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Mapping the trails of financial crime

Introduction

Recent economic and geo-political events have alarmingly highlighted the risks to peace and economic prosperity that could occur if phenomena such as terrorism, organised crime and political subversion were to join forces for collaboration and mutual support.

The financial crimes that could result from such collaboration are particularly worrying and include fraud, money-laundering and operations of a direct criminal nature, or the more insidious one of occult financing of organised crime, political subversion, terrorism and other such serious criminal activity.

Besides the direct threat there is an indirect one, namely, the damage to the financial system that the use of credit and financial channels for criminal ends can cause, since integrity and transparency are a sine-qua-non for a sound and efficient market economy.

The risks produced by financial crime have grown in step with the number and sophistication of the instruments available, with low-cost and user-friendly technology that spreads exponentially and with constant innovation, and is capable of speeding-up and swelling the size of illicit operations. A corresponding increase in damage is being inflicted on the integrity and soundness of the system.

Extremely topical, therefore, has become the need to identify and combat such forms of crime through a method that is cohesive and effective, based on timely and preventative measures. No stone can be left unturned; every road and every source of help must be explored and tested to discover an effective strategy of response. This could be the essential formula for finding the best solutions.

Up to now, most legal systems have focused their attention primarily on instruments created for tracking and investigating illicit operations after the fact.

But these instruments have too often proved a bit too slow. The authorities find themselves in the position of running after the problems and their perpetrators – the “robbers” always keeping the advantage over the “cops”. With this advantage and with the ever-increasing innovations in technology that can be used for illicit ends, the risk grows that the criminal act cannot be intercepted by the supervisory, investigative or law-enforcement institutions before the action has been completed and the strategies for concealing proceeds and perpetrators for the most part realised.

In this state of things, even the uncovering and reconstruction of the specific techniques used in financial crime are of use only over the short term since behaviours tend to move away from revealed schemes.
To meet the challenge from financial crime in its many and most innovative forms, there must be a broader prospective. It is essential to look at more predictive and preventive instruments. It is necessary to know more about the movements that go through the markets: the causes, options, instruments available, opportunities that arise from all these, choices that this mix can offer the perpetrators, and the effects these choices produce at system level. It is essential to be able to foresee, anticipate and influence changes in behaviour – not only those of lawful operators, but if possible those of the same illegal players.

In a word, it is needful to know more to be able to intervene better and more rapidly. Illegal players must be beaten at their own game of finding out the best strategies, to block them through timely intervention or wait for them as they come out the other end. That only will advantage the goal of confiscating the profits and arresting the perpetrators.

**Financial crime and economic activity**

To identify how all this can be possible, a return must be made to more general principles.

Finance, like the economy in general, is essentially a process of making choices among the alternatives available, for the aim of achieving a profit.

The conditioning elements of such choices are related to the structure of the environment where they take place. Specifically, they refer to:

- Constraints that characterise the environment (whether objective or induced as the effect of a mix of individual actions, or by the actions of someone who has the power to structure the environment itself);
- Means (resources, instruments, knowledge, capacity and – not least – power) available for moving in the environment to face (bypass, avoid, remove) those constraints;
- Costs and risks (economic and non-economic) in acquiring and using those means.

The behaviour the players (licit and illicit alike) pursue to reach certain goals has to take these elements into account – by what is called their “economic calculation”. These elements they only partly know. Those they don’t know, they must try to assess and anticipate – with uneven success.

Illicit finance includes, among the constraints that have to be faced, also those established by the law. When the goal is illicit resources have a broader scale than the legal range. But the matter is always to find them out and exploit them by means of suitable formulas and routes, and to bear (not only in financial terms) the costs and risks.

The best possible knowledge of the different environments that can be realistically accessed and of the alternatives (in terms of options, constraints, costs, resources) available in the different settings at hand is what players have at their disposal to make their choice. The framework is open and changeable; the combinations are potentially unlimited. This is the
frame in which the criminals have to operate also – and within which the authorities must trace them.

True, the authorities can also intervene to shape the landscape itself by introducing new constraints that play to their advantage. For the criminals, then, the matter will be to reorganise their routings, adapt their tools and cover their costs, to cope with the new constraints. The authorities, in their turn, will react. And so the game goes on.

Yet, a better knowledge of options and models available to the players can give the authorities the same possibility to assess possible combinations. Thus they can select (in addition, or as an alternative, to supplementary constraints) suitable tools for monitoring the system, averting the danger or intervening in operational patterns.

This is of special importance in the “globalised” context which characterises most of the contemporary economy. Here, given the “openness” of liberal systems and the ease of communications, every operational innovation looks at first as if it is wholly legitimate; and escapes – at least in some parts of the global system – the controls and constraints that may be put in place in other parts.

It is then worthwhile to look at a number of new approaches for discovering the ways the financial system can be used for criminal purposes since this can be useful for designing instruments capable of defeating them.

Particularly interesting is the goal of drawing up a model of the system and the behaviours within it, so as to make it possible to map the spread of certain characteristics, structural links and connections, risk areas and phenomena and to identify the behaviour patterns to focus attention on. In this way, changes in behaviour could be anticipated for new constraints and opportunities and well-focused action could be taken.

There follows a short investigation into the implications and methodology of this approach, considering what criteria and what processes would make it possible to combat financial crime through the analysis and modelling of behaviours.

**Modelling operations**

The modelling approach gives a powerful conceptual tool at both fact-finding and problem-solving levels.

A “model” is a simplified picture used to describe and interpret phenomena that occur in a complex reality, and potentially for deciding on how to act on them. Models are used in a vast and growing complex of field from architecture to engineering where they have been used since ancient times. Today they are applied with success in the cognitive sciences, in economics, social sciences, IT, cybernetics, psychology, and so on.

Models provide many opportunities on the conceptual, methodological and operational levels. They facilitate the gathering and selection of vast quantities of data and permit the
organisation of knowledge into synthetic forms. At the level of interpretation, they help understanding, schematisation, creation of logical link-ups, a linear construction of hypotheses through identifying and evaluating more clearly interpretations, opinions, ideas, various solutions to problems, arguments for and against. At the operational level, they enable schemes that can replicate the functionality of the system and reconstruct the effects produced by any changes.

Modelling can represent different levels of focus or of detail, depending on the information available and the objectives, thus offering different levels of “operationality” of the results achieved in terms of predictability of behaviour, parameters for intervention and simulation of effects.

**Objectives**

To apply modelling to our area of interest – that is, the financial system and the margins therein for perpetrating illicit activity – the operational goals to be met must first be decided upon.

If modelling is to be effective in combating financial crime, it must satisfy certain conditions.

First, it must enable the development of a general monitoring of the structure and functionality of the system, through observing and interpreting behaviour in support of supervising authorities and of the duties of collaboration entrusted to the intermediaries.

Equally, the successful use of financial analysis demands constantly updated information about how the system works, and effective methods for discovering anomalies and alarm signals among the changes and growing complexity of the scenario.

Moreover, effective modelling of behaviour should respond to some functional goals, allowing the supervising authorities to confront particular gaps of information. On the one hand, opacity that exists in the relationships between supervisory institutions and the system (due to the existence of facts which only the intermediaries know and which the supervisory institutions can get only from them). On the other hand, the problems of information asymmetry in the relationships between intermediaries and their clients (because of facts known only to these latter, which the intermediaries can only learn if the customers make them transparent).

**Methodology**

To meet these needs, it is necessary to assess all aspects that could offer useful information about the functionality of the system and the activities of its players.

These are very widely reflected in the vast output of data the system itself produces.

Specifically, there are at least three groups. First, data gathered and processed expressly for fact-finding and for study by public institutions and research centres. Secondly, there are the
data that intermediaries produce and store as part of their activity. Third, there are those that the controlling authorities produce and file themselves in the normal course of their work.

Numerous disciplines provide a range of know-how that can be used to make connections and interpret this universe of data. The question is to find the methodology that can properly select and relate the components.

Six different approaches best merit attention in this regard: analysis of the legal framework, organisational analysis, specific expertise, economic analysis, sociology, and statistical analysis.

**Legal framework analysis and organisational analysis**

Analysis of the legal framework and organisational analysis set out the objective terrain of the opportunities.

The first provides the knowledge of the conditioning framework in the regulations governing a sector or a country, and hence of the possibilities available for fully legal operations. Conversely, it also defines the constraints which the illegal players try to circumvent.

The second clarifies the structure of the system itself, the processes that can evolve within it and the instruments that can be used. Hence, it will be possible to discover connecting nodes and access points not sufficiently guarded, or gaps by which constraints can potentially be got around with low cost and low risk of getting caught.

This makes it possible to draw a map of all possible routes, margins and costs of accessibility for perpetrating illegal operations. When conjoined with the output of the other approaches, the map can reveal beforehand the routes with the highest probability.

**Professional expertise**

Next, there is the professional expertise of the various players.

Expertise from the financial intermediaries (for example in applying the “know your customer rule”) can reveal the *modus operandi* of the “ordinary” customers and discover the specific motivation behind their peculiar operational profile. This can be integrated with the results of the other approaches.

Expertise from the supervisory, controlling, investigative and enforcement agencies, on the other hand, provides information about suspect or illicit transactions already discovered.

By crossing the two we are able to sketch profiles of the different kinds of transactions and players.
**Economic analysis**

Economic analysis provides elements of special interest. It reveals the economic mechanisms and the system of incentives that guide the behaviour of the different players.

It can indicate conditions and more effective forms for getting active collaboration, enhancing transparency, designing the best mechanisms and incentives.

It can explain conditioning arising from specifics in customer profile (risk aversion, liquidity needs, specifics on the sector, the company, etc.) discovered through the information managed by the intermediaries.

Most of all, it can provide ways for interpreting anomalies discovered through statistical examination, in terms of constraints caused by the need to hide profits or destinations of funds, or in any case to elude the regulatory and controlling framework.

In this way, plausible explanations can be given to justify (or not) the preference for a certain kind of transaction and help identify the reasoning behind the choices of one or other route. One particular explanation, in the absence of other suitable justifications, is illicit goals.

The economic approach can finally enable a testing of the basic assumptions and linking matrices developed in other areas for building reference models (structure of the money-laundering market, preference function and utility function of the players, conditioning structural factors, impact of regulatory and controlling constraints, etc.).

**Sociological studies**

Sociological studies can equally make a contribution to understanding the phenomena linked to economic and financial crime. Indeed, there are aspects that would be very hard to understand if approached from the economic side alone.

This is especially true of aspects and elements that make up the reference context, which are fundamental for a correct functioning of analytical models and for an effective development of preventive action.

There is a number of relevant aspects where sociological studies can assess the presence of extra-economic variables (environment, culture, etc.) which influence behaviour. For example:

- the factors that influence the choice of criminal behaviour,
- the structures of relationships caused by the overlapping of the criminal, the legal and the ‘grey’ economy,
- the choice whether to 'internalise', rather than outsource, the financial services that organised crime needs,
the preference for financial “parallel” channels and circuits (like hawala), which might also be used for money laundering and terrorist funding.

This list could go on. In general, all that entails aspects and relationships of trust, power, and non-economic exchanges involves the sociological approach.

**Statistical analysis**

Statistical analysis performs quantitative studies of behaviour and constructs homogeneous “standards” at system or subsystem levels by comparisons between different sectors and elements.

It can uncover anomalies which would require explaining through other disciplines.

Finally, it enables the transfer of schemes worked out with the help of other disciplines into patterns to be looked for and tested during analysis of data flows.

In fact, the key to a practical exploitation of the knowledge gathered by the different approaches lies in connecting the results to the real financial activity – actually, to the *data* that reflect it.

Data available on financial activity combine – as we have seen – research data, accounting data from the market players, plus data stored by the supervisory and enforcement bodies. Hence the information and behavioural models developed by means of the methods outlined above must be made concretely applicable and comparable with such data.

Hence, a need to translate standards which define certain behaviour (usually collected and expressed in descriptive terms) in algorithms and parameters that enable “queries” to emerge.

Whatever the modelling process and approach, it must be subject to a suitable “quantitative” methodology, which structures the logical-mathematical formulas, which in turn enable the application of the models to the available data, and eventually the discovery of elements capable of application at operational level.

**Towards integration**

The above approaches enable the setting out of a three-pronged kit of instruments – a map of possible transactions, a data set that can be organised heuristically for modelling, and a range of criteria for behaviour-motivation. These will usefully blend together.

According to the approach and route chosen and to the disciplines involved, a modelling methodology implies an integration of *inductive* and *deductive* processes. *Inductive processes* target a model by means of synthesis, by a set of know-how collected through expertise and professional experience. *Deductive processes* move from abstract schemes to
concrete, with the help of results of economic research, sociology, organisational studies 
and other human sciences.

Support from knowledge of the law and organisational analysis provide the constraints and 
identify loopholes through which constraints can potentially be avoided, or breached, with 
low cost and low risk of punishment.

Statistics enables the building of parameters deriving from data processing. It is both 
inductive and deductive according to whether it takes (from a different approach) a criterion 
of anomalous behaviour and seeks deductively the results of the operations, or looks for 
anomalous behaviour directly in the data and then seeks inductively to discover behavioural 
paths.

For a given domain, the overlapping of the different approaches enables parameters to be set 
and different results to be integrated, and hence to assess, refine and enrich the model.

Some interesting studies and experiences about countering money laundering phenomena 
through the approach of analysis of data flows and modelling have been taking place at the 
“Ufficio Italiano dei Cambi”, Italy’s Financial Intelligence Unit.

Certainly, Italian regulatory background helps, since transactions are filed in standardised 
data banks kept by each intermediary, and classified by law on the basis of the nature of the 
transactions executed. Complex operational schemes can thus be identified through 
reference to significant “analytical codes” and to transactions recorded in given time- 
periods.

It would not seem too hard, in any case, to adapt the method to contexts where regulatory 
standardised filing systems do not yet exist.

Further research, studies and experiments are being pursued along these lines. They could 
be more extensively implemented in collaboration with other institutions and centres of 
research, who may wish to share and develop such experience.

Indeed, it is the author’s conviction that a more in-depth knowledge of the real alternatives 
available in the system – deriving from a mapping and modelling of behaviour – could lead 
to further substantial developments.

Its wider application could enable a simulated calculation of expediency/opportunity which 
is within the possibility for players. It would make it possible to forecast choices and 
anticipate moves, through guarding better the more risky transit “gaps” or by implementing 
well-aimed interventions, both of an operational and of a legal character, and incentives or 
disincentives according to the appraisal of the behaviour.

On a wider plane, almost at “macroeconomic” level, this approach might produce, crossed 
with other appropriate methodologies, some kind of yardstick of effects (and distortions) at 
the economic level from the results of behavioural trends discovered or anticipated.
The in-depth knowledge of the system in all its various elements, which would be provided by mapping and modelling, could lend support also to policy purpose. Italy’s Financial Intelligence Unit includes in its data base overall information of the financial flows that take place in the country, which it analyses to monitor the system. It might not be a mere coincidence that it has recently be given by law responsibilities also as consultant to Parliament and government for preventing and combating money laundering and financial and economic crime.

In so far as getting one step ahead is now an urgent priority, a successful strategy against the use of the economic-financial system for illicit ends can be developed only by exploring and assessing every available approach, and only with the contribution of all the forces and institutions involved.


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