaches for accountants are time and uncertainty. What value should be assigned to an item of equipment in use? To a natural resource? (a question that featured prominently at this meeting). What value should be attached to a claim that will not mature in the near term and will not necessarily be collected? Indirectly, the answers to such questions on balance sheets affect the calculation of depreciation, capital gains and losses, and, as a result, that of flows such as investments, profits, income, and financial transactions.

Many business accountants and all national accountants are rightly suspicious of historical cost valuations. These offer only a semblance of security, since they often lead to inadequate assessments of balance sheets and transactions. But what should we substitute for historical cost?

Fluctuations in the real value of money are particularly troublesome. Money is supposed to provide a yardstick for values, but it clearly stops doing so when inflation prevails. Should we cling to the fiction anyway? If not, what intertemporal benchmark for values should we adopt? Business accounting and national accounting provide different answers to these questions. Moreover, national accounting uses a hybrid approach. It supplies some—but not all—accounts at constant prices. It is careful not to treat the purely nominal increase in value of inventories as operating income—a procedure that business accounting does not avoid. But the national accounts classify all interest as income despite the loss in real value of the interest-yielding assets. There are other examples.

Such difficulties give lucid accountants an uneasy conscience. Their discomfort becomes particularly visible when they have to explain and justify the systems of rules adopted for financial institutions. These systems were developed by members of the professions involved or by supervisory authorities. Initially devised for recording fairly simple transactions, the systems became gradually more complex as the transactions in the industry became more varied and sophisticated. The methods thus result from an enlightened empiricism whose guidelines have lost their clarity and relevance (consider, for example, the logical significance of "off-balance-sheet" items). National accountants, in my opinion, seem unable to offer alternative solutions, for they are still at the stage of the simplest transactions and too often they still tend to equate interest and services rendered. This equation must be scrutinized closely, as this meeting's speakers on the service industry know.

There are other causes of unease particularly the lack of accounting for the depletion of non-renewable natural resources and for environmental damage. Both topics have been abundantly discussed by this conference.

Conscience-stricken accountants naturally wonder if they should carry out bold reforms to establish the closest possible identity between book value and market valuation. This raises two questions. Precisely what accounting rules would result from this identity principle? And should one take the leap—that is, a thorough overhaul of current procedures? Allow me to comment briefly on both issues.

**Extrapolating market values**

In situations where market prices are clearly determined, there is no obstacle to their use for accounting valuation. For example, many years ago, Marcel Boiteux suggested that a company's car fleet should be booked to the balance sheet at the vehicles' second-hand resale prices, which are reasonably well-defined and are publicly available. Boiteux calculated the depreciation schedule that yielded roughly the same results. The valuation is even simpler for a portfolio of marketable securities.

In many instances the market-prices reference is less immediate and requires extrapolation. This calls for the application of a formula, hence the acceptance of a model, and thus—ultimately—some understanding of price-setting mechanisms. Some models are fairly straightforward, such as those for assessing financial derivatives. The latter models are based on the principle that prices must be set so as to eliminate all opportunities for profitable arbitrage. But in most cases the model is less simple.

Consider, for example, the valuation of a specific piece of equipment that cannot be resold but bears the promise of future income. To compute a present value, we need to know the nominal interest rates at successive maturities. Most important, we have to determine which future effects on the (nominal) revenues and on the (nominal) offsetting costs will be assignable to the equipment. For this purpose, the model will likely have to incorporate the equivalents of a production function, of a demand function for the principal product, of extrapolation laws for other relative prices and unit costs, and of
an inflation forecast. As the model will recognize the presence of substantial uncertainties, we will also have to impute risk premiums—for which the financial markets, let us hope, will provide sufficient references.

Naturally, all these data should already be available within the company, since they are essential to sound management. But the example gives an idea of the complexity of the approach.

For national accountants, the same type of reference should exist at the level of aggregation where they are working. We are therefore dealing with a macroeconomic model. It is easy to imagine the difficulty of undertaking some of the valuations that would attempt a rigorous extrapolation of actual market values. We have no choice but to settle for rough approximations, particularly to assess productive capital in use. But we may achieve methodological progress by re-examining the approximations currently adopted, in view of the results that might be reached through more elaborate investigations.

Extrapolation and modeling principles also seem to have inspired the closing comments by J. Sherp in his paper on environmental accounting. He explains that the philosophy of the valuation method must be consistent with market value, but must nevertheless make maximum allowance for concepts derived from the analysis of environmental value—notably value in use and option value.

**Should one always rely on market prices?**

The arguments against a switch to "market-value accounting" have been correctly perceived by the U.S. banking industry, which now faces a source of possible difficulties, although their impact is unclear to me. I am not suggesting, however, that observed prices should be modified for that reason, and I believe that in practice the extrapolation principle probably has no useful rival.

The second issue, by contrast, is bound to have practical implications. We observe that certain prices are volatile, such as stock-market prices, exchange rates, and the prices of certain goods, commodities, raw materials, and oil. Economic theory largely attributes this volatility to the frequent changes in the physical conditions of supply and demand (e.g., fresh fruits) or to the frequent revisions of market participants' expectations (stock-market prices). Theorists, however, adopt one of two attitudes. Some see observed prices, despite their volatility, as the best references. In particular, expectations are revised in the light of new information that effectively modifies the values assignable to goods and claims. Other theorists regard some markets as being too narrow and thus operating in unrepresentative conditions; some other markets are too influenced by speculation, that is, by the quest for short-term gains from relatively erratic price fluctuations without consideration for the movement in the fundamental values of the objects traded. Theory also shows that, in certain conditions, artificial speculative waves may be self-sustaining.

The diffidence toward certain market prices is reflected in the accounting literature. For U.S. banks, it is accepted that the right "market value" is not necessarily the value recorded in the latest transactions. If the markets involved are not large and liquid, the reference should be to the "fair value" estimated by experts or any other well-informed individuals capable of a reasonably impartial judgment. The determination of fair values requires methodological, quasi-ethical rules. These must be roughly the same as the rules

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It may be legitimate—in some clearcut cases—to ignore or correct certain market prices

governing the use of the extrapolation principle—for example in valuing a set of credit lines extended to a category of customers. In other words, the problem is identical to that of valuing provisions in conventional accounting.

Similarly, in his book on the accounting of national wealth, Philippe Sentis distinguishes two aspects of asset ownership. The first is a productive power, entitling the holder to possible future revenues, benefits, and rights. The second is a trading power, which allows the holder to obtain prompt payment. The author uses the term "wealth" (richesse) to denote the value assigned to a set of objects in terms of future production, and "worth" (fortune) for the value of the same set in terms of its immediate trading potential.

If you share my view that (1) most agents think of arbitrage only occasionally and their behavior is guided by plans extending beyond the immediate future, and (2) most national accounting practices concern phenomena at horizons of one year or more, then you will agree that it may be legitimate—in some clearcut cases—to ignore or correct certain market prices. Indeed, this opinion seems implicit in René Irsard’s article when he states that "the concept of market value proves delicate to apply to assets," sometimes because extrapolation may rest on divergent principles, at other times because the value of a security is not identical for the issuer and the holder.

These investigations are promising but require solid factual bases. For brevity's sake, I shall simply describe one of the frameworks adopted—which happens to be the most useful of all those that could be mentioned. I shall then explain its relevance to national accounting.

An analytical framework

We examine a variable noted y. It is determined by the action of a large number of individuals i, each of whom chooses the personally relevant variable yi. For the macroeconomic analysis, it is important to establish the determinants of the arithmetical mean y and the way of forecasting its variations.

The microeconomic analysis assumes each individual i bases his or her decision on the values taken by two groups of variables, the first applying to the full set of individuals, the second specific to that individual. For example, yi might denote the quantity consumed of a product, determined by (1) the price due (identical for all consumers), (2) "i's" income, and (3) i’s indicator of the intensity of "i's" need for that particular product. Let x be the variables of the first group. For simplicity’s sake, we may assume a single variable. Similarly, let us assume the second group contains only one potentially observable variable xi, such as income, and a single variable ti characterizing the specific features of "i's" behavior. In these conditions, microeconomic analysis leads us to adopt the equation:

\[ y_i = f(x_i, z : t_i) \]

III - Data for the aggregation of economic relationships

So far, we have talked about the insights contributed by theory to national accounting. Let us now look at the help that the latter should provide to theory. For this purpose, we could examine any one of the applications of national accounts to empirical research. To explore the borderline of national accounting, I’d like to focus on a narrow but important topic: the aggregation of economic relationships.

As you know, macroeconomic theories depend as much on microeconomic analyses as on the observation of aggregate variables and their movements, for such

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We postulate the function $f$ as common to all individuals once $t$ is identified. It can display any analytical form. But it is worth examining the case in which we can express it—either exactly or approximately—as a finite sum of products of two factors, one depending on the common variable, the other on the individual variables:

$$f(x, z; t) = \sum_{j=1}^{J} a_j(z) \varphi_j(x, t)$$

The $\varphi_j$ functions are said to form a basis for the representation of $f$. For example, if $f$ is a second-degree function of $x$ and $t$, the number $J$ is equal to 6 and the $\varphi_j$ functions are the elementary polynomials $1, x, t, x^2, xt, and z$. More generally, we know that there are several ways to approximate a given function $f$ by means of a type-(2) formula.

Here, the aggregation problem consists in identifying the law likely to give an accurate representation of the determination of the average $\overline{y}$ in terms of observable macroeconomic elements such as $z$ and the average of the $x_i$ variables. If we look at equation (2), the answer is obvious:

$$\overline{y} = \sum_{j=1}^{J} a_j(z) \overline{\varphi_j}$$

$\overline{\varphi_j}$ is the average of the expression $\varphi_j(x, t)$ for the entire population. For example, if $f$ is second-degree, we can perform an elementary reorganization of the terms to obtain an expression in which the six terms of the sum are: $1, x, \overline{t}, \varphi(x), \text{cov}(x, t)$, and $\text{var}(t)$. Equation (3) would give the desired macroeconomic law if all the $\overline{\varphi_j}$ averages of $f$'s representation basis were observable.

The latter condition calls for closer examination. We must distinguish between the influence of the $x$ variables, which, as mentioned earlier, are "potentially observable," and that of the $t$ variables, which are not. If no useful information is available for the $t$ variables, the only possible hypothesis is that their influence is invariant. For example, $\overline{t}$ and $\text{var}(t)$ would be constants in all applications and $\text{cov}(x, t)$ would be a constant linear function of $\overline{x}$, and $\text{var}(x)$. The useful macroeconomic law would thus be reduced to a form analogous to (3), but with fewer terms. For example, in the simple quadratic expression discussed above, there would be three terms left:

$$\overline{y} = a_1(z) + a_2(z) \overline{x} + a_3 \text{var}(x)$$

The analytical framework proposed here has two implications for researchers. First, as a rule, they cannot confine themselves to working with simply aggregated values, with sums, or with averages. They must also incorporate other characteristics of statistical distributions of microeconomic variables, such as $\text{var}(x)$ in our example. Second, researchers should work directly on microeconomic data to find the satisfactory approximations of form (2) that seem relevant to the behavior studied. From that, researchers will deduce an aggregate law of form (3) or (4), which they can verify empirically with any other means at their disposal.

The approach outlined here is fairly flexible. That is true of the basis in which $\overline{\varphi_j}$ functions other than polynomials often yield better results. Flexibility also exists for the aggregation level. Indeed, it is often necessary to distinguish between several classes of agents and to aggregate only within classes. This method offers better guarantees concerning the validity of approximation (2) and of the hypothesis that the effects of the distributions of the unobserved variables $t$ are invariant.

In addition, the approach described is not exclusive. For instance, if we use form (1) without applying approximation (2), we can still justify a macroeconomic law that contains only $z$, $\overline{x}$, and $\text{var}(x)$ if the changes in the statistical distribution of the individual variables $(x, t)$ are determined solely by two parameters, which can be identified from $\overline{x}$ and $\text{var}(x)$. This "stability" of the statistical distribution is a rough substitute for the assumption that approximation (2) would suffice.

If current research studies are producing interesting results, it is precisely because they establish three things: (1) the degree of stability of statistical distributions, (2) the nature of the approximations applicable to individual laws, and (3) the significance of errors introduced by two practices. The first of these is the overaggregation of heterogeneous classes. The second is the failure to include in the aggregate laws enough moments of individual variables—for example, in (4), the neglect of the term that contains $\text{var}(x)$.

**National accounting and panel data bases**

All the studies mentioned above have an obvious importance for macroeconomic theory and its application. But they absolutely require access to good panel data bases. This requirement has been perceived—with a commendable degree of anticipation, in fact—by certain economists. Some, like R. and N. Ruggles, have gone as far as to claim that national accounts should have a broader scope and incorporate panel data bases representative of the various agent categories. Their proposal is worth reconsidering as we now enter a new period of reflection after the latest revision of our systems.

The strongest argument for the proposal is the consistency required between the variables gathered at the individual level (x) and (y) values.

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When too much is expected of statistical instruments, they are never truly operational and the aggregate variables taken from the national accounts (such as $\bar{x}$, $\bar{y}$, and $\bar{z}$). However, most national accountants, myself included, have thus far refrained from advocating the proposal because it seemed to impose excessive demands on national accounts as well as on the production and dissemination of panel data bases. When statistical instruments are expected to serve too many purposes, there is a risk that those instruments may never be truly operational.

Of course, to accept that panel data bases should not be incorporated into national accounts does not mean the quest for conceptual consistency should be abandoned. As far as possible, and given the multiplicity of objectives, the definitions chosen for both types of data should be adapted to make them similar—if not identical—in most cases. National accountants and survey managers should agree on those definitions. I have no specific suggestion on this point. However, if national accountants acknowledge the need for consistency with panel data bases, and accept the latter’s macroeconomic utility, I would hardly be surprised if they were sometimes led to reconsider their theoretical choices.

This is not the only case, obviously, where we need to take into account certain goals that transcend those served by economic accounts in the narrow sense. Some of us are surely thinking about whether one should follow up the ambitious projects of R. Stone on socioeconomic matrices. Similarly, as J. Sherp explained in this meeting, a good information system for the environment must harness together a complementary array of indicators and revised national accounts, while ensuring adequate consistency among these various sources.

In conclusion, the number of topics worthy of discussion is impressive—all the more so as they far exceed those mentioned in the course of this talk.

Edmond Malinvaud
Professeur honoraire
au Collège de France
National accountants, keep up the good work!

In this paper, André Vanoli discusses the following topics: the main stages in the construction of a harmonized international system of national accounts; the respective contributions of national accountants from the main participating countries, France in particular; the major obstacles to the implementation of the new central system of national accounts; the projects still to be initiated or expanded; and the subtle theoretical issues requiring proper, urgent treatment by a joint force of national accountants, other statisticians, and economists.

The 1993 system of national accounts, recently published in English, marks a major step in the development of harmonized systems of national accounts since the end of World War II.¹

Broadly speaking, over the past fifty years, the process at the international level has unfolded in three main stages.²

The international system:
three stages in 50 years

The first family of international systems of national accounts came into being in the late 1940s-early 1950s under the auspices of the United Nations—continuing the work begun by the League of Nations—and the Organization for European Economic Cooperation (OEEC). Both bodies adopted similar recommendations. The main focus was on estimating aggregates (domestic product, national product, national income) and simplified accounts for the nation as a whole and for some sectors such as general government, the other sectors being functionally oriented. The system totally excluded stocks of assets and liabilities, and provided only a limited coverage of flows. Transactions in goods and services were tabulated at high levels of aggregation, with a variety of breakdowns depending on the transaction category. Financial transactions were left out altogether.

Despite these shortcomings, the first system played a significant role by facilitating the international harmonization of the main aggregates and by supplying an initial framework for countries lacking experience. It was very deficient, however, as an instrument for economic policy-making and for coordinating economic statistics.

The second family of national-accounting systems was developed in the late 1960s under the dual auspices of the U.N. (OECD [ex-OEEC] having given up its own system) and the European Community. The 1968 SNA and the 1970 European System of Integrated Economic Accounts (ESA) closely resembled each other. Both sought to incorporate tools that had been developed separately except in some countries like France. The tools included input-output tables, institutional-sector accounts, and tables of financial transactions. Only the balance sheets and a part of the accumulation flows remained outside the system; a special manual on these aspects was published later. The 1968 SNA/1970 ESA was fuller and more detailed. It offered a far more productive instrument for analysis, economic-policy advisory services, and the integration of economic statistics.

The 1993 SNA represents the third phase in the development of harmonized systems of national accounts. It can be viewed from several angles.³ In terms of coverage, it completes the classical edifice begun fifty years ago. The balance sheets and all economic-asset accumulation flows are now fully integrated. For example, the discovery and extraction of subsoil resources, wartime destruction, and asset and liability revaluation are included. In this area, the new system permits deeper analysis. For instance, it enlarges the concept of fixed capital formation to some intangible assets, although research and development is regrettably excluded. It gives a fuller description of income distribution and redistribution, notably by introducing the new concepts of actual final consumption and, correspondingly, of adjusted disposable income. It also deals with phenomena such as multiple exchange rates, the allocation of imputed financial intermediation services among users, and high inflation. To

accommodate the latter, it offers an alternative method of recording interest.

Around what has been redesignated as the central framework of national accounts, the new SNA recommends the development of satellite accounts. It emphasizes flexibility, even in the implementation of the central framework itself.

This system for the end of our century, or rather the start of the twenty-first, exhibits one crucial feature: it aims at universality. The SNA is published not by the United Nations alone, but by five leading institutions: the Commission of the European Communities, the International Monetary Fund, the Organization for Economic Cooperation and Development, the United Nations, and the World Bank. (The revised ESA will not diverge from the SNA.) It is gradually replacing the material-product accounting system that prevailed in the countries with centrally planned economies. It will be applied by the United States. It is more closely harmonized with other international standards, in particular those developed by the IMF—first and foremost the Balance of Payments Manual.

This overview of the changes in the international system in the past half-century provides an opportunity to examine the contribution of French national accounting to the process.

A growing French influence

The first system that emerged in the late 1940s-early 1950s was based on the experience of countries such as the United States, the United Kingdom, the Netherlands, and the Scandinavian countries. The direct influence of Richard Stone was decisive. His proposals of 1947 were more elaborate than those adopted in the first international system. France, whose official work in the area was just beginning, played no role in this phase. By quickly adopting this go-it-alone attitude, France was able to keep working without the constraints of the first SNA interpreted in a narrow sense. At the same time, however, French national accountants were isolated from the international scene.

The situation changed with the SNA revision in the late 1960s and the preparation of ESA. French experts were actively involved in both. Jacques Mayer was appointed to the group of experts assembled by the U.N. Richard Stone, once again, played a prominent role in the drafting of the 1968 SNA. My own contribution was a more modest report for the European Community, then engaged in building ESA. However, as I recall my involvement in the international discussions, French national accounting was among the most advanced—and even in the front rank as regards the scope of coverage, system integration, the interrelationships with business accounting, and the intensity of use of the accounts. A convergence became clearly perceptible between Stone’s proposals and some of the main priorities of French national accounting. Indeed, France had already decided by then to join the international system and hence to drop some of its idiosyncrasies, notably its narrower concept of production and its geographic delimitation of economic territory. As regards the systems’ form and some aspects of their substance, the French influence was more direct on the 1970 ESA than on the 1968 SNA.

It is fair to say, in my view, that the 1993 SNA reflected a decisive French influence on the world scene (some, indeed, found that influence at times too pervasive). Some European countries had trimmed their national accounting teams or, more generally, their statistical personnel. As for the United States, the idiosyncratic features of its national accounts in an obsolete system precluded it from a leading intellectual role. And, in many countries, the day-to-day management of existing systems severely restricted the prospects of future advances. Amid all these developments, France had succeeded in preserving its momentum. It explored certain aspects in ever greater detail—witness, for example, the compilation of corporate accounts and national balance sheets. It designed and developed new tools, principally the satellite accounts and intermediate systems. Other factors, as well, explain the vigor of the French influence: the fruits of an international outreach strategy decided upon twenty years earlier (nobody was more familiar with the 1968 SNA than the French); a "dep provincialization" due to extensive technical cooperation activities; the growing interest in conceptual and theoretical issues; and a few individual achievements. Far be it from me to deny the collective character of the gigantic effort involved in preparing the 1993 SNA. But it would be easy to list the features of the new SNA directly due to the French influence—especially the introduction of an integrated economic accounts table (tableau économique d’ensemble), the concept of a central framework, and the satellite accounts. It is more important, however, to underline the indirect effect of the dissemination of our experience and of what could be called the French doctrine. Let me mention two examples. It is a


5. I am referring here to the official French national accounts and to the teams that were compiling them. Jean Marczewski had worked with Richard Stone and the Norwegian Odd Aukrust on the preparation in 1949, by the OEEC National Accounts Research Unit, of the first standardized system published by OEEC in 1950.

6. I am speaking of the direct intellectual influence of the U.S. during the revision itself. By contrast, the U.S. contributed substantially—through Carol Carson and her colleagues—to the organization of the second phase of the revision process. American universities, meanwhile, have provided vital inputs to studies and research on national accounting.
Norwegian specialist who, at the June 1986 meeting of the group of experts, suggested that the new SNA should include a chapter on the satellite accounts. And it is a U.N. staff member who, citing our work in Latin America, proposed the introduction of an integrated economic accounts table. One final comment: the French approach has never been to lift an item from France's Enlarged System of National Accounts (SECN) and incorporate it as such in the SNA. The influence has been creative, not mimetic.

The tasks ahead

This achievement, which may be considered a collective success of French statisticians (I do mean statisticians, not just national accountants), creates obligations for us. Few statisticians around the world would understand (although some might rejoice) if, after having promoted one of the vital elements of the statistical system to such heights and so ambitiously, we were to fall meekly back into line. Nothing says, of course, that we should or will be able to remain in the forefront, but neither is the opposite inevitable.

The goals of the introduction of the new system in France are set out in the articles by Jacques Bourmay and René Isnard. One goal is the effective integration of balance sheets and complete accumulation accounts in the routine accounts-production process. Another aim is to meet the strict standards for concepts and measures prescribed by the 1993 SNA. The main priority here is to make more general use of the accrual-basis principle. This raises major problems in the general-government sector, but is especially necessary for recording accrued interest—which replaces the former interest due/paid method.

Two pitfalls should be avoided in implementing the new central framework. The first is an inadequate awareness of the enhancements provided by the 1993 SNA even when its innovations are directly derived from French practice. One example is the compilation of accounts at previous year's prices. This method was long disallowed in international recommendations and sometimes attacked at INSEE. Now, it is recommended by the 1993 SNA. However, in calculating long series in volume terms, we have partly lost the benefit of our experience because we have shifted exclusively to series that are readdressed to prices of a fixed base year. Actually, though, the series that are effectively chained at all aggregation levels are the only ones to keep a trace of successive price systems. Our method here needs improvement.

The second pitfall would be to avoid expanding our treatment of certain areas because of the ESA's conservative stance on them. To be sure, France is bound to the ESA constraints by its EU commitments, but there is nothing to stop us from using supplementary accounting procedures, notably for R&D expenditure as an element of capital formation and the allocation among users of indirectly measured financial intermediation services. I do hope that time and resource constraints will not make us neglect these issues.

The tools that the French SECN has sought to develop outside the central framework—namely, satellite accounts and intermediate systems—have reached very different stages of international acceptance. The satellite accounts have been gradually adopted in certain countries such as Germany and Norway. Now, they are recommended in a separate chapter of the 1993 SNA. For functionally-oriented accounts, the new SNA has rationalized a conceptual framework that, in France, emerged in perhaps too empirical a manner. The French experience prompts two comments. The first is that the scope of the satellite accounts has tended to be narrower in practice than in their original design. The combination of monetary and non-monetary data has been limited, and the range of fields covered has been reduced. Perhaps statisticians failed to fully realize the opportunity offered to them—beyond but in tandem with national accounting—of developing effective conceptual systems in particular fields. My second comment is that we have undoubtedly lacked boldness by sometimes clinging too closely to the central framework. Two examples are the treatment of R&D expenditures and the approach to environmental issues. Michel Brabant addresses these concerns in his article.

The 1993 SNA devotes no chapter to intermediate systems, and makes only a passing reference to them in its introductory chapter. This concept too, however, is gaining ground. The U.N. Statistical Division is working on a manual of relationships between business accounting and national accounting. INSEE should become involved, for it seems to me that our experience in the area —while acquired in a non-worldwide context—is unique in the world today. The use of accounting sources, especially tax data, is attracting ever greater interest in many countries. Eurostat is planning an initiative in the area under the auspices of the GNP Committee. France's experience in intermediate systems—chiefly the intermediate system of enterprise accounts—shows that French statisticians have long been interested in the issue discussed by Edmond Malinvaud in the last part of his talk: the relationship between national accounting and micro data. Even if the initial approach was guided by the account-producers' priorities, the aim of promoting joint macro- and microeconomic analyses was soon put on the agenda. In all probability, however, the compromises dictated by various constraints inhibited an adequate development of user services. True, statistical and tax-data confidentiality raises

7. In Italy, for example, where ISTAT and the Finance Ministry have been exploring the area for the past several years.
complex issues. In the business-data field, INSEE also concluded that the micro-macro relationship could be totally established not at the individual level but only at a mesoeconomic level. The reason is that it seems unrealistic to recalculate for each firm, even a large one, the consumption of fixed capital and changes in inventories on a more economically-based principle than historical values, or to estimate tax evasion. Meanwhile, the links between national accounts and household micro data bases remain a totally uncharted territory for future exploration.

Subtle theoretical issues that call for further study

The projects already under way will require considerable energy. However, it is vital to forge ahead on new issues and on those dealt with inadequately thus far. I can discern two such topics: integrated environmental and economic accounting, and human capital. The first deserves top priority because it is the object of intense social demand. Both issues have considerable implications for statistical information systems, and both raise delicate theoretical questions for national accountants. These questions cannot be brushed aside even in the context of satellite accounts and analyses, which should not be used as dumping-grounds. The questions have arisen within the central framework itself. Unlike its predecessors, the 1993 SNA has tried to outline the conceptual bases and a minimal set of theoretical references for the prescribed treatments — thanks in particular to the texts contributed by Peter Hill. In a word, the main concern is the relationship between the concepts of income, capital, and monetary values in national accounting and the corresponding concepts in economic theory. In his talk, Edmond Malinvaud examined the potential applications of price theory to measurement methods in national accounting. Integrated environmental and economic accounting requires more detailed theoretical work on the three concepts mentioned above. Experts are discussing ways to adjust national accounting aggregates to environmental concerns. The environmental economists in the forefront of such discussions rely mainly on the theoretical definitions of income and capital, and more infrequently on the concept of welfare. By contrast, they seem to pay scant attention—at least in the narrow group of studies I have read—to the theoretical significance of their proposed combinations between monetary measures of environmental phenomena and the market or near-market monetary measures used in the central national accounts. Likewise, they sometimes appear to make light of the formidable problems involved in the passage from microeconomic environmental measures—which typically means micro-local measures—to aggregate measures. Integrated environmental and economic accounting also raises tough questions about externalities.

The issues discussed above, like others, call for a joint effort at deeper theoretical exploration by national accountants, other statisticians, and economists. The task is visibly urgent in the environmental field. There, social pressures could force the adoption of measures that might not be conceptually sound but would be perceived as "politically correct." In my view, the use by some specialists, particularly at Eurostat, of expressions such as "green national accounts" and "green GDP" is a sign of the potential danger. I hardly recommend an evasive attitude in these matters. We must try to meet the demands of society in ways that are technically and intellectually sound. However, it seems to me that we have so far ridden on the strength of our innovations in natural patrimony accounting and environmental protection expenditures — while tending to bury our heads in the sand when it comes to other aspects of the field.

Readers of this article will no doubt have understood that, fifty years after its takeoff, I do not regard national accounting as obsolete. But elaborating this opinion would require too long an article!

André Vanoli
Director at INSEE
National accounts" the future base-1990 system

Every ten years or so, the French national accounts are rebased. The event provides an opportunity to review frameworks, concepts, and classifications; to incorporate the advances in statistical sources into the current figures; to improve working methods for greater efficiency; and—last but not least—to meet the needs of a large, diverse array of users.

These broad objectives also inform the introduction of the base-1990 system in France. The emphasis is on three priorities" (1) conformity with the new international and European standards; (2) improvement of the overall quality of accounts, particularly of non-definitive accounts, through a closer consistency between annual and quarterly accounts, between financial and non-financial accounts, and between flow and stock accounts; (3) simultaneous construction of long backward-calculated series adapted to user needs. In the following article, Jacques Bournay describes—in their context—the conceptual and methodological changes that characterize the base-1990 system, whose initial publication is scheduled for 1998.

The harmonization at world level of the major systems of economic statistics—and of those systems with one another—has made substantial progress in recent years, notably as regards" 

- classifications of activities and products (ISIC = International Standard Industrial Classification, in 1990)
- the balance of payments (in 1992)
- national accounts (in 1993).


The document was prepared by a group of international experts, among whom André Vanoli2 played a prominent role.3 Official representatives of the five international organizations (U.N., IMF, World Bank, OECD, and Eurostat) have participated in the working group since its formation in 1986.

World standards and European versions

The harmonization between the three above-mentioned systems is nearly complete. The 1993 SNA explicitly refers to the third revision of ISIC, while the drafting of the 1993 SNA and the fifth edition of the IMF Balance of Payments Manual were simultaneously and fully coordinated.

It should be noted that all central/east European countries have adopted the new standards, making these truly worldwide for the first time ever.

The twelve member States of the European Union have taken harmonization even further by interpreting, adapting, and defining the new standards in a common manner.

In the national accounting sphere, a new version of the European System of Accounts (1995 ESA) is expected to be completed and published in early 1995. INSEE is taking part in the drafting of the text as a member of the Eurostat working group on national accounts. The Institute is in charge of the chapters on "Sequence of accounts" and "Balance sheets and changes in balance sheets." As members of the Eurostat working group on financial accounts, INSEE and the Bank of France department of research and statistics on financial transactions (Service d'Études et de Statistiques des Opérations Financières" SESOF) are among the compilers of the "Financial transactions" chapter and the financial section of the chapter on balance sheets.

1. This text was submitted by the author to an information meeting on the future base of French national accounts, arranged by the National Council for Statistical Information (Conseil National de l’Information Statistique" CNIS) on January 11, 1994.


3. The preface to the first English edition of the 1993 SNA does not mention everything that the work also owes to Pierre Muller. This regrettable omission will be rectified in all subsequent edition in all languages.

Courrier des statistiques, English series, no.1, 1995
The 1995 ESA will have the status of a European regulation. Although EU countries will not actually need to comply with ESA itself, they will be asked to supply statistical tables on the ESA model.

Many aspects of the French statistical system will be transformed by European harmonization. In addition to the monetary and financial statistics, managed by the Committee of Governors of the Central Banks, the areas affected will include classifications, the Insurance directives, the document currently under discussion on the structural statistics of enterprises, and the manual in preparation on service-sector statistics.

The advent of the single market and deregulation have changed or eliminated some statistical sources. This necessitates a better use of the available statistics, in a coherent manner within each member State and throughout all twelve. The Intrastat system, which came into effect on January 1, 1993, is intended to provide intra-EU trade figures but has apparently been experiencing some startup problems.

At the European level, it has been agreed that GNP figures, which form the assessment base for the Fourth Resource, will be compiled using the 1995 ESA from spring 1998 (i.e. starting with the provisional accounts for 1997). The timetable constraints will therefore be very tight for submitting 1970-1997 series by that date.

### Preliminary and parallel work

Several types of projects not directly linked to the rebasing will have major consequences on the latter. But statistics producers would be well advised to clearly distinguish the timing of each operation.

- **The change in classification of products and activities**, with official effect from January 1, 1993, will gradually apply to surveys and statistical studies. For users and international organizations (as well as for the preparation of the base-1990 system), the change must occur as soon as possible. But the opposite is true for statisticians in charge of extending the base-1980 (which uses the old Nomenclature d’activités et de produits or NAP) up to 1997. Until then, they will have to retain the option of using NAP codes derived from the new French Classification of Activities (Nomenclature d’activités française or NAF).

- **Base-1980 balance sheets and changes in balance sheets** are to become part of the standard statistical production process in the units concerned beginning with the 1993-94 statistics-preparation
period (campagne statistique). This will pave the way for their full integration (i.e. their inclusion in the statistical harmonization process) into the base-1990 system. What remains to be seen is the upstream and downstream impact of the integration of balance sheets, as well as their inclusion in the overall summary of accounts. Upstream applications include the Unified System of Enterprise Statistics (Système Unifié des Statistiques d’Entreprises” SUSE) and the intermediate system of enterprises, which will have to be extended to company balance sheets. Downstream areas of impact include the consistency between net worth and income, in particular financial net worth and the interest account.

- The closer convergence between annual accounts and quarterly accounts will take place gradually, starting in the 1993-94 statistics-compilation period. This should lead to changes in the conceptual approaches and some calculation methods for both series. Annual-series accountants will not only have to work on annual averages but also use profiles and quarter-on-quarter changes, for example in measuring changes in inventories. Quarterly-series accountants will have to compile full series at level 40 of the classification.

A related issue is that of the publication schedule for annual and quarterly national accounts, particularly during the January-June half. The present calendar is being re-examined with a view to consolidating and reducing the number of consecutive publications. These changes will naturally be kept on in the base-1990 system.

The 1993 SNA: a compendium of accountants’ experience

The foregoing remarks might give the impression that French national accountants will be totally bound by international—especially European—rules with no room for maneuver. Indeed, a debate is under way on the need for a purely French manual of methods for the base-1990 system. A good solution might be to take the 1995 ESA text and supplement it, as needed, with chapters (on agents’ accounts, satellite accounts, and intermediate systems) as well as paragraphs of commentary and adaptation to the French context. In fact, the constraints apply more to the timetable and the tabulation of the accounts than to the basic principles, which are essentially identical. The 1993 SNA marks a major advance in national accounting. It reflects the combined experience of national accountants, notably French accountants. On several points, it even goes beyond that experience. Users of the French national accounts, therefore, are unlikely to feel "lost" in the new system. It is important to keep this continuity well in mind before we go on to describe the main changes.

The principal conceptual changes are obviously not independent of one another, and many have had an impact on several parts of the accounts, but each will be mentioned below only once. A working group on each subject will have met in 1994 to specify the choice of methodology best suited to the available and potential sources. A detailed calendar was prepared with the participating units in December 1993.
The current system for recording general-government transactions is a blend of methods that includes "full-accrual basis," "accrual basis," and "cash basis" depending on the situation. The system will have to be overhauled to bring it more in line with the accrual principle and with the working methods of all the national accountants involved, since the "pilot" role of general-government accounts might be modified as a result of the change.

Sectors' change amid continuity

The institutional sectors will remain largely the same, but with numerous modifications.

- The "corporate and quasi-corporate" enterprises' sector will have its name shortened to "non-financial corporations" but will still include quasi-corporate units. It may be broadened to accommodate some units currently classified elsewhere. However, it will exclude financial auxiliaries (and insurance auxiliaries) as well as holding companies whose subsidiaries are principally engaged in financial activities. In addition to the established division into activity subsectors, the 1993 SNA asks for a breakdown into three subsectors according to the majority shareholder—general government, rest of world, or national private sector.

The required breakdown might be achieved through a coordinated extraction of data from surveys on shareholdings. The breakdown could be integrated into the accounts up to and including the intermediate system. Integration into the accounts seems feasible by calculating the "national private sector" as a balancing item, but it will be far more complex if a cross-tabulation with activities is desired. In fact, the purpose of the 3-subsector breakdown was to define a "public sector" in the broad sense (general government + public financial and non-financial corporations), so the cross-classification with activities may not be needed.

- For the household sector, the new system calls for complete accounts of households, broken down by category. This is an opportunity to assemble and integrate the current analyses by occupation and social category of consumption, income, and the existing estimates of net worth. Such studies have been conducted, in particular, by INSEE and the Center for Research on Income and Costs (Centre d'Étude des Revenus et des Coûts CERC). This enhancement of statistical information—which ought to improve economic analysis— seems in strong demand from users, as witnessed by the success of CERC publications on the subject.

- The scope of coverage of the financial-corporations sector is considerably enlarged since—in addition to the financial auxiliaries and financial holding companies mentioned above—it includes the entire insurance sector.

The subsectoral breakdown of purely financial institutions (that is, excluding auxiliaries and insurance) will continue to pose problems of comparability among the twelve EU members until European financial authorities succeed in agreeing on a common definition of "banks." By contrast, as mentioned earlier, the European directives on insurance are very explicit and detailed. Reinsurance may become a distinct subsector of insurance in addition to the three in present use—Life, Casualty, and Mutual.

The new system also requires the financial-institutions sector to be divided into three subsectors according to the majority shareholder.
The composition of the general-government sector will need to be examined with a view to achieving full European harmonization—in particular since two of the "Maastricht criteria" (public deficit and public debt) explicitly refer to concepts and measures "as defined in the European System of Integrated Economic Accounts." The need for review applies especially to the long lists of "other central-government organizations," "other local-government organizations," and "social-insurance dependent organizations."

In any event, changes in sector content will have a much smaller impact than changes in the time of recording on the general-government accounts. Also, non-market output of general government will not be fully consumed by producers. The classification of government expenditure by purpose will distinguish, however, between collective consumption (general government, security, defense, etc.) and individual consumption (education, health, transport). The latter category will be included in final household consumption.

Non-profit institutions serving households will remain a separate sector (there had been plans to include it in the household sector). These entities were formerly called the "private non-profit institutions" sector. Some units currently registered in the latter should probably be redesignated as enterprises. This recommendation is contained in a study by the Institut d'Etudes Politiques of Grenoble, which also calls for a sharp upward revision in the values of sector accounting items.

Two innovations will be applied to the "rest of the world." French economic territory is redefined to include France's overseas départements and exclude Monaco. The method selected for the new system consists in compiling overall accounts for metropolitan France (mainland + Corsica) and the overseas départements by broadening the scope of coverage of the relevant indicators and surveys. Under this approach, the construction of full accounts for each overseas département is viewed as an ordinary component in the regionalization of national accounts. The enlargement will be required for the entire set of national accounts, including flows and balance sheets, financial and non-financial, annual and quarterly.

In another change, the "rest of the world" will be systematically divided between Europe and non-European countries throughout the accounting system, but several definitions of "Europe" are possible and may be requested. Among them are the European Union, Economic and Monetary Union, and European Economic Area.

From the choice of unit to a wider definition of assets

The choice of basic statistical unit in the input-output table will have to be reconsidered in the light of several criteria. The 1993 SNA states that the basic unit should be the local kind of activity unit (LKAU). But the recommendation appears to be unenforceable in several European countries. In France, the discussions on the fourth generation of annual enterprise surveys (EAE 4G) concluded that it was generally impossible to cross-tabulate all multiple activities and multiple locations, except for very large companies (on which detailed studies are still needed). In any event, the first 4G surveys will not be ready until 1996, too late for the introduction in the base-1990 system, although they may be incorporated later.

Another criterion for the basic unit is that it should correspond as closely as possible to the observable unit. This may entail the construction of input-output tables by establishment subsectors in addition to the input-output tables by "pure" industry (units of homogeneous production).

Goods transport should now be recorded as transport margins, in keeping with the present treatment of trade margins, so as to eliminate from output all or part of the transport expenses included in selling prices (the choice between total and partial elimination remains to be discussed).

Meanwhile, the convergence between the 1993 SNA and the Balance of Payments Manual has led to a major change in national accounts. Total imports are now recorded on an FOB basis, while detailed imports by product remain on a CIF basis, with an overall CIF/FOB adjustment in the input-output table. These new treatments will require a complete revision of procedures for calculating external transactions in transport services.

The base-1980 distinction between market and non-market will be replaced by a threefold breakdown into market/own account/other non-market.

The incorporation of balance sheets and changes in balance sheets now allows a full, consistent treatment of produced assets (gross fixed capital formation, assets outstanding, consumption of fixed capital, revaluation) and non-produced assets (acquisition, other changes in volume, revaluation).

There is widespread discussion at present among national accountants and business accountants about the concept of intangible investment. For the base-1990 system, the broadening of the definitions of asset and gross fixed capital formation of produced intangible assets (mineral exploration, software, literary and artistic assets) and non-produced intangible assets
(patents, brand names, commercial rights) has been examined in detail by Pierre Muller in an INSEE internal report of March 1990 entitled "The enlargement of the concept of gross fixed capital formation and its impact on the national accounts" [available in English].

The concept of asset will also be extended to (a) certain natural cultivated and non-cultivated assets such as standing timber, and (b) those items of military equipment that could be put to an equivalent civilian use. (At present, all military equipment is booked as intermediate consumption by general government.)

The concept of change in inventories will be enlarged to include services (engineering) and work in progress.

New presentation of the integrated economic accounts table

The new integrated economic accounts table (tableau économique d’ensemble or TEE) comprises three parts: current accounts (from production to saving), accumulation accounts (capital account, financial account, other changes in balance sheet), and balance sheets.4

The "income"portion of the current accounts has been greatly expanded. It now includes the "enlarged"income and "enlarged"consumption defined in the base-1980 system. The income accounts are broken down into primary distribution of income, secondary distribution of income, and redistribution of income in kind. This approach underlines the distinction between two pairs of concepts: (a) consumption expenditures + disposable income, and (b) actual consumption + adjusted disposable income. Set (a) is more restrictive than the present concept of consumption, as it excludes social benefits in kind. Set (b) is wider, as it encompasses the "enlarged"consumption and the "enlarged"income tabulated in the present system the latter comprises social benefits in kind and social transfers in kind, that is, individual consumption as defined above. The change will require a close review of the volume/price breakdown.

The introduction of "national economy"columns in the tables will allow the direct inclusion of the major aggregates—GDP, national income, national saving, and national wealth. These can be expressed in gross terms and net of fixed capital consumption.

The distinctly French computation of two separate balances for market GDP and non-market GDP is probably worth keeping.

Two rejected improvements

French national accountants proposed two other major conceptual changes, together with appropriate valuation methods, but both were turned down for the 1995 ESA and the first was rejected for the 1993 SNA.

- **The enlargement of the concept of gross fixed capital formation (and of the corresponding asset, patents) to research and development was rejected**, even though (a) it actually represented the largest share of the extension of the concept of produced intangible asset, and (b) this extension had been accepted for the three other "objects—namely, mineral exploration, software, and literary and artistic assets. The refusal seems incomprehensible in economic terms when one considers the importance of R&D as an engine for the economy. Even more curiously, the most widespread opposition came from OECD countries! The rejection is baffling from the statistical standpoint as well, since OECD itself keeps a fairly detailed record of R&D expenditures including many statistics for each member country.

- **The second rejected change concerns the breakdown of imputed output of banking services—which will be designated in the base-1990 system as "financial-intermediation service indirectly measured"** (FISIM). The aggregate will be calculated on an overall basis and treated as non-disaggregated intermediate consumption, as in the base-1980 system. The simultaneous and coherent construction of a financial balance sheet and a table of interest flows is an integral part of the base-1990 system—an approach that would have allowed a breakdown of FISIM by user according to several methods. The breakdown, recommended by the 1993 SNA, has thus far not been adopted in the 1995 ESA.

A powerful motive for the rejection may well have been the increase in GDP that the two changes would have generated, and the impact of that increase on the Fourth Resource. On both points, French national accountants would do well to keep promoting the system. They could show it is indeed possible to incorporate the two improvements in the base-1990 system, for example in the form of supplementary tables.

Environment" first steps toward inclusion

As we conclude this overview of the main conceptual changes introduced by the base-1990 system, some readers will probably be surprised to see no mention of environmentally adjusted GDP—sometimes known as "green GDP." The fairly widespread opinion among national accountants is that the "greening" of the accounts is a far vaster issue than the mere

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4. See the tables published in the above-mentioned paper by A. Vanoli.
computation of a "green GDP" through minor adjustments to the present GDP. The reluctance to introduce "green GDP" in the central framework of accounts is due to the largely non-monetary character of the relationships between Economy and Nature. By contrast, GDP is a macroeconomic aggregate pertaining to the monetary economy. The same argument justifies the exclusion of unpaid domestic work in households.

But this is not an attempt to avoid the issue. The 1993 SNA broadens the concept of asset to selected "natural" assets and introduces in its "other volume changes in assets" account such elements as the depletion of mineral resources, and the deterioration and changes in quality of natural assets. These changes will be included in the new French system. The 1993 SNA also proposes a satellite account for the environment, a more suitable framework than the central framework, since it allows changes in the conceptual definitions and valuations in terms of physical quantities. The satellite account is described as a "natural" extension of the balance sheets.

Environmental-accounting studies have been conducted in France for many years, but with far more modest resources than elsewhere. The foundation of the French Institute for the Environment (IFEN) in 1991 marked a step forward. This may lead to different options for the base-1990 system, notably in response to probable EU demand.

Methodology" current and projected improvements

In addition to the conceptual changes listed above, the base-1990 system will incorporate methodological improvements due to new sources and new treatments.

- The basic statistics on financial institutions are being thoroughly overhauled. A data base on financial agents (Base de Données des Agents Financiers" BAFI) was introduced on January 1, 1993. A new accounting system for UCITs (undertakings for collective investment in transferable securities" the European name for mutual funds) came into effect on January 1, 1994. And France is applying the fifth edition of the IMF Balance of Payments Manual, which could be an opportunity for the Bank of France SESOF department to establish an intermediate system for financial institutions (excluding insurance).

The base-1980 system made the national accounting tables of financial transactions consistent with monetary aggregates, which have been directly recorded as outstandings in the tables. This coherence will, of course, be preserved under the new system. Earlier we mentioned the convergence between interest accounts and financial balance sheets. More generally, however, the consistency between financial and non-financial accounts needs to be improved. In the enterprise and household sectors, there is a widening discrepancy between the net lending/net borrowing and the net receivables/payables figures. The gap is being examined by a working group of the National Council for Statistical Information, which was due to hand in its report by year-end 1994. The group has explored opportunities for a better use of available financial data on companies. The methods used for compiling the household account will also have to be reassessed in the light of the studies mentioned below.

Financial deregulation (through the lifting of foreign-exchange controls) and Intrastat have eliminated some sources for balance-of-payments data, and it appears that the "other goods and services" item in the French balance of payments cannot be kept on in the new system. The impact of this elimination on accounting methodology will have to be examined.

- The system will aim for a closer consistency between output and employment at a relatively detailed
level. In addition to its intrinsic value for assessing productivity, such consistency should provide useful additional resources for measuring the informal economy. The method used by Italian national accountants will be a model here.

This complex issue of account adjustment will have to be fully reviewed. In particular, the adjustment coefficients should be revised at fairly frequent intervals of at least every five years to accommodate the likely changes in economic agents’ behavior. The central taxation department (Direction Générale des Impôts” DGI) will naturally have to be consulted.

• The price/volume breakdown will continue to be calculated from accounts at previous year’s prices, but the methodology for constructing long time series in volume (i.e. inflation-adjusted) terms will have to be re-examined. Points to be looked at include chained indexes and detailed readjustments to ensure additivity. The 1993 SNA recommends that the major aggregates, as well, should be published in directly chained form with no additivity constraint.

All the international organizations call for a frequent rebasing (every five years) for volume series and for prices. This could be a good opportunity to relax the rule strictly enforced until now by the French national accountants, which was to ban all changes of method for the entire ten-year lifetime of a base-year system. France should not, however, go as far as the British practice of allowing changes (with backward calculation) whenever necessary. Any alterations here will have to be discussed with users.

• Past experience indicates that the backward calculation of the base-1990 accounts should be dealt with at the outset. The timely completion of the process requires the development and extensive use of statistical and econometric “mechanical” methods, with “manual” correction of any flagrant inconsistencies. The length and degree of detail of the backward calculation should be discussed with users. A reasonable proposal would be a level-40 computation for the period 1970-89.

• Several studies on specific points of the accounts are in progress and should be completed by the end of 1994. The findings will naturally be useful for work on the base-1990 system. Areas under study include “equipment lifetime; domestic-market breakdown; changes in technical coefficients; the breakdown between consumption inside and outside the home; the incorporation of INSEE’s Family Budget Survey; trade margins; the breakdown of intermediate consumption by product in each industry; the CIF/FOB adjustment; and the volume/price breakdown in banking services, insurance services, and non-market services.

Intermediate systems and satellite accounts

The changes embodied in the base-1990 system will also affect the systems peripheral to the national accounts—namely, the intermediate systems “upstream” and the satellite accounts and regional accounts “downstream.” One aspect mentioned earlier is the closer cooperation with quarterly-accounts statisticians.

• Intermediate systems serve two purposes” (1) they make it easier for national accountants to construct their accounts; (2) they foster dialogue with users, especially as the tabulated results are sent back to data providers. In fact, an intermediate system is a reclassification in national-accounting terms of figures derived from the accounting system used in a particular sector, with no change in the valuations. The task of national accountants is precisely to make all these valuations mutually compatible for the national economy as a whole.

The new concepts of the base-1990 system will therefore entail changes
in the two intermediate systems currently in use the enterprise IS and the insurance IS. The most significant modification will be the inclusion of balance sheets and related elements. The intermediate system for financial institutions will be based directly on the new concepts, as will the intermediate system being designed for general government.

Satellite accounts, as well, are strongly oriented toward users—most of whom are public authorities. Often, the accounts are compiled via a specialized commission. Their purpose is to provide a detailed record of a particular sphere of economic and social life. The presentation aims to be consistent with the central framework but employs different concepts or measures, sometimes of a non-monetary type.

The point to be examined is the impact of the changes in the base-1990 system on the satellite accounts. For example, how should the social-protection account be amended to reflect the new classification of social benefits and transfers?

The satellite account for housing has a slightly different status. In the base-1980 system, it drew attention to the inconsistencies between (a) the calculation of residential gross fixed capital formation from housing starts (the method used by national accountants) and (b) its estimation from housing credits. Unlike the preceding example, this satellite account will therefore be a factor for improving the national accounts themselves.

In the same way, the satellite account for the audiovisual industry is closely linked to the enlargement of the concept of intangible literary and artistic assets. Similarly, the satellite account for research could record the extension of gross fixed capital formation to R&D—an innovation that was refused for the central framework.

Europe and regional accounts

The centralizing tradition—still alive and well in France—has turned the regional accounts into the "poor relations" of the national accounts system. No treatment of French regions will be truly satisfactory until the local units are directly taken into account, and until representative regional values are routinely calculated for all the national economic indicators. The decisions taken concerning the fourth-generation annual surveys of businesses will not allow any notable advances in the methodology of regional accounts for metropolitan France—at least not during the initial implementation of the base-1990 system.

Regional indicators have been in use for some time in France and elsewhere in the European Union. Subsequent demand from Eurostat and local authorities in France has given a powerful impetus to regional accounts. These now provide regional figures for value added, gross fixed capital formation, household income, and local government accounts. There are also regional accounts — and even département accounts — for agriculture.

Meanwhile, substantial work has been carried out on France’s four overseas départements" a series of integrated economic accounts tables (TEEs) has been compiled for each, using the base-1971 methods and covering the period 1970-89.

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Base-1990 system of national accounts

Financial institutions and financial accounts

In the area of financial accounts, as in other sections of the national accounts, the transition from the base-1980 system to the base-1990 system will entail significant conceptual and methodological changes.

The following paper by René Isnard, read at an inter-group meeting of the National Council for Statistical Information (Conseil National de l'Information Statistique: CNIS) on January 11, 1994, is a complement to the article by Jacques Bournay in this issue. It summarizes—and, in some cases, spells out—those aspects of the rebasing that are more specific to the financial area. These include conceptual innovations such as classifications of agents and transactions; the recording of interest and changes in balance sheets; and the intermediate system. The other innovations are of a methodological and statistical nature.

I - Conceptual innovations

The conceptual innovations to be introduced in the base-1990 system serve three main purposes: to make the French system consistent with the revised SNA and ESA; to accommodate the evolution of the financial sphere in recent years; and to apply the experience acquired during the implementation of the present base-1980 system. At the current stage of preparations, the innovations seem likely to focus on five key points:

1. A broader sector, defined in more operational terms

The 1993 SNA features three innovations:

- The combination of today's "financial institutions" and "insurance companies" into a single broad sector. The change acknowledges the financial intermediation role of insurance companies as distributors of medium- and long-term investment products.

- The extension of the sector to financial auxiliaries and financial holdings. The only such units to be counted as financial institutions in the base-1980 system are those that qualify as credit institutions and equivalents.

- An additional breakdown into three subgroups according to the category of majority shareholder (general government, rest of world, national private sector). One of the purposes of the breakdown is to define a "public sector" in the broad sense, including public financial and non-financial enterprises as well as general government.

The main likely consequence of the ESA revision is a subsectorization of financial intermediaries that offers an efficient interconnection with the monetary-policy sphere at European level. This point of the revision is still in progress, as it requires close cooperation with the authorities representing the future European central bank system. As things now stand, the interconnection will be based on the rather broad concept of "monetary financial institutions," defined as the set of financial organizations involved in transmitting monetary policy. In the case of France, this grouping would comprise money-market mutual funds (money-market UCITSs).

To preserve its relevance to the French context, the classification of financial institutions in the base-1990 system, at its most disaggregated level, will have to reproduce all or part of the subdivisions that reflect the French banking law and were already used in the base-1980 system—such as banks, savings banks, and finance companies.

2. Financial transactions: a new classification

The SNA has adopted a classification into seven main headings (monetary gold and special drawing rights; currency and deposits; securities other than shares; loans; shares and other

1. Undertakings for Collective Investment in Transferable Securities, a subcategory already used in the base-1980 system but not in the current ESA.
A single large sector that includes insurance

Photo DREIF/Gobry

equity; insurance technical reserves; other accounts receivable/payable), as against nine in the current French system. The change will have several important consequences. The current category of "international means of payment" will be split up, and all of its elements now treated as claims/debts in foreign currency will be reclassified under deposits and loans. Today's "credits" category will be split into (1) loans and (2) trade credits and timing differences between accrual and payment.

The ESA classification, now nearly complete, is unlikely to place any heavy constraints on the French base-1990 system beyond those imposed by the SNA. In all probability, however, ESA will contain distinct subheadings for UCITSs and derivatives, as well as a secondary breakdown to isolate the components of monetary aggregates within each broad category.²

While showing consistency with SNA and ESA, the French base-1990 classification should try to preserve those distinctive features of the base-1980 system that proved most useful in practice—such as the addition of a sectoral criterion for deposits and loans.³ The new system may also address new concerns, such as the relationships with investment aggregates. Discussion of these various issues is still at an early stage.

3. The concept of interest: a twofold innovation

To harmonize French practice with SNA and ESA, the base-1990 system will replace the present method of recording interest paid with the recording of interest accrued. The new method is one of the ways in which the transaction-records rules in the system of accounts are being unified on an accrual basis.

For non-equity securities, the change will also involve an enlargement of the concept of interest. In addition to standard coupon payments, the aggregate will include all the differences between security issue prices and redemption prices.

This twofold innovation will allow financial investments to be assessed in a far more economically relevant manner than under the base-1980 system. The valuation will be independent of the form of the income payment (prepaid interest, recurrent coupons, capitalized interest, issue premium, redemption premium, etc.). It will also ensure greater consistency between interest flows and financial balance sheets, both within each accounting period and over total investment lifetimes.

4. Accumulation accounts and changes in financial balance sheet

Concerning the changes in balance sheets, both financial and non-financial, the base-1990 system should allow the detailed, periodical production of several new elements. Most of these were already outlined in the theoretical framework of the base-1980 system, but their statistical specifications have so far been rudimentary.

The base-1980 system routinely uses the term "reconciliation account" to denote that portion of the change in balance sheets during a given period not originating in the flows occurring in that period. The reconciliation account may be further broken down into components due to price changes (holding gains and losses) and components representing volume changes other than flows (non-recurrent events). Both components, however, had so far been quantified only on an occasional basis and outside the ordinary statistical production process.

To be consistent with SNA and ESA, the base-1990 system will, instead, have to give those components the same status as flows. Under the generic umbrella term of "accumulation accounts," it will bring together the following:

- accounts of non-financial flows (capital account) and financial flows;
- the "other volume changes in assets and liabilities" account;
- the "revaluation account" showing holding gains and losses.

All three types of accounts will have to be compiled to the same level of detail and at an identical frequency.

The revaluation account will also have to provide a breakdown—not specified in the base-1980 system—between "neutral" gains/losses (i.e. that offset overall 12-month price changes) and "real" gains/losses (i.e., that change real net worth).

2. Unlike the base-1980 system, this breakdown is not directly incorporated into the general classification of financial transactions. It appears in a table appended to the Table of Financial Transactions whose sole purpose is to identify the connections between financial accounts and monetary aggregates. This compromise solution was dictated by the current inconsistency of monetary-aggregate definitions among the main member States of the European Union.

3. The base-1980 classification divides deposits and loans into transactions between financial agents and other transactions.
On balance, the base-1990 accumulation accounts will complement the conventional approach to savings provided by the sequence of current accounts. They will do so by incorporating all or part of the other items—of a contingent or non-recurrent nature—that contributed to changes in net worth during a given period.

(5) An "intermediate system"

The base-1980 accounts already include an intermediate system for non-financial enterprises and insurance companies. An intermediate system for the financial-institutions sector should be introduced on a trial basis in 1995 and become fully operational in the base-1990 system. In keeping with the definition of intermediate systems, its specific feature will be its presentation of data extracted from the accounting documents of financial institutions. The data will be restated in accordance with national-accounting classifications, but the figures will not be adjusted to harmonize them with other statistical sources.

The availability of this new production tool will make it easier to prepare an intermediate system for financial institutions. It will also facilitate the backward calculation of financial accounts entailed by the rebasing.

- The recent project carried out by the CNIS working group on "information on corporate financial transactions." This work should yield solutions to current difficulties in linking the financial and non-financial parts of business accounts. By the time the base-1990 system comes into effect, the project may allow the systematic use of tax statistics in compiling the financial account of enterprises.

In conclusion, therefore, the switch to the base-1990 system and the extensive work related to the transition portend decisive conceptual and qualitative progress in the financial area as in other sections of the national accounts.

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Monetary Research and Statistics Department, Bank of France

II - Methodological and statistical reforms and innovations

As regards statistical sources and methods for financial accounting, the base-1990 system should benefit from the unusually large number of reforms and new statistical studies whose completion is expected by the end of 1995. Major developments will include:

- The implementation in 1994 of the data base on financial agents (BAFI). This will notably provide a more detailed breakdown of financial institutions' transactions by counterpart sectors, and a fuller measure of the securities portfolios held by the financial sector.

- The initial effects, in 1994, of the reform of the information system on mutual funds (UCITs), and the findings of the survey on securities flows; in 1995, the restructuring of the Bank of France data base on bonds. These changes should allow far more accurate valuations of securities transactions, in particular those performed by businesses and households.

- The completion in 1995 of the SMF project, which will involve a thorough overhaul of the computer production of monetary statistics and financial accounts. The main benefits we can expect from this are the following:
  - a closer integration of annual financial accounts, quarterly financial accounts, and monetary statistics
  - a substantially greater automation and reliability of the various phases of account compilation
  - the routine production, on a current-year basis, of the revaluation accounts and other volume changes.
The satellite accounts—described in this article by Michel Braibant—cover most of the major fields of economic and social activity, such as health, social protection, research, road transportation, housing, and the environment. These fields are characterized by large-scale government intervention. The aim of a satellite account is to provide information about specific aspects of the field, notably its characteristic activities, expenditures, financing, and beneficiaries.

The very concept of satellite accounts is still being debated a quarter-century after its implementation. The discussion has recently focused on the issue of linkage and consistency with the central framework of national accounts, particularly at the statistical level. Some argue that the satellite accounts are intrinsically designed to highlight differences with the central framework, which proves inadequate for studying certain specific fields. Other experts feel that such differences should not exist. They advocate improving the connection between satellite accounts and the central framework, especially to illustrate the position of a particular field in the overall economy or in relation to another field, and to draw international comparisons.

The central framework of national accounts has inherent limitations that restrict the study of social and economic domains. The framework is obliged to comply with principles of homogeneity and simplification that impede the analysis of specific fields. Here are several examples of such constraints:

- The classifications of activities and products are not always appropriate, either because the categories do not distinguish the producer units engaged in certain characteristic activities such as tourism, or because the expenditures in one field—the environment, for example—are hard to isolate from other expenditures.

- National accounts are segmented into industries and products, whereas the areas of government intervention are more aptly described in functional terms.

- The central framework does not identify ancillary activity for own account. This makes it impossible to evaluate total expenditures in services such as research and transportation.

- The national accounts are based on a monetary unit of account, which guarantees consistent valuation.

The satellite accounts have not emerged at random [1]. They meet a strong demand—from officials, professional people, employers’ organizations, and trade unions—for fuller information about the economics of a particular field [2]. France’s base-year 1980 Enlarged National Accounts System (Système Elargi de Comptabilité Nationale: SECN) addresses the key concerns of managers and administrators in the satellite-account fields.

Meeting the needs of managers in individual areas

There are currently ten satellite accounts in France, whose prime purpose is to offer specific data on selected fields (table 1). Special accounts commissions are involved in most satellite accounts, except research and education. Not all accounts are at the same stage of development. Some are now produced on a regular annual basis (health, research, social protection), while others are only at the initial publication phase (housing). Some are interlinked with the central framework, while others are only partially so.

The 1980 SECN does, however, stress the fact that a satellite account must, above all, address the issues common to all fields, namely: expenditure, financing, beneficiaries, and output of characteristic activities. It must also permit international comparisons ([3] and [4]). Its field of application comprises collective functions characterized by a high degree of government intervention. The concept of «function» is crucial here. It refers to the fact that satellite accounts use approaches complementary to those of the central framework in order to measure household consumption or

1. References in brackets are to the bibliography in the second box.
government consumption by function. These approaches tabulate transactions by purpose. For example, the accounts will evaluate the sum total of health-care expenditures, including pharmaceuticals purchases, by all economic agents. Another common feature of the satellite fields is the importance of non-monetary data. The revised United Nations System of National Accounts (hereafter 1993 SNA) includes a new chapter on satellite accounts[5]. The chapter harmonizes their methodology, emphasizing the conceptual and statistical link between the satellite accounts and the central framework [6]. It also incorporates a «Satellite System for Integrated Economic and Environmental Accounting.» This defines a second purpose for the satellite account, namely, to treat certain concepts in a different manner from the central framework or to integrate valuations of non-market elements such as pollution and volunteer work.2 Here, we describe the methodology of the 1993 SNA satellite accounts, but with frequent references to the French methodology, which has served as a model for several satellite accounts.

### The field: specific actions that generate expenditures

To compute significant aggregates such as the national expenditure in a given field, we must begin with a precise delimitation of the field’s boundaries. These are defined by the identification of field-specific expenditures, which include: purchases of specific products (= characteristic products + connected products), gross fixed capital formation by characteristic activities in non-specific products, and field-specific transfers.

A distinction must be made between characteristic activities—which are the constituent elements of the field’s economy—and characteristic products. As a rule, though, the two can be treated jointly. Characteristic activities involve production of outputs, while characteristic products give rise to the field’s consumption.

Two fields are especially problematic in this respect. The first is tourism. The activity of hotels, bars, and restaurants is «characteristic» only as regards the portion of their services provided to tourists. The problem is to identify the consumption of tourist products and, above all, the capital expenditure of the corresponding

### Table 1. French satellite accounts and analyses

<table>
<thead>
<tr>
<th>«Satellite accounts»</th>
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<th>Annual quantification</th>
<th>Accounts commission</th>
<th>Organization in charge</th>
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<tr>
<td>- Research</td>
<td>1970</td>
<td>yes</td>
<td></td>
<td>MESR - Ministry of higher education and research</td>
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<td>- Health</td>
<td>1970</td>
<td>yes</td>
<td>yes</td>
<td>SESI - Ministry of health</td>
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<td>- Social protection</td>
<td>1979</td>
<td>yes</td>
<td>yes</td>
<td>SESI - Ministry of social affairs</td>
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<tr>
<td>- Education</td>
<td>1980</td>
<td>yes</td>
<td></td>
<td>DEP - Ministry of education</td>
</tr>
<tr>
<td>- Transportation</td>
<td></td>
<td></td>
<td></td>
<td>OEST - Ministry of transportation and tourism</td>
</tr>
<tr>
<td>. Road</td>
<td>1982</td>
<td>yes</td>
<td>yes</td>
<td>STP - RATP (Paris-area mass-transit authority)</td>
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<tr>
<td>. Greater Paris area</td>
<td>1987</td>
<td>yes</td>
<td></td>
<td></td>
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<td>- Information technol-</td>
<td>1985</td>
<td></td>
<td></td>
<td>IFEN - Ministry of the environment</td>
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<td>ogy</td>
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<td></td>
</tr>
<tr>
<td>- Environment</td>
<td>1986</td>
<td></td>
<td></td>
<td>DIT - Ministry of transportation and tourism</td>
</tr>
<tr>
<td>- Tourism</td>
<td>1988</td>
<td>yes</td>
<td>yes</td>
<td>DAEI and DC - Ministry of housing</td>
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<td>- Housing services</td>
<td>1992</td>
<td>yes</td>
<td></td>
<td>SJTI - Prime minister</td>
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<td>- Audiovisual</td>
<td>1992</td>
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<th>Accounts commission</th>
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<td>- Transportation</td>
<td>1955</td>
<td>yes</td>
<td>yes</td>
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<td>- Agriculture</td>
<td>1964</td>
<td>yes</td>
<td>yes</td>
<td>INSEE and SCEES - Ministry of agriculture</td>
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<td>- Wholesale/retail trade</td>
<td>1963</td>
<td>yes</td>
<td>yes</td>
<td>INSEE (wholesale/retail trade division)</td>
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<td>- Services</td>
<td>1987</td>
<td>yes</td>
<td>yes</td>
<td>INSEE (services division)</td>
</tr>
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</table>

2. Canada is working on a satellite account for households in which unpaid domestic work is valued. The U.S. is attempting to construct a measure of GDP in which research expenditures are treated as gross fixed capital expenditure.
characteristic activities.

The challenge is even greater in the field of environmental protection, where only a small number of goods and services can be regarded as specific. Most expenditures do not involve product purchasing. They are generated by actions (such as developing «cleaner» products) or programs (natural-park conservancy, water treatment) that are not listed as such in the classification of activities and products, since they are functions [7]. The relationship between products, activities, and purposes is much more blurred than in the other satellite accounts.

Thus a field can be defined by actions specific to it, which give rise to an expenditure. Those actions may come under the heading of production as defined in the central framework: examples include doctors’ services in the health-care account, and teaching services in the education account. Such production entails an expenditure such as final consumption or capital formation. Alternatively, the actions may correspond to an expenditure that has no production counterpart in the central framework. In that case, the identification of characteristic activities is more difficult.

- A characteristic activity is defined as a typical (or at least important) activity of the field, which requires a complete study of the field's production sector. Also, if an activity is characteristic, the capital expenditure of the activity’s producers is included in national expenditure. The classification of characteristic products can be more detailed than that of the central framework while being interconnected with it. In the tourism account, accommodation is disaggregated into hotel lodgings, rentals, camping, and so on. These categories are cross-classified with the type of stay: long stay, short stay, business trip, etc. [8]. Likewise, in the education account, teaching services are classified by organizational level (primary, secondary, higher education), regardless of whether they are market-produced or non-market-produced.

- Connected goods and services are, by contrast, products covered by the satellite accounts only in regard to their financing and use, not their output. As a result, the satellite accounts do not include the capital expenditures of the activities that produce these goods and services. Typically, connected goods and services constitute secondary consumption by economic agents of the field. In health care, for example, pharmaceutical industries are not characteristic activities, because their production structures more closely resemble those of industrial activities. Likewise, textbooks and school supplies (goods and services connected to education) are not, as a rule, consumed only by the school-enrolled population.

- A field-specific transfer is a payment in money or kind by one agent to another, whose occurrence is generated by an activity or action in the field. This definition excludes general-purpose transfers such as VAT on products. Scholarships are transfers specific to the education field. In social protection, most expenditure consists of social-assistance benefit transfers, classified by the category of risk covered and by their type (cash or in kind). The field’s only characteristic services are the management activities of social-protection agencies.

Field expenditure equals outlays by financing units

Expenditure is the gauge of the outlay on a given field by the nation's economic agents and is defined as the sum of actual spending on characteristic products, purchases of connected goods and services, and field-specific transfers. Expenditure is thus defined from the financing standpoint, being the sum of outlays committed by financing units to the field.

For example, current health-care expenditure is defined as the total financing allocated to health-care expenditure. It therefore covers a broader field than market and non-market total medical consumption (TMC). The TMC boundary excludes daily disability benefits, outlays on the health-care system (research, education, and prevention), and health-care management expenditures [9].

One can demonstrate the connection between the expenditure in a satellite account and the uses of output in the central framework. In the research account, expenditure includes own-account research output, whose flows are not recorded in the central framework (see, in this issue, the article by Braibant and Minder on the research account). It also includes financing items that are not a counterpart of output, notably subsidies and reimbursable advances and financing of international organizations [10].

It should be noted that there is no single accounting method for assessing expenditure in all satellite fields. The 1993 SNA measures only national expenditure by resident units. It includes seven components: (1) actual final consumption and intermediate consumption of specific products including consumption of ancillary output; (2) capital formation in specific products; (3) capital formation of characteristic activities in non-specific products; (4) current transfers that are not counterparts of uses (1); (5) capital transfers that are not counterparts of uses (2) and (3).

3. Double counting must be avoided. For example, if a characteristic producer in a field purchases specific products for production purposes, the purchase will not be recorded, as it will be included in that producer’s sales.
These five items include only the portions consumed or financed by resident units. National expenditure is obtained by subtracting (6) current uses and (7) capital uses by resident units funded by the rest of the world.

The satellite account makes an additional distinction between current expenditure and capital expenditure. National current expenditure is equal to the sum of (1) final and intermediate consumption and (4) current transfers minus (6) current uses of resident units financed by the rest of the world. National capital expenditure is equal to the net value of the four other items, namely (2) + (3) + (5) - (7).

In other satellite accounts such as research, expenditure in a field is defined as the sum of expenditures by the field's characteristic producers (i.e. their costs). These satellite accounts begin by estimating «domestic» expenditure from the accounts of characteristic producers. These figures are available with a reasonable degree of precision from statistical surveys.

Next, national expenditure is calculated by adding financing paid to the rest of the world and subtracting financing from the rest of the world. In addition to differences of approach (domestic versus national expenditure), the two methods can be shown to produce different levels of expenditure. The discrepancy is equal to the gross saving of producers.

One final issue is transfers. Which ones should be included in the determination of national expenditure (without double counting)? In social protection, transfers effectively constitute new expenditure. Similarly, in the 1993 SNA method, production subsidies and subsidies on products effectively constitute new expenditures relative to purchases of specific products. As a rule, these are recorded in the central framework at purchase prices—i.e. excluding such subsidies. By contrast, investment grants should not be included, since they are a resource for financing capital formation by characteristic activities.

But there are more complex cases. In a transportation account, for example, some specific taxes and other payments are used to finance government expenditures. Tax disks, driver's licenses, registration certificates, and proceeds from fines and penalties serve to finance general-government expenditures on road transportation [11]. As a result, only the difference between expenditures and receipts, rather than the levies' full value, should be counted as current transfers.

Another accounting problem is posed by the interest paid by a non-market producer on an investment loan. Booking the interest under national expenditure will result in different types of expenditure depending on the method of financing. To avoid such distinctions, we would need to include the opportunity cost if the investment is self-financed.

**Identifying and analyzing «users» and «beneficiaries»**

Households are often the main beneficiaries, or at least the category for which the analysis of beneficiaries is most worthwhile in economic and social terms. A satellite account should thus concentrate on identifying those households that benefit from the expenditure. The identification should use all the criteria deemed necessary, such as income bracket, socio-occupational category, gender, age, place of residence, and so on. In the education account, for example, the analysis of beneficiaries—which is admittedly limited—focuses on the average levels of expenditures per student by educational level and with respect to educational-district expenditures by the French education ministry.

In fact, the experience of the French satellite accounts shows persistent gaps in analyzing beneficiaries because it is not always easy to...
identify the beneficiary of an expenditure, and because of deficiencies in the statistical system.

The 1993 SNA refers to both «users» (in fields such as tourism, research) and «beneficiaries» (for social protection). General government is regarded as the final consumer of the collective services that it produces on behalf of society as a whole. General government outlays classified as individual final consumption expenditures are those such as health and education, which benefit «individualized» households.

It is legitimate to ask, however, if this list is not too restrictive. Might it not be possible to individualize government expenditures on water and on road transportation? If the answer is yes, one should compile a table of «secondary beneficiaries,» which therefore means a departure from the central framework.

Actually, one can often identify several «primary» or «secondary» beneficiaries of a single expenditure. Are households or businesses the main beneficiaries of occupational medicine, vocational training, and the use of light commercial vehicles? In the educational domain, do not higher qualifications represent a benefit for the productive economy—notably firms—and for the community? State subsidies to railroads benefit not only the rail authority, but also, to some extent, rail users. True, such subsidies serve to meet operating costs. But do they not also serve to finance investments that will improve comfort, speed (ex. the French high-speed train, TGV), and safety—in short, the quality of service? The answers to these questions largely depend on accounting conventions.

Water provides another illustration of the difficulty of analyzing beneficiaries and financing from the central framework. Water taxes are paid by users to local water authorities (known in France as agences de l'eau), which reallocate a portion of the receipts as grants to units investing in water treatment. Under the central framework and the methodology of the 1993 SNA satellite accounts, the national water expenditure equals the sum of water consumption and treatment investment. The «users/beneficiaries» comprise (1) water consumers (whose tax payments are recorded as a tax on products in the central framework) and (2) units investing in water treatment. Financing is provided by consumers (in an amount equal to their consumption) and the water authorities. This analysis does not seem totally satisfactory. A satellite account for water could equally well include only the amount (net of value added and other taxes) corresponding to the portion used by consumers, and record the remainder as a transfer to water authorities.

Lastly, there is the problem of external effects, which we can discuss on the preceding example. Water taxes include pollution taxes whose amount does not appear to be proportional to the pollution produced. In other words, the «polluters pay» principle is doubtless not strictly applied. The table of users should therefore be supplemented by the table of polluters. Likewise, in transportation, it is legitimate to ask whether the analysis of beneficiaries can incorporate external effects, in particular pollution. The problem is, first, to identify those external effects, then the «beneficiaries» or «victims» of the effects, and finally to estimate their monetary values. We assume here that the satellite accounts should focus primarily on monetary data. But the need to compile such complements to the satellite accounts will certainly emerge, especially in transportation and the environment. Overall indicators of the state of the environment will be needed to supplement if not precede the satellite account.
Financing: a choice of approaches

Financing units may consist either of whole institutional units or fractions thereof. This method provides a link between the classifications of the central framework and of the satellite account. In the health-care account, for example, the financing sector comprises (a) institutional units that devote most of their transactions to financing health-care expenditures, and (b) disaggregated units that devote only a fraction of their expenditures to health. The financing sector thus includes central government, local government, Social Security (whose financing must be consistent with the figures tabulated in the social-protection satellite account), employers (including central government), mutual insurance organizations, private insurance corporations, households, and private non-profit organizations such as the Red Cross. Similarly, in the social-protection account, some schemes incorporated into the accounts of an employer or government department may neither maintain separate accounts nor be autonomous.

As regards transactions, the accounts aim to describe the expenditures by financing units in the field. These expenditures are performed via transactions that are generally specific to each unit. In the health-care account, transactions include social benefits, transfers, and subsidies. Because of its size, the overall allocation paid by Social Security to public hospitals is treated separately. Transactions also include budgetary operating expenditures that qualify neither as benefits nor as transfers and subsidies. One example is preventive medicine.

The French methodology classifies financing into two categories: final and initial.

«Final financing includes the flows that constitute the resources of the production sector, the flows of purchases of connected goods and services, and the flows generated by other distributive transactions (specific transfers) that define the field.» In the health-care account, households are the final financing units for purchases of medicines and doctors’ services, even if those expenditures are partly met from social-assistance benefits.

«Initial financing is defined as the transactions of units that ultimately bear the expenses by making transfer payments to the final financing units.» The health-care account, for example, displays three initial financers of national expenditure: households (for the non-refundable portion of health-care expenses), social-security organizations, and mutual-insurance societies. The last two categories pay social benefits directly to households in order to finance household purchases of goods and services in the field. But the satellite account does not extend «upstream» to the units—such as households and businesses—that finance the social-security organizations. It is in the social-protection account that the social-security organizations become final financing units. Social-protection expenditure consists mainly of transfers in the form of social-assistance benefits. Initial financing units include units that pay social contributions to

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4. Actually, the analysis of financing is not simple. For example, in the area of capital formation, a government agency may finance its overall deficit by issuing instruments, such as bonds, that are not earmarked for any particular program.
The satellite accounts

social-security organizations [12].

In the 1993 SNA, financing units, which are the ultimate bearers of the expense, consist of market producers, non-profit institutions, general government, households, financial institutions, and the rest of the world.

Production of characteristic activities

In France, the compilation of accounts for producers of characteristic activities has often been the necessary first step in assessing the expenditure aggregates of satellite accounts such as education [13]. The compilation of such accounts (current and capital transactions) presupposes the existence of accounts for field producers by activity (in order to evaluate their uses) and a table giving the breakdown of financing of characteristic activities by institutional unit (in order to evaluate their resources). To perform this analysis, we need to define two sets: the set of production units, and the set of their transactions.

The producer units are the economic units engaged in one or more characteristic activities of the field. They may consist either of institutional units in the central framework or of fractions of those units. To analyze the production sector, we must distinguish these unit fractions, which can be described as units of homogeneous production of characteristic goods and services (UHPCs) of the field. We must then compile full sets of accounts for them based on sufficiently detailed data. In-company vocational training is not recognized as a separate activity in the national-accounts central framework, which records expenditures linked to that activity as production costs of the industrial product—under the same heading as compensation of employees, purchases of equipment, and so on. The education satellite account properly creates a distinct category for in-company training centers, whose output consists of the training programs conducted by the companies for their own employees.

Economic activities are tabulated in a set of accounts that classifies economic transactions under two headings: current transactions and capital transactions. The transactions classification is usually simpler than the one used in the central framework. In the education account, the following categories are used:

• resources:
  - current-transactions account: expenditures of financing units disaggregated by unit type;
  - capital-transactions account: investment grants; changes in producers' liabilities are excluded.

• uses:
  - current-transactions account: personnel costs and other operating costs;
  - capital-transactions account: investment.

Using this method, we can compile the current-transactions account and the capital-transactions account of the «apprenticeship» activity. The balancing items—saving, net lending/borrowing—are calculated by netting out resources and uses.

The 1993 SNA method, for its part, introduces an «input-output» table of specific products as a supplement to the table of national expenditure by «users/beneficiaries» and the financing table. The input-output table offers a measure of various aggregates, in particular the domestic and national consumption of specific products produced by resident enterprises. These figures can be well worth calculating for fields such as tourism and transportation, since they are not analyzed to the same degree of detail in the central framework.

The «input-output» table of specific products should be in harmony with the concepts and data of the central framework. However, we can add a valuation of ancillary output. We can even modify some of the central framework's conceptual approaches. For example, the French transportation account can value uses in a manner consistent with actual transactions in transportation services rather than with the CIF/FOB trade figures of the present central framework or even the FOB/FOB trade figures of the future base-1990 central framework.

A synoptic, educational, and open-ended instrument

The introduction of satellite accounts marks an advance in statistical and accounting information. The accounts are an educational tool, offering a synoptic view of their field and enabling specialists to discuss it in a common language. They also stimulate economic studies downstream.

Just as national accounting gives only a macroeconomic vision, so should we avoid using a satellite account for purposes beyond its capabilities. The account, on its own, is not a compendium of all the information systems in a field. In particular, it does not estimate the benefits and ultimate effects of output, such as a population's state of health or cultural level.

The satellite accounts also need to be refined, regionalized, and supplemented by monetary valuations of external costs [14].

In conclusion, we cannot over-emphasize the open-endedness of the satellite accounts, as the experts who drafted the French base-1971 national-accounting manual pointed out: «As they must be rapidly used for purposes of applied study, they
must not be too ambitious at the outset. They should attempt a clear presentation of the material they can contribute to the existing statistical and accounting system. That contribution consists of field-specific information and central-framework accounting data. In particular, they must assemble the scattered data on expenditures and their financing into a coherent whole that brings the data into focus. They must begin to provide inputs that will help economic policy-makers in their field to address current issues without awaiting the results of the work in progress, even if we know that these findings will lead to a different and better description of the field.»

Michel Braibant
Concepts and Classifications Division,
INSEE
Satellite accounts: a French example

The research satellite account

The research satellite account is annual. Its purpose is to describe the funding and expenditure flows of research and development (R&D) activity using an approach consistent with national-accounting methods and concepts. The account provides the uses-and-resources balance of the market research product. The table is reproduced in the central framework. The satellite account also analyzes flows not recorded in the central framework. The purpose of that analysis is to show the full range of research-related expenditures and funding, in particular the valuation of research for own account.

Michel Braibant and Jean-François Minder summarize the stages of preparation of the research satellite account, with figures for 1990.

The research satellite account is compiled in several stages.

The first stage is to analyze research resources in the national-accounting classifications of activities and institutional sectors (tables 1a and 1b). Data on inter-unit research transactions are disregarded.

The measurement variables used are domestic expenditures and human resources. These yield two sets of tables: Gross domestic expenditure on R&D (GERD) by institutional sector performing the expenditure (table 1a) and GERD by research industry (total R&D expenditure in table 1b) and activity industry (total activity expenditure in table 1b).

The account applies two classifications to research-unit work. The first is based on the type of product to which the research is devoted; the second, on the use of the product and hence on the industrial activities that benefit from the research.

The satellite account classifies research expenditures by means of two economic criteria: by research industry, using a description of beneficiary activities; and by the activity industry of the units of homogeneous production where the research is performed. The second approach is consistent with the national-accounting analysis by industry. The two classifications coincide for the units that engage in research for their own account.

Each unit of homogeneous research surveyed thus receives two code numbers: one specifies its research industry in a format compatible with the French classification of activities and products (Nomenclature d'Activités et de Produits: NAP), while the other indicates the industry of the unit of homogeneous production to which the unit belongs.

The research-industry classification selects the industry that directly benefits from the research. Accordingly, the research work benefiting activity A but performed by a firm in industry B will be placed under activity A in the research-industry classification and under activity B in the activity-industry classification.

Gross domestic expenditure on R&D (GERD)

GERD is defined as "all intramural R&D expenditure by units on national territory, regardless of the sources of funds, and thus

1a. GERD by institutional sector (1990, FF million)

<table>
<thead>
<tr>
<th>Institutional sector</th>
<th>Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>total</td>
</tr>
<tr>
<td>Education</td>
<td>22,941</td>
</tr>
<tr>
<td>Government</td>
<td>35,811</td>
</tr>
<tr>
<td>Private institutions</td>
<td>724</td>
</tr>
<tr>
<td>Corporate and quasi-corporate enterprises (CQCs)</td>
<td>97,670</td>
</tr>
<tr>
<td>Total</td>
<td>157,146</td>
</tr>
</tbody>
</table>

1b. GERD by industry (1990, FF million)

<table>
<thead>
<tr>
<th>Industry</th>
<th>Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>total R&amp;D</td>
</tr>
<tr>
<td>Market (excl s83)</td>
<td>97,670</td>
</tr>
<tr>
<td>Market research (s83)</td>
<td>0</td>
</tr>
<tr>
<td>Non-market research (T38)</td>
<td>59,476</td>
</tr>
<tr>
<td>Total</td>
<td>157,146</td>
</tr>
</tbody>
</table>

Source: Ministry of Higher Education and Research

1. The terminology used in this article is broadly based on the OECD Frascati Manual, 1990 revision.
provides a measurement, without double counting, of all expenditures on R&D carried out in France during a given year." Intramural expenditures incurred by producers comprise current expenditures and capital expenditures (capital expenditures in tables 1a and 1b) such as acquisitions of fixed assets.

Such research units occasionally sell their research activity or, more generally, receive external funding for it. In the central framework of the national accounts, their sold output is kept aggregated with the actual output of the unit of homogeneous production to which they belong, but it is reallocated to market research services in order to calculate distributed output.

- R&D funding and performance by activity industry (table 6).

The "funding/performance" table—an extension of the uses-and-resources balances—is a crucial element in this step. The funding sectors are tabulated in columns and the performing sectors in rows. The amount shown in a cell represents the funding of the row by the column. The sum of each row constitutes the research performed by the institutional sector, that is, its intramural expenditures. Total intramural expenditures equal GERN. Total funding represents GNERD.

To obtain the funding-performance table from the uses-and-resources balance of market research, two corrections are required.

The first is the addition of funding items other than intermediate consumption, such as subsidies, refundable advances, and funding granted to international organizations (table 4).

The second correction involves incorporating own-account expenditures. These expenditures are calculated, for each institutional sector, as the balance of total GERD (see table 1a) minus funding of research performed on behalf of third parties (see table 4).

Next, the account calculates national expenditure (GNERD). This aggregate consists of total R&D funding by national economic agents during the year. It is calculated not directly from the amounts reported by the funding units but indirectly from GERD, minus non-resident funding of intramural domestic expenditure, plus funding to non-residents for research work performed on national territory.

This yields the basic equality in the research satellite account:

\[ \text{GNERD} = \text{GERD} + \text{R&D funding to the rest of the world} - \text{R&D funding from the rest of the world} \]

The second stage largely consists in analyzing the flows of research between units and between the institutional sectors in which the units are classified. Resources and uses are compiled for the flows in each sector, yielding the market research uses-and-resources balances in the national accounts (tables 2 and 3).

Resources notably comprise "research transfers." These are sales of research services by units of homogeneous research incorporated into units of homogeneous production in manufacturing or other industries.

Funding and performance

The third stage merges the results of the first two stages through two breakdowns of expenditure funding and performance, one by institutional sector, the other by activity industry. Both tabulations provide a bridge between GERD and gross national expenditure on R&D (GNERD), that is, between R&D performance and R&D funding.

This analysis yields two summary tables shown below:

- R&D performance and R&D funding by institutional sector (table 5);

<table>
<thead>
<tr>
<th>Resources</th>
<th>Uses</th>
<th>Education</th>
<th>Govt.</th>
<th>Priv.inst.</th>
<th>CPGs</th>
<th>Total intramural</th>
<th>Rest of world</th>
<th>Total resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>112</td>
<td>961</td>
<td>36</td>
<td>1,157</td>
<td>2,266</td>
<td>136</td>
<td>2,402</td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td>57</td>
<td>1,974</td>
<td>39</td>
<td>1,030</td>
<td>3,100</td>
<td>1,067</td>
<td>4,167</td>
<td></td>
</tr>
<tr>
<td>Private institutions</td>
<td>9</td>
<td>29</td>
<td>14</td>
<td>43</td>
<td>95</td>
<td>11</td>
<td>106</td>
<td></td>
</tr>
<tr>
<td>Corporate and quasi-corporate enterprises (research)</td>
<td>2</td>
<td>537</td>
<td>21</td>
<td>12,090</td>
<td>12,650</td>
<td>726</td>
<td>13,376</td>
<td></td>
</tr>
<tr>
<td>Corporate and quasi-corporate enterprises (other)</td>
<td>7</td>
<td>14,507</td>
<td>14</td>
<td>7,721</td>
<td>22,249</td>
<td>9,905</td>
<td>32,154</td>
<td></td>
</tr>
<tr>
<td>Rest of world</td>
<td>23</td>
<td>10</td>
<td>0</td>
<td>6,017</td>
<td>6,050</td>
<td>0</td>
<td>6,050</td>
<td></td>
</tr>
<tr>
<td>Total uses</td>
<td>210</td>
<td>18,018</td>
<td>124</td>
<td>28,058</td>
<td>46,410</td>
<td>11,845</td>
<td>58,255</td>
<td></td>
</tr>
</tbody>
</table>

Source: Ministry of Higher Education and Research

### 3. Market research uses-and-resources balance

<table>
<thead>
<tr>
<th>Resources</th>
<th>Uses</th>
<th>58,255</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual output</td>
<td>13,376</td>
<td></td>
</tr>
<tr>
<td>Research transfers</td>
<td>32,154</td>
<td></td>
</tr>
<tr>
<td>Incidental sales</td>
<td>6,675</td>
<td></td>
</tr>
<tr>
<td>Imports</td>
<td>6,050</td>
<td></td>
</tr>
</tbody>
</table>

ICMG = Intermediate consumption of market goods
ICNMG = Intermediate consumption of non-market goods

Source: Ministry of Higher Education and Research
4. Research performed on behalf of third parties and other funding not linked to production (1990, FF million)

<table>
<thead>
<tr>
<th>Performance</th>
<th>Funding</th>
<th>Education</th>
<th>Financial correction for educ.</th>
<th>Government</th>
<th>Financial correction for govt.</th>
<th>Private institutions</th>
<th>C&amp;Cs</th>
<th>Total intramural</th>
<th>Rest of world</th>
<th>Total performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>112</td>
<td>0</td>
<td>961</td>
<td>860</td>
<td>36</td>
<td>1,157</td>
<td>3,126</td>
<td>136</td>
<td>3,262</td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td>57</td>
<td>0</td>
<td>1,974</td>
<td>0</td>
<td>39</td>
<td>1,030</td>
<td>3,100</td>
<td>1,067</td>
<td>4,167</td>
<td></td>
</tr>
<tr>
<td>Private institutions</td>
<td>9</td>
<td>0</td>
<td>29</td>
<td>249</td>
<td>14</td>
<td>43</td>
<td>344</td>
<td>11</td>
<td>355</td>
<td></td>
</tr>
<tr>
<td>Corporate and quasi-corporate enterprises</td>
<td>9</td>
<td>0</td>
<td>15,044</td>
<td>4,057</td>
<td>35</td>
<td>19,811</td>
<td>38,956</td>
<td>10,631</td>
<td>49,587</td>
<td></td>
</tr>
<tr>
<td>Rest of world</td>
<td>23</td>
<td>199</td>
<td>10</td>
<td>5,234</td>
<td>0</td>
<td>6,017</td>
<td>11,483</td>
<td>0</td>
<td>11,483</td>
<td></td>
</tr>
<tr>
<td>Total funding</td>
<td>210</td>
<td>199</td>
<td>18,018</td>
<td>10,400</td>
<td>124</td>
<td>28,058</td>
<td>57,009</td>
<td>11,845</td>
<td>68,854</td>
<td></td>
</tr>
</tbody>
</table>

Source: Ministry of Higher Education and Research

5. R&D funding and performance by institutional sector (1990, FF million)

<table>
<thead>
<tr>
<th>Performance</th>
<th>Funding</th>
<th>Education</th>
<th>Government</th>
<th>Private institutions</th>
<th>C&amp;Cs</th>
<th>Total intramural</th>
<th>Rest of world</th>
<th>Total performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>*19,791</td>
<td>1,821</td>
<td>36</td>
<td>1,157</td>
<td>22,805</td>
<td>136</td>
<td>22,941</td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td>57</td>
<td>33,618</td>
<td>39</td>
<td>1,030</td>
<td>34,744</td>
<td>1,067</td>
<td>35,811</td>
<td></td>
</tr>
<tr>
<td>Private institutions</td>
<td>9</td>
<td>278</td>
<td>*383</td>
<td>43</td>
<td>713</td>
<td>11</td>
<td>724</td>
<td></td>
</tr>
<tr>
<td>Corporate and quasi-corporate enterprises</td>
<td>9</td>
<td>19,101</td>
<td>35</td>
<td>*67,894</td>
<td>87,039</td>
<td>10,631</td>
<td>97,670</td>
<td></td>
</tr>
<tr>
<td>Total intramural</td>
<td>19,866</td>
<td>54,818</td>
<td>493</td>
<td>70,124</td>
<td>145,301</td>
<td>11,845</td>
<td>157,146</td>
<td></td>
</tr>
<tr>
<td>Rest of world</td>
<td>222</td>
<td>5,244</td>
<td>0</td>
<td>6,017</td>
<td>11,483</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total funding</td>
<td>20,088</td>
<td>60,062</td>
<td>493</td>
<td>76,141</td>
<td>156,784</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: figures preceded by * are calculated as balancing items

Source: Ministry of Higher Education and Research

6. R&D funding and performance by activity industry (1990 FF million)

<table>
<thead>
<tr>
<th>Industry</th>
<th>Intramural expenditure (GERD)</th>
<th>+ Intermediate consumption</th>
<th># Research budget</th>
<th>- Sales and transfers</th>
<th>- Subsidies and advances</th>
<th>+ Funding to rest of world</th>
<th>= National expenditure (GNERD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market research (not including s83)</td>
<td>85,008</td>
<td>26,476</td>
<td>111,484</td>
<td>32,154</td>
<td>3,419</td>
<td>0</td>
<td>75,911</td>
</tr>
<tr>
<td>Market research (s83)</td>
<td>12,662</td>
<td>1,582</td>
<td>14,244</td>
<td>13,376</td>
<td>638</td>
<td>0</td>
<td>230</td>
</tr>
<tr>
<td>Non-market research (T38)</td>
<td>59,476</td>
<td>18,352</td>
<td>77,828</td>
<td>6,675</td>
<td>-4,057</td>
<td>5,433</td>
<td>80,643</td>
</tr>
<tr>
<td>Total</td>
<td>157,146</td>
<td>46,410</td>
<td>203,556</td>
<td>52,205</td>
<td>0</td>
<td>5,433</td>
<td>156,784</td>
</tr>
</tbody>
</table>

Source: Ministry of Higher Education and Research

The final table (table 6) classifies research funding and performance by activity industry. The net funding of each industry measures the financial contribution of the industry's units to the national research effort, i.e., GNERD. This aggregate is defined as GERP plus external research expenditures or intermediate consumption of the "market research" product. The resulting aggregate is the "research budget"—that is, the sum of intramural and external research expenditures.

By construction, the research budget for a specified set of units double-counts the research cross-flows between the units, first as intramural expenditures and then as external expenditures under intermediate consumption.

To obtain national expenditure, the account subtracts funding received, i.e., sales of research services (actual output, research transfers, and incidental sales), and subsidies and refundable advances (tables 3 and 4). But funding of international organizations is added in (table 4). The accounting-correction item is added as a resource to imports of research services, which become funding to the rest of the world.

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The Insurance Intermediate System

The use of microeconomic data for macroeconomic valuation has long been a source of problems for statistical analysis. The process involves a conceptual transformation that can complicate the interpretation of the results. The need for an intermediate level of aggregation and analysis was recognized as far back as the base-1971 system of French national accounts, which introduced the Intermediate System of Enterprises (Système Intermédiaire d’Entreprises: SIE) [1]. A similar approach was simultaneously tested for the insurance industry, but was abandoned in practice under the new base-1980 system. Today, that “Insurance Intermediate System” (IIS) needs to be revived for two pressing reasons: first, to bring economic clarity to the insurance account; second, to pave the way for future improvements in national-accounting methods. The IIS—the focus of Jean-Pierre Dupuis’s article—will effectively be implemented in the next version (i.e. base-1990) of the French national accounts.

The first prerequisite for creating an intermediate system is the existence of a set of standard accounting practices followed by all enterprises in a given sector. That is the case with insurance corporations in France, whose activities and accounts are closely regulated and supervised.

Statistical source

Since the early twentieth century, French insurance has come under the increasing control of public authorities seeking to protect the insured. For more than fifty years until 1990, that control was performed by the Insurance Directorate of the Economics and Finance Ministry. The opening of the single European market on

1. References in brackets are to the list of titles at the end of the article.

What is an intermediate system?

The French Enlarged System of National Accounts (SECN) defines intermediate systems as “an economic description of agents’ accounts, obtained by aggregating individual accounts.” The intermediate systems consolidate elementary data into a sequence of accounts analogous to that of the national accounts. They are also “the instruments that provide the statistical link between microeconomic data and macroeconomic data.” They can be compiled for any group of units that keep their accounts in accordance with the standardized rules of an accounting plan.

The passage from the “elementary” accounting level to the “intermediate” accounting level constitutes a qualitative leap whose impact is described by Pierre Muller: “Synoptic documents in business accounting are primarily designed to report the financial position from an internal standpoint and over a short period. The intermediate system seeks to define an analytical framework for describing only external flows and external net worth over a longer period [2].” Thus the intermediate system is not a mere transcription on an aggregated level of synoptic documents from private business accounts, namely, balance sheets and income statements. It effectively rearranges this material into “an integrated whole, describing both the generation and distribution of income, the financial resources available and their various uses, the components of the changes in net worth [etc.]” [3].”

The intermediate system is governed by a logic of its own. While bearing a conceptual resemblance to the central framework of national accounts, it is not subject to the same constraints. It is based exclusively and entirely on company data, making no attempt at consistency with the accounts of other sectors such as general government and the rest of the world. Its methods of classification and valuation, as well as the times of recording, are those used by business firms. Moreover, it can be compiled on the basis of looser aggregation criteria than those used in the national accounts. This flexibility allows the preparation of complete accounts for each activity subsector. The intermediate system thus preserves the consistency of the sectoral or subsectoral accounts.

An innovative compromise between private accounting and national accounting, the intermediate system helps to define a mesoeconomic level of analysis that describes the sector’s specific rationale and dynamics.
December 31, 1992—largely anticipated in the financial sectors—provided an opportunity for reforming insurance legislation.

The law of December 31, 1989, reforming the insurance code was followed by institutional reforms. This process transferred most of the Insurance Directorate’s authority to the Insurance Control Commission (Commission de Contrôle des Assurances), a judicial body independent of the ministry. The Commission’s monitoring and disciplinary powers were increased. In particular, the Commission is responsible for enforcing solvency constraints. It collates the detailed financial statements submitted by insurance corporations with effect from fiscal 1989. It arranges for their publication in a manner compatible with the Insurance Directorate’s annual report to the President of the Republic [4].

The Commission’s report is, in fact, the main statistical source available. It shows the aggregated accounts for the entire market—that is, all the insurance corporations authorized to operate on the French market, regardless of their legal status, including subsidiaries of foreign companies. However, it excludes units specializing in reinsurance, which is not a government-regulated activity in France. The corporate statements are prepared in compliance with a specific system of accounts known as the 1969 Insurance Accounting Plan, modeled on the 1957 General Accounting Plan.

Two features of the report need emphasizing here:

- The presentation of the accounts meets the legal obligation to segregate life insurance and savings activities from non-life insurance activities (i.e. property/casualty, fire, and other classes of general risk).
- The financial statements of insurance corporations record their global activity, both inside and outside the national territorial boundaries. However, the report contains an accounting document known as État A1 that restates selected items of the operating income statement on a territorial basis.

Risk management and financial management

The insurance activity can be defined as risk-sharing or the transformation of individual risk into collective risk. This intermediation mechanism for coping with risk involves a highly specific method of managing time.

By comparison with goods-producing industries and other service industries, insurance is characterized by an inversion of the production cycle, since revenues are collected—i.e. premiums are earned—before the service is performed and claims are settled. The etymology of the term "insurance premium" makes the point very clearly. "Premium" here does not signify a reward, but a sum that the insured must pay beforehand (from the Latin primum) in the manner set out in the insurance policy.

These distinctive features of the insurance production cycle create an uncertainty about the value of the service produced, which cannot be estimated on a month-by-month basis from the revenue figures. Moreover, the uncertainty is proportional to the lag between premium earnings and claims settlements [5].

The method of financing life insurance is known as equity-building (in French: capitalisation). In this system, premiums paid are allocated to the policyholder’s individual account and capitalized with compound interest. This procedure is a vital requirement for two reasons:

- The period of risk coverage can be long and very distant in time from the premium-collection period. This is because life-insurance policies are a vehicle for planned or long-term saving.
- Life-insurance policies are highly individualized. They do not offer proportional coverage, as the sums paid to policyholders are not based on the actual risk occurrence. On the contrary, in life insurance and personal insurance, the guaranteed benefits (lump-sum capital or annuity) are specified in advance in the policies themselves.

The most common method of financing non-life insurance is the pay-as-you-go or current-disbursement system (in French: répartition), in which the benefits paid out in any given year are funded by the premiums received during that same year from all the insured. In car insurance, for example, the insured population’s size and turnover are sufficient to allow the system to operate in such a mode. By contrast, the funding system for building insurance did not survive the downturn in the construction industry in the late 1970s. This led to the decision, in 1982, to adopt a capitalization method for financing building insurance.

The French Insurance Code requires insurers to maintain technical reserves. This mechanism is dictated by the need to underwrite commitments toward policyholders by exploiting the time lag between premium payment and risk occurrence. Larger reserves are required for insurance financed through capitalization.

There are three types of technical reserves:

- Prepaid premiums: these consist largely of "reserves against outstanding claims" in non-life insurance, i.e. the portion of premiums that will cover the risks incurred in the following accounting period. This applies to all annual premiums not issued on January 1.
- Reserves against claims: These are mostly "reserves against unsettled claims" equal to the probable sum to be disbursed for claims filed in the current accounting period but not yet settled.

- Actuarial reserves: These include all the technical reserves of the life-insurance subsector. They arise from the difference between the value of the premiums paid by policyholders and the present value of insurers' liabilities. The reason for this calculation is that the life-insurance premium is not strictly adjusted to the risk's variation over time. Although the risk of death—estimated from mortality tables—rises with age, the premium charged is higher at the start of the policy and smaller when the policy matures (for policies with recurrent premiums).

In economic terms, technical reserves constitute a debt of insurance corporations toward their policyholders. The method used to record them in the accounts—i.e., the full-accrual basis—effectively guarantees that the insured risk is covered by a reserve and that any potential future claims will be met.

Technical reserves provide the bulk of the funds used by insurance corporations for their financial investments. They are booked under liabilities in the company balance sheets, and offset on the asset side by real-estate assets and financial securities. The "financial" activity of insurance companies is therefore inseparable from—and, in a sense, is an extension of—their "technical" activity.

Basic principles of the Insurance Intermediate System (IIS)

Two basic principles derive from these characteristic features of the insurance business. Both are common to the Insurance Intermediate System (Système Intermédiaire d'Assurance, hereafter IIS) and to the central framework of national accounts. One concerns the concept of service output, the other the recording of investment income.

The first principle is crucial to the structure of the insurance account. It consists in dividing insurance premium income into two distinct transactions: (1) the production of an insurance service and (2) a distributive transaction (the net premiums used to finance a share of the claims).

The premiums earned by insurers during the accounting period, referred to as "gross premiums," can be said to serve a dual purpose:

- The funding of payments due under contractual commitments to policyholders. This consists of a distributive transaction in which a portion of the gross premiums, referred to as "net premiums," is used to finance the claims and equity owed to the insured.
- The payment of the insurance service.

The concept of production (and output)—central to any description of economic activity—is not readily discernible in the insurance sector. However, the insurance activity involves pooling risks and managing them through a specialized intermediary who collects premiums and undertakes to pay claims to policyholders if and when those risks materialize. This activity can thus properly be described as the production of a market-traded service. Accordingly, a portion of the gross premiums earned is used to meet the costs of that service, such as the cost of managing policies and processing claims; the assessment of insurable risks and the adjustment of premiums to claims underwritten; the financial management of reserves; and so on.

The second basic principle results from the sheer volume of insurers' financial activity. Service-production costs and insurance technical expenses are paid for not only out of gross premiums earned but also out of income from real-estate and financial investments (table 1). This income is a vital component of insurers' profits and helps keep insurance premiums at a commercially attractive level for policyholders.

The time of recording transactions in the IIS is fully consistent with the accounts of the insurance corporations themselves. The principle is the accrual basis—i.e., recording claims and debts when recognized.

The accrual basis for an insurance premium is the coverage of the risk during the accounting period. The premiums are recorded after subtracting the portion serving to cover the risk in subsequent periods (the "prepaid premiums" reserve). The accrual basis for the claim is the occurrence of the loss. Claims are recorded when due, i.e., including the reserves set aside to meet actual losses not yet settled (reserves against claims).

Like the time of recording, the valuation method in the IIS is identical to the one used in the insurance corporations' own accounts. Goods and services consumption is valued at market prices and reproduced directly from the insurers' financial statements.

But the measurement of gross premiums earned and insurance-service

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2. "Insurance premium income" is defined as total premiums collected by insurers during the accounting period.
3. Interestingly, this approach has been taken up by the group of experts in charge of revising the United Nations System of National Accounts (1993 SNA).
4. In theory, this principle also applies to the recording of transactions in the central framework of French national accounts. But there are some exceptions to the rule, as—under present methods—some transactions such as taxes, subsidies, and interest are hard to record on an accrual basis.
Table 1 - French insurance in the 1980s: significant aggregates from the IIS ([7] and [8])

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-life insurance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross premiums earned</td>
<td>90,666</td>
<td>140,228</td>
<td>183,640</td>
<td>214,522</td>
<td>229,052</td>
</tr>
<tr>
<td>(including taxes)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net investment income</td>
<td>8,484</td>
<td>14,796</td>
<td>18,574</td>
<td>20,989</td>
<td>20,422</td>
</tr>
<tr>
<td>Insurance-service output</td>
<td>33,274</td>
<td>51,433</td>
<td>79,507</td>
<td>100,100</td>
<td>85,944</td>
</tr>
<tr>
<td>Claims due</td>
<td>65,876</td>
<td>103,591</td>
<td>123,846</td>
<td>137,171</td>
<td>166,437</td>
</tr>
<tr>
<td>Life insurance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross premiums earned</td>
<td>30,180</td>
<td>50,127</td>
<td>97,811</td>
<td>203,610</td>
<td>208,230</td>
</tr>
<tr>
<td>(including taxes)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net investment income</td>
<td>8,656</td>
<td>18,165</td>
<td>28,921</td>
<td>51,075</td>
<td>62,402</td>
</tr>
<tr>
<td>Insurance-service output</td>
<td>8,370</td>
<td>12,835</td>
<td>16,097</td>
<td>22,948</td>
<td>23,193</td>
</tr>
<tr>
<td>Due to policyholders</td>
<td>31,406</td>
<td>57,032</td>
<td>112,249</td>
<td>233,102</td>
<td>249,016</td>
</tr>
</tbody>
</table>

The flows of "real" insurance income—i.e., gross premiums earned and net investment income—pay for the service produced by insurance corporations and finance the claims due to policyholders (the discrepancy between the two sets of aggregates is due to the subsidies item).

output poses a special problem: How should one record the taxes on non-life insurance premiums and taxes on insurance policies? These taxes do not appear in the operating income statements of insurance corporations, which regard themselves as mere collectors on behalf of general government. This approach resembles that of industrial and commercial firms toward value added tax (VAT). Policyholders, on the other hand, cannot deduct the taxes on their insurance premiums. In keeping with the output-valuation rule of the French Enlarged System of National Accounts (SECN) [3], these non-deductible taxes are added back into the value of gross premiums earned and into output value. On the resources side, they are included in insurance-service output. Their counterparts in the form of taxes and levies appear under expenses in the generation-of-income account.

A five-account structure

The IIS is arranged in a dual sequence of accounts:

- A sequence of three flow accounts—based on insurers' operating income statements and profit-and-loss statements—describes the generation and various phases of distribution of the income of insurance corporations. The three accounts—production, generation of income, and distribution of income—respectively yield three balancing items of major significance for economic analysis: gross value added, gross operating surplus, and gross self-financing (a concept equivalent to saving).

- A sequence of two accounts, interlinked with the first three, tabulates information on the insurers' net worth (assets minus liabilities) derived from their balance sheets.

Wealth flows—the counterpart of self-financing in the distribution-of-income account—are recorded in the investment-financing account, which is analogous to a financing table. The changes in assets and liabilities resulting from those flows are registered in the balance-sheet-changes account (between years n and n-1).

The production account and generation-of-income account require no major changes with respect to the overall structure of any intermediate system.

The production account shows the formation of value added, which is equal to the difference between output and intermediate consumption. The latter includes commissions paid to insurance intermediaries (agents and brokers), net reinsurance charges, and miscellaneous management expenses including property expenses.

"Production" includes the production of insurance service but also the production of a housing service (measured by rents collected) and production of financial auxiliaries (ancillary income).

The generation-of-income account tabulates the primary distribution of value added (plus any subsidies) between compensation of employees and taxes, including taxes on premiums, payroll taxes, and labor taxes. The balancing item is the gross operating surplus.

The specificity of the insurance industry is more apparent in the following two accounts.

The distribution-of-income account is indeed a crucial element for analyzing insurance activity. The risk-sharing function is reflected.
in net premiums and technical expenses. The financial function linked to insurance generates investment income. A portion of this is registered in the distribution-of-income account under financial income, while "property income" is included in the production account under housing-service output. The other flows of this account are less directly related to the production of insurance service. They include such items as non-recurring profits and losses, corporation income tax, and dividends paid. The balancing item, self-financing, is the main balancing item of the entire IIS.

The investment-financing account describes investment flows and the resources used to finance them—mainly self-financing and changes in technical reserves—as well as the resources derived from borrowing. The resulting table is not, strictly speaking, a supply-and-use table for the accounting period, but rather a table of changes in assets and liabilities.

The balance-sheet-changes account describes the changes in insurers' balance sheets during an accounting period. It uses the same categories as the investment-financing account to classify assets and liabilities. For each category, it details the change from the value on the balance sheet at the close of the preceding period to the value booked to the balance sheet at the close of the current period. For the most part, the changes are due precisely to the flows recorded in the investment-financing account. However, many assets are the object of allocations to depreciation or to provisions that are listed in a separate column. Also, these allocations are counted as expenses in the insurance corporations' operating income statements and profit-and-loss statements. They are therefore a key bridge between the net book profit or loss and gross self-financing. As in the investment-financing account, some adjustments may be made to accommodate deficiencies in the statistical source and/or in the methods used.

A dual purpose: a tool for economic analysis...

Like all intermediate systems, the IIS serves a dual purpose.

- As an "economic" description of accounts, the IIS helps to define a common language and analytical system for macroeconomists and microeconomists. More accessible than the central framework of the national accounts, it offers a relevant frame of reference for analyzing the insurance sector.

- As it may be compiled on a territorial basis, the intermediate system can be a valuable tool for preparing the national accounts themselves. Indeed, it requires an initial restatement of the elementary accounting data within a homogeneous framework modeled on the national accounts. The intermediate system creates the conditions for an integrated passage from business accounts to national accounts. That is the only rigorous method capable of ensuring an orderly transition from the microeconomic sphere to the macroeconomic sphere. It is the vital step needed to reduce the risks of error and inconsistency inherent in account aggregation.

Among other advantages, intermediate accounting preserves the division between life insurance and non-life insurance, two activities governed by fairly distinct economic and financial rationales.

The IIS is a thus a complete, integrated sequence of accounts describing the generation and distribution of insurers' income. As we have seen, it is closely interlinked with the corporations' aggregate financial statements. Because of its congruence with the sector's accounting principles, it can faithfully describe the economic rationale of the insurance industry.

That consistency is due not only to common rules of recording and valuation methods, but also to the underlying concepts. These effectively establish a very clear equivalence between the corpus of definitions used in national accounting and the business-accounting definitions summarized in the French General Accounting Plan of 1982. Such equivalent concepts include output, value added, and gross operating surplus.

For all these reasons, the IIS may perhaps be regarded as a special variant of the table of "income-statement intermediate balances" (soldes intermédiaires de gestion) prescribed by the 1982 Accounting Plan. A set of eight ratios defined with the aid of the significant IIS values and balancing items allows this analysis to be put into practice (see INSEE Méthodes 18) [7].

The 1982 reform of the Accounting Plan, however, did not extend to insurance corporations. To this day, they continue to apply their 1969 Accounting Plan, derived from the 1957 General Accounting Plan. The directives on European harmonization, in the context of the single market, are imminent. In the meantime, the gap between insurance accounting and general French business accounting may remain a source of difficulty or of divergence between the IIS approach and standard insurance-industry practices.

...and a tool for preparing the national accounts

With an adjustment to its territorial scope of coverage, the IIS paves the way for an integrated passage from business accounts to national accounts.

A common base may be found in the field of subsector S51 (see box 2) by excluding data specific to reinsurers. Reinsurance flows appear in the present form of the IIS only as expenses in the production account of direct insurers. There, the output flows are roughly estimated as the premiums ceded to reinsurers minus the reinsurers' share of claims paid.
Unlike the insurance-corporations account in the central framework, the Intermediate Insurance System makes no attempt to integrate the sector into a description of the total economy. Admittedly, the IIS does try to establish a homogeneous framework modeled on national-accounting concepts. But the system is bound by the constraint of maintaining the accounting consistency and economic rationale of the insurance sector.

The IIS time of recording and transaction-valuation method are consistent with those of business accounts. Its data are strictly derived from corporate accounting data, with a territorial adjustment. The aggregation method resembles standard insurance accounting practices, while allowing a more efficient transition from business accounts to national accounts.

To achieve that transition, the IIS base must be congruent with the territory of metropolitan France. The account should not be "worldwide" but "territorial." The État A1 form in the Insurance Control Commission's report is the only available synoptic accounting document prepared on a territorial basis. It is therefore the prime source for the IIS.

A simplified intermediate system

The gaps in the accounting source, however, restrict the coverage of the territorial IIS. This deficiency has resulted in a simplified intermediate system.

État A1 shows accounting items by risk class (for non-life insurance) or "branch" (life insurance) and breaks down the overall total into several columns (Metropolitan France + Monaco, Reinsurance Acceptances in France, Overseas Départements and Territories, Rest of the World). But the form is based only on data from insurers' operating income statements.

In other words, no balance sheet or income statement exists on a territorial basis. It is impossible to prepare a sequence of accounts from État A1 alone. The territorial IIS is thus confined to the production, generation-of-income, and distribution-of-income accounts (table 2). The distribution-of-income account is a simplified account whose balancing item is the gross profit from current operations after taxes. This aggregate is the closest equivalent to gross disposable income in the national accounts.

Moreover, the level of detail in the accounting data on a territorial basis is inadequate. In consequence, the IIS has to borrow distribution tables from the world account (for operating expenses, for example) or make certain assumptions. These include the convention that "property income" (i.e., rents collected) in the (world) operating income statement is actually received on national territory and can thus be booked as such.

Intermediate system and central framework

The basic differences between the concepts of the IIS and those of the
central framework of national accounts are of three kinds:

- **Time lags due to the basis of recording:** The IIS records taxes and interest on the same basis as the business accounts, namely, corporate income tax when due (not when paid) and interest accrued (not interest when due).

- **Differences in valuation of assets and liabilities:** The national accounts record net worth at market value, and wealth flows at transaction value. The IIS, in conformity with the insurance-industry Accounting Plan, uses historical cost. Assets are booked at acquisition value minus depreciation and allocations to provisions. The IIS, therefore, does not take into account unrealized capital gains. This is in keeping with the conservatism principle that applies to all business accounts. Moreover, the impact of asset disposals on wealth-flow accounts is confined to the book value (net value on balance sheet) of the assets sold. Capital gains and losses effectively realized during those disposals are, as mentioned earlier, recorded on an aggregate basis in the distribution-of-income account.

- **Differences in classification and presentation:** The most important of these is the treatment of life-insurance transactions. The central framework of the national accounts regards net premiums and

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**Table 2 - Simplified IIS: non-life insurance**

Territorial account,* calendar 1990

<table>
<thead>
<tr>
<th>USES</th>
<th>RESOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Production account</strong></td>
<td></td>
</tr>
<tr>
<td>Intermediate consumption</td>
<td>32,855</td>
</tr>
<tr>
<td>of which:</td>
<td></td>
</tr>
<tr>
<td>Commissions</td>
<td>20,406</td>
</tr>
<tr>
<td>Net reinsurance charges</td>
<td>-5,102</td>
</tr>
<tr>
<td>Other (including property expenses)</td>
<td>17,551</td>
</tr>
<tr>
<td><strong>Value added</strong></td>
<td>53,126</td>
</tr>
</tbody>
</table>

| Generation-of-income account | | |
| Compensation of employees | 16,304 | Value added |
| Taxes | 31,797 | Production subsidies |
| of which: | | 145 |
| Taxes on premiums | 29,207 | |
| Other taxes | 2,590 | |
| **Gross operating surplus** | 5,170 | |

| Distribution-of-income account | | |
| Claims due | 145,984 | Gross operating surplus |
| of which: | | 5,170 |
| Claims and losses paid | 133,066 | Net premiums |
| Change in reserves against unsettled claims | 12,918 | Net interest income |
| Interest paid | 1,596 | Memorandum: |
| Dividends paid | 3,275 | Gross premiums earned |
| Corporate income tax | 2,038 | + Taxes |
| **Gross profit from current operations after taxes** | -2,714 | Net investment income |
| | | 18,471 |

* This account covers all non-life insurers licensed to operate on the French market, to the extent of their business transacted on French economic territory. The statistical source is État A1, a key document in the Insurance Control Commission’s annual report (for more details, see INSEE Méthodes no. 18, part 2 [7]).
the changes in actuarial reserves as financial transactions. The IIS, on the other hand, treats them as distributive transactions, and, as such, includes them in the distribution-of-income account on the same basis as non-life net premiums and claims.

Wealth flows and transactions in the distribution-of-income account are thus the two categories of items most likely to be affected by the transition from the intermediate system to the national accounts.

A fruitful approach

The IIS has a particularly high information content. It is well-suited to the economic analysis of the insurance business and sheds light on its specific aspects. The system contains a complete sequence of flow accounts and wealth accounts, arranged to yield balancing items that can be interpreted in economic terms. It thus allows macroeconomists to conduct detailed analyses. At the same time, its accounting principles closely resemble those used in the insurance industry, and its data are easy to relate to insurers' statistics. These features make the IIS a valuable synoptic tool for microeconomists.

However, the IIS is also a half-way stage in the preparation of the national accounts. As such, it precisely offers the advantage of formalizing one of the steps in their construction. That is because it provides an elaborate presentation of business statistics in compliance with the data-integration approach outlined in the insurance-industry Accounting Plan. In its "territorial account" version, the IIS also constitutes an exhaustive compilation of data on one of the institutional subsectors in the national accounts. It is therefore an ideal starting-point for assessing that subsector's accounts.

There is no longer any need to demonstrate the effectiveness of using the intermediate system for a given field to prepare the accounts for that field in the central framework. That effectiveness is proportional to the degree of integration of the system of national accounts being used. In a highly integrated system, the constraints on valuations are numerous and hard to manage. By processing subsectoral data through intermediate systems—where such constraints are largely absent—national accountants can formalize the entire complex of transformations arising from data integration, and hence manage those conversions more efficiently. Viewed in the light of current national-accounting trends linked to the revision of the U.N. System of National Accounts (1993 SNA), the intermediate system promises to be a highly fruitful approach.

While a valuable instrument and an efficient intermediary, the IIS does have some shortcomings:

- Although well adapted to the analysis of its field—namely, insurance corporations—the IIS is by nature limited to that analysis. Establishing links with statistical instruments pertaining to other domains, such as general government and households, is often a delicate task.

- By relying on one statistical source, it embodies the imperfections of that source, such as the occasional inadequacy of detail and the relative specificity of the accounting methods used.

In sum, the intermediate system's congruence with an ultimately narrow field is both a strength and a weakness. Beyond the distinctive characteristics of the field studied, the intermediate-system approach is broad enough to be applied to many other areas—on two conditions:

- First, the existence of an accounting standard that requires the observed units to follow sufficiently uniform practices.

- Second, the existence of a statistical source, such as a government database or a survey, that adequately covers the national field of observation.

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References


