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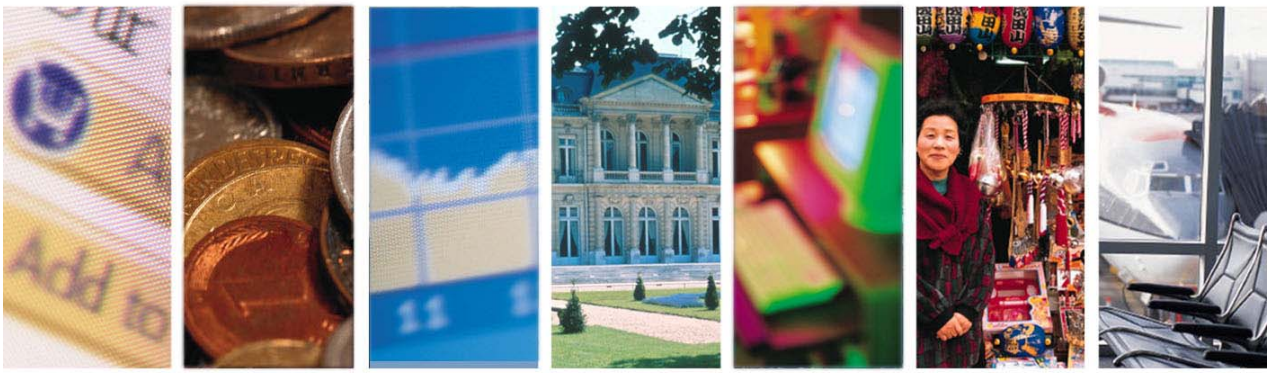

INFORMATION NOTE

# Compliance Risk Management:

# Audit Case Selection Systems

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CENTRE FOR TAX POLICY AND ADMINISTRATION

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# ABOUT THIS DOCUMENT

## Purpose

This information note, consisting largely of a number of country case studies, seeks to illustrate the application of compliance risk management techniques in the audit case selection processes of revenue authorities in a number of OECD-member countries.

The note was prepared with the assistance of officials from revenue authorities in Australia, Austria, Canada, Finland, France, Germany, Greece, Ireland, Japan, New Zealand, Norway, Sweden, Switzerland, United Kingdom, and the United States.

## Background

### Sharing knowledge within and beyond the OECD

With globalisation comes the increasing need for tax administrations around the world to cooperate to help each country administer their revenue system. The work of the Organisation for Economic Cooperation and Development (OECD) and other international organisations aims to find ways to ensure the correct tax is paid in the correct jurisdiction. OECD members need to continue to explore ways of sharing experience and contributing to ongoing research.

### Focus on issues of risk management

In July 1997, the Committee on Fiscal Affairs approved the Practice Note titled *Risk Management*. In addition to providing a generalised description of risk management, the Note acknowledged that a number of national revenue authorities had started to use risk management principles in order to better allocate scarce resources to achieve an optimum tax compliance strategy—one aimed at achieving the best overall tax compliance outcome for the resources employed. The note went on to describe, in brief, the concept of revenue risk management in a tax administration context, discussed some practical considerations in undertaking revenue risk assessments, and provided a brief description of a model for the application of risk management in a tax administration context—described as the 'Revenue Risk Management Cycle'.

Recent years have witnessed major reforms in public sector administration as governments strive to improve the efficiency and effectiveness of their operations. Central to these reforms has been the establishment of sound corporate governance practices, including the application of modern risk management approaches. As a result, national revenue authorities in a number of countries have given considerable attention to the development of sound compliance risk management practices, resulting in their further evolution. During meetings of the CFA's Forum on Strategic Management in early 2002, it was agreed that further work should be carried out by country tax officials to share experiences and to provide more comprehensive guidance on compliance risk management practices, particularly for small/ medium enterprises (SMEs).

### The Forum on Tax Administration Compliance Sub-group

In May 2002, tax officials from a number of OECD countries convened in London—as the Forum on Tax Administration's Compliance Sub-group—to consider what actions could be taken to exchange experiences in the area of compliance risk management and to agree on a strategy for documenting guidance on this important topic. The scope of the Sub-group's work was to be domestic compliance issues affecting medium and small businesses. At that meeting, a number of task groups were established and a series of subjects were identified for consideration and research. At around this same time, the FTA's work in the area of electronic commerce suggested that there would also be value in undertaking a study of country experiences with the development of Internet search tools for compliance risk management purposes. It was therefore decide to bring this study within the work programme of the Compliance Sub-group, given its focus on compliance risk management matters. The work of the Compliance Sub-group has now culminated in the development of a number of products that, following approval by the CFA, will be disseminated to all OECD countries. These products, all relating to Compliance Risk Management, are:

Guidance Note: *Managing and Improving Tax Compliance*
Information Note: *Catalogue of Compliance Research Projects*
Information Note: *Catalogue of Compliance Strategies*
Information Note: *Audit Case Selection Systems*
Information Note: *Use of Random Audit Programs*
Guidance Note: *Progress with the Development of Internet Search Tools*

## Caveat

Each revenue authority faces a varied environment within which they administer their taxation system. Jurisdictions differ in respect of their policy and legislative environment and their administrative practices and culture. As such, a standard approach to tax administration may be neither practical nor desirable in a particular instance. The documents forming the OECD tax guidance series need to be interpreted with this in mind. Care should always be taken when considering a country's practices to fully appreciate the complex factors that have shaped a particular approach.

## Inquiries and further information

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# SUMMARY

Audits are a critical and significant component of the compliance activities of revenue authorities in all OECD countries. Faced with limited resources and relatively large numbers of taxpayers to administer (especially in the SME sector), revenue authorities require a systematic risk-based approach for identifying which taxpayers to audit.

This information note, consisting largely of a number of country case studies, seeks to illustrate the application of compliance risk management techniques in the audit case selection processes of revenue authorities in a number of OECD-member countries.

From these case studies, it can be seen that there that there are two key elements necessary for an effective audit case selection process:

- The timely availability of accurate and comprehensive data;
- The availability of relevant knowledge and skills to analyse and prioritise available data, and to facilitate feedback into updating audit case selection parameters and the compliance risk management process at the strategic level.

Other enablers that have been found to be critical are resources for information technology systems (covering all aspects of data capture, accumulation and analysis) and a solid organisational commitment to the risk identification and assessment function.

# INTRODUCTION

1 The primary goal of a revenue authority is to manage and improve overall compliance with the tax laws, and in the process sustain confidence in the tax system and its administration. The actions of taxpayers, whether due to ignorance, carelessness, recklessness, or deliberate evasion, or weaknesses in administration mean that instances of failure to comply with the law are inevitable? To the extent that such failures occur, governments, and in turn the communities they represent, are denied the tax revenues they need to provide services to citizens.

2 Historically these failures, or compliance risks, have been addressed only in terms of enforcement through an audit-based approach and the case studies in this note reflect that emphasis.

3 But, whilst audit remains a fundamental and necessary approach to addressing non-compliance, the examples given in this note recognise that the factors underlying taxpayers' compliance behaviour in any specific risk area are frequently quite complex and, as a result, are unlikely to be treated successfully with a 'single action' strategy — particularly one based solely on verification and enforcement actions. In this regard, the guidance encourages revenue authorities to give greater attention to understanding the factors that shape taxpayers' compliance behaviour so that a potentially more effective set of responses—ones that deal with the underlying non-compliant behaviour rather than focussing on treating the symptoms—can be crafted and implemented.

## Focusing on small business

4 The main focus of the series of which this note is a part is on Small and Medium-sized Enterprises (SMEs) and particularly the risk of their under-reporting income, for either direct or indirect taxes. However, the principles and key elements are equally applicable for identifying risks associated with non-registration, non-filing, and non-payment.

5 Definitions of what in particular comprises an SME vary between administrations but a useful summary can be found in the companion paper in this series, *Use of Random Audits* (where they are called Small & Midsize Businesses):

> A small and midsize business is any for-profit commercial entity other than those that exceed a given (high) asset threshold. Small businesses include sole proprietor, partnership and corporate forms of organisation. They also include individual return filers who have income from self-employment, even if self-employment income is not their primary source of income.

6 SMEs represent a high risk group in most countries because they are numerous and because their income is neither fixed nor capable, in most cases, of verification against third party data. In addition their commercial set-ups can lack the well developed structures for record keeping, independent audit of accounts and cash handling that help to minimise risks of under-reporting in larger businesses.

# 1 ROLE OF AUDIT WITHIN COMPLIANCE RISK MANAGEMENT

7 It is a key facet of compliance risk management techniques that the treatments for identified risks fit well together (within the operational context of each Administration). The treatments should include both proactive and reactive strategies and they should cover all relevant taxes in an integrated manner. Furthermore, a good treatment will often include a suite of strategies rather than a single approach recognising the differing drivers for non-compliance.

8 Audit has in the past been the sole treatment for compliance risk available to administrations and will continue to play a key role in the development of more integrated strategies. It can be defined as any treatment that requires the active review of the records on which tax returns and computations have been based, from the twin standpoints:

- do the records fairly reflect the full activities of the taxpayer; and
- do the calculations properly comply with technical tax regulations*?*

9 Although the focus on flexible and coordinated response to risk is highlighting the value and effectiveness of many forms of non-audit intervention, audit will continue to play a key role in responses to non- compliance:

- audit is the strategy that allows administrations to exercise effective sanctions and to deal with those towards the top of the 'Compliance Pyramid' (see the guidance note 'Managing and Improving Tax Compliance', Figure 4.2) by enforcing compliance;
- audit acts as a public sanction making the extent of the Administration's enforcement powers visible within the community and thus encouraging others to comply;
- the data gathered during audit is an essential building block in the appreciation of compliance risk and the devising of appropriate treatments.

10 So the effects of a successful audit programme are not limited to the direct effects of each individual action (in terms of additional duties, interest or penalties, and enforced compliance). There are clear, and in many ways more important, indirect effects from Audit programmes in terms of maintaining levels of compliance. These effects are described as:

- a corrective effect – persuading individual customers to move further towards the bottom of the compliance pyramid (see Figure 4.2 of 'Managing and Improving Tax Compliance').
- a deterrent effect – persuading customer groups that it is in their interests to be more compliant.
- an indirect preventive effect – the perceived deterrent effect that audits have on others.

11 Thus, the audit programme underpins substantial levels of voluntary compliance and contributes to the developing work on other methods of influencing customer behaviour.

# 2 KEY REQUIREMENTS IN AN EFFECTIVE CASE SELECTION PROCESS

12 A fundamental point of the compliance risk management process is that the strategic risk identification needs to occur and be settled before operational or case based risks can be identified. In the same way that the environmental scanning sets the context within which strategic risks can be effectively identified, the identification of strategic risks represents the context within which operational or case based risk identification occurs. Nevertheless, the strategic risk identification process is informed through the continuous accumulation of data which is progressively transformed into intelligence and knowledge. This data accumulation often occurs, in part, as a result of past operational risk treatments.

13 The level of strategic intelligence capability in each administration (see Figures 2.1 and 2.2 of 'Managing and Improving Tax Compliance') will vary, depending on the level of development in each of the knowledge and organisational perspectives. Nevertheless in selecting specific cases for treatment (either for audit or otherwise) the administration needs to have the capability to focus back down into the bottom left hand corner of the model – on specific cases or transactions requiring review.

14 Chapters 2 and 3 of the guidance note 'Managing and Improving Tax Compliance' set out in general terms the elements and techniques that comprise an effective risk management process. This information note documents the use of those techniques by a series of case studies. These studies illustrate the methods by which a number of administrations have resolved the operational, cultural and administrative difficulties in reconciling strategic appreciations of compliance risk with need to find specific cases on which action can be taken to improve levels of compliance.

15 From these studies, it can be seen that there are two key elements necessary in the effective translation of strategic priorities for risk treatments into individual case selections for action.

- accurate and timely data and information relevant to the compliance risks to be addressed;
- knowledge and techniques with which to analyse and prioritise that data and to facilitate feedback into the compliance risk management process at a strategic level.

16 Other enablers that have been found to be critical are resources for information technology systems (covering all aspects of data capture, accumulation and analysis) and a solid organisational commitment to the risk identification and assessment function.

## Data & Information

17 The main requirement here is access to the data contained within individual tax returns made by individual customers. Each of the studies places a central emphasis on the interrogation of that data electronically or manually. This data is used to identify badges of non-compliance – either in terms of formal "risk scores", or by reference to transactions identified (by strategic review or by case workers knowledge) as, in themselves, indicating non-compliance.

18 Other key data that is essential in creating effective case selection methodologies, (but less ubiquitous in the case studies) are:

- information from third parties which can confirm (or otherwise) the details shown on tax returns;
- previous case histories of the individuals concerned;
- more generic taxpayer/business sector profiles.

19 Challenges to be dealt with here, in particular as administrations move towards a more thorough going risk management process, are:

- the focus in the studies tends to be on a single return, but to get the most value from the data it is necessary to enrich the data with an appreciation of the compliance history of the individual concerned;
- similarly more value can be obtained from the data if it can be related to data supplied by individuals in comparative business or personal situations;
- privacy rules can limit access to or the use of data particularly when some form of electronic profiling or analysis is necessary;
- establishing relationships between the various data sets is very difficult (if not impossible) without major investments in IT systems.

20 Thus the key facets for case selection data are:

- flexibility in access to data from as wide a group of sources as possible;
- flexibility in the ability to relate data as compliance risk management treatment priorities change;
- the holistic use of the data to inform risk identification and treatment strategies across the full spectrum of compliance risk.

## Knowledge management & analysis techniques

21 Cases are not selected on the basis of data alone, but as a result of some form of analysis of the base data. Thus the second key element in case selection is knowledge management and data analysis techniques.

22 As can be seen from the studies, case selection systems are typically comprised of some combination of three general analytical methods:

- rule based and automated risk scoring systems;

- case review by Auditors – sometimes referred to as screening;
- the results from data mining and other statistical analysis techniques.

23 Rule based systems allow for the bulk processing and risk assessment of returns data, thus enabling that data to be reviewed against a set of risk indicators and for the results to be ranked in terms of the risk of non-compliance thus identified. Such systems are an essential tool in facilitating the exclusion of the bulk of returns with no (or very low) identified risks and allowing the resources available for risk identification to concentrate their efforts only on those cases with significant identified risk.

24 Some of the challenges inherent in using such a system are:

- many of the rules by which a case is scored are dependant on financial ratio analysis and other industry benchmarking (e.g. the ratio of fuel to gross receipts for taxi drivers). These ratios can change over time thus attention needs to be given to continually updating the risk rules. In addition, when they become known within the populations they can become in themselves standard factors to be achieved, and thus self-fulfilling.
- the rules need to be responsive to the local knowledge of the front line staff who are working on the cases when selected. Firstly the final case selections need to be able to reflect the local knowledge of the caseworkers themselves whilst retaining appropriate propriety within the case selection system. Automated selections with no opportunity to be influenced by such local knowledge can create resistance and lead to sub optimal working once the cases are underway (but see the comments below on manual case screening). Secondly, the risk rules need to be responsive to the knowledge gained by front line workers from working their cases. Such knowledge can be about new risks, changes in commercial behaviours, or new technical tax devices and the impact of that knowledge can be significantly leveraged if it can be captured within a flexible and developing set of risk rules.
- at their most effective the rules should bring together data from disparate sources (e.g. tax returns, Third Party information, and public domain information from Internet). This level of analysis requires considerable investment in IT resource.
- the rules need to have the capability to be changed reasonably quickly to take account of new strategic appreciation of compliance risk. Once again if the rules are themselves hardwired into IT coding then this may be a resource intensive business.

25 Case review by auditors (screening) is the traditional method by which audit cases have been selected. The method dates from the time when there was little or no IT support, the data available was in any case limited, and the compliance risk management techniques at a strategic level less well developed. Such a methodology has the benefit that its makes full use of local knowledge, that it creates significantly less case worker resistance, that it can be used to attack specifically defined risks and that it can be operated substantially without IT support.

26 Some of the challenges inherent in relying on case worker selection are:

- it relies on a limited data set with no systematic cross reference to other data available within the administration's systems;
- caseworkers, no matter how experienced, can miss aspects of non-compliance with which they are not familiar;

- those with the knowledge to undertake such screening are usually those with the skills to undertake the substantive intervention. Thus there is an opportunity cost in asking them to undertake such screening;
- modern standards of propriety would indicate that there should be a gap between those selecting cases and those who will be working them.

27 It is becoming increasingly common to base case selection methodologies on the results from statistical analyses. Typically these may involve:

- the use of techniques such as Discriminant Function Analysis (as in the US Study) to predict that certain classes of tax return fall into 'high' or 'low' risk categories;
- the use of data mining techniques to identify patterns of non-compliance in the past and to identify those characteristics in the current population;
- the use of large scale data matching techniques to highlight disparities in tax return data.

28 The challenge in the use of these methods however is that they require significant investments in IT, both hardware and software, and in the acquisition of accurate data on which the IT programmes can operate. If the electronic infrastructure will not support such investments or the skills are not available to the tax administration then this is a difficult road to go down.

## Other Enablers

29 As is clear, the chief enabling factor here is the capability of Information Technology (IT) systems when dealing with the large and often disparate sources of data needed for accurate risk identification. It is often impractical for administrations to manually examine every single return.

30 Skills & research capabilities are also key elements and efficient risk identification is highly dependent on investment in analytical and research competencies. It involves both training people to design and operate systems and in research and intelligence activities.

31 In addition, specific resources funded to provide risk management specialty support are critical in underpinning organisational commitment and provide a corporate wide knowledge base and intellectual capital which facilitate continuous improvement.

32 Finally organisational commitment to the maintenance and operation of a thoroughgoing risk identification and case selection process is essential. This requires a clear and demonstrable commitment from the organisation and its leaders to the strategy, and sensitive management to foster common understanding and acceptance. Messages showing commitment coupled with decisions based on risk priorities from the top Executive are essential to embed managerial support. It is also important that existing abilities continue to be valued by the organisation to prevent staff alienation, alongside the establishment of new skills.

# 3 EVALUATION AND FEEDBACK

33 It is essential in devising and implementing a case selection process that evaluation criteria are determined and then reported upon. This gives benefits as follows:

- it establishes the value (or otherwise) of current case selection techniques, and facilitates the collation of feedback from those working the cases to those responsible for strategic level risk identification;
- it will highlight useful new data sources and analytical techniques;
- it will contribute to overall evaluations of the success of the risk management treatments being employed.

34 The formal process of evaluation needs to be supported by the creation of feedback loops throughout the whole risk management system. Such loops will support the development of more inclusive and responsive systems, and in particular:

- they will encourage the sharing of knowledge both to better inform the risk management process but also to encourage the best use of data and systems for other purposes. (e.g. the data generated in case selection can also be a key factor in driving evidence based policy making);
- they will create visibility of and for the compliance management programme within the administration thus enhancing their effectiveness and helping overcome cultural resistance to the use of new techniques;
- they will ensure that the techniques are not operated in "stove pipes" but in a joined up manner so as to give the most efficient overall benefit to the administration.

# 4 CASE STUDIES

35 These studies reflect the experience of various members of the group in finding practical solutions to the needs of the compliance risk management process. They focus on case selection methods, with the main emphasis being on the production of cases suitable for audit. They are designed to illustrate a number of the points made in the introduction to this document and also in the guidance note on 'Managing and Improving Tax Compliance'. But most clearly, they show that there is no single template for efficiency in this area. Administrations need to reach solutions that fit the legislative, commercial and administrative culture within which they are being asked to operate.

36 **Case Study 1: US Internal Revenue Service (Para.43)**. A detailed technical description. This risk-based method uses large computer systems and data files coupled with statistical, other mathematical models and artificial intelligence-based business rules to identify non-compliant taxpayers.

37 **Case Study 2: Canada Revenue Agency (Para.72).** The Canada Revenue Agency (CRA) approach to Risk Based Compliance (RBC) is presented to provide the reader with a comparable but different automated RBC approach.

38 **Case Study 3: Switzerland Federal Tax Administration (Para.100).** A brief overview of a non-automated and de-centralised approach.

39 **Case Study 4: UK Inland Revenue (Para.106).** A wide ranging case study describing the risk management context, how that translates into practical frameworks for case selection, and the parameters of those frameworks and how they are used.

40 **Case Study 5: Austrian Federal Ministry of Finance (Para.155).** A short outline of the Austrian computer-based risk analysis systems (RAS) for both VAT and (Corporate) Income Taxation.

41 **Case Study 6: UK Customs & Excise (Para.178).** This Case Study gives a brief summary of the history of risk analysis in UK Value Added Tax, and sets out their pre-repayment credibility system for VAT repayments.

42 **Case study 7: French General Tax Directorate (Para.199).** A technical description of the risk based method of auditor screening used in France to select cases for audit.

## Case Study 1: Centralised/Automated Method (US Internal Revenue Service)

### Discriminate Function (DIF) Workload Selection Model

43 In the US, most tax returns are scored for audit potential and ranked at the macro level using a statistical method called discriminate function (DIF) analysis. The DIF scores

are developed from the audit results of a stratified random sample of tax returns. The original random audit programme was known as the Taxpayer Compliance Measurement Programme (TCMP). The current programme is known as National Research Programme (NRP).

44 DIF is used by the Internal Revenue Service (IRS) to create a fair and nationally consistent scoring methods for identifying for audit the potentially most non compliant individuals and low-asset business tax returns. The DIF score for the following returns is calculated and applied during filing and processing: (1) individual returns; (2) partnership returns; (3) corporate returns with assets less than $10 million; and (4) corporations with assets more than $10 million.

45 In addition to DIF, the IRS also selects returns for audit that meet the criteria set out in the IRS's strategic planning process. Through a series of environmental scans and compliance risk assessments, emerging areas of non-compliance are identified. New Risk Based Compliance (RBC) methodologies have been/are being developed, tested and deployed to address the non-compliance characteristics of each strategy in the work plan. These transactions tend to have a high degree of complexity and frequently involve tiering structures, establishment of a foreign business operation, bank accounts, trusts and in some cases, use of debit cards to repatriate offshore funds. In many cases there is a complete lack of conventional links that would alert the IRS to the presence of offshore activity or other tax avoidance strategy involving the use of a flow through entity.

46 The IRS is working toward designing a workload selection environment to meet the needs of current strategic objectives. This environment would enable the IRS to;

- extract information from multiple internal and external data sources as appropriate;
- analyse up to four years of return data for the primary taxpayer together with any related returns for the period;
- capture and analyse operational results by issue on closed examinations and make RBC model and business rule adjustments as appropriate;
- allow for frequent updates necessitated by a rapidly changing economic and business environment; and
- uncover and route issues that can be addressed in a non-enforcement manner in the pre-filing process (e.g. education, outreach, legislation, or improved form design).

47 There are several examples of functioning systems and research prototypes that feature many of the features detailed above, like access to and utilisation of internal and/or external data, use of automated issue-based risk engines, and improved case selection. The most mature of these is called the Dependent Database (DDb) system.

## Moving Toward the New RBC Vision in the IRS Campuses

48 The DDb is presently used in the IRS campuses (formerly known as service centres) to identify tax returns for examination with potentially non-compliant dependency issues like the earned income tax credit (EITC) and duplicate dependency. This is a departure from using the DIF methodology to select non-compliant returns for audit because DIF identifies non-compliant returns but does not identify audit issues. Unlike the DIF-based selection process, which has a significant manual-screening component,

returns selected using DDb have pre-identified issues with explanations as to why the return was selected.

49 The current features of the DDb system include the following:

- internal and external datasets are brought together in a flexible environment;
- a risk identification engine powered by issue-specific business rules;
- the database is business rule driven; each rule identifies noncompliant EITC indicators or duplicate dependency issues;
- if rule conditions are met, the rule "fires";
- each fired rule receives points based upon established scoring methodologies;
- certain high-risk returns are identified as they are being processed, and refunds are systemically frozen as appropriate;
- inventories are built for each IRS campus by issue (EITC versus other) and rank ordered based on the scoring methodology.

50 New processes are currently being researched and developed to augment the DDb to allow for a more complete risk-based approach to workload selection and taxpayer treatment at the IRS campus level. After using the DDb system for several years, it is clear there are limitations.

51 The DDb can only select a few issues. Most of the inventory in the DDb is EITC pre-refund work and EITC dependency issues for post-refund cases. The system needs additional programming to allow it to identify, classify, and select returns with other issues.

52 The DDb cannot provide case/trend/history analysis. The system produces reports that provide a history of cases that are selected, but is not capable of systemic analysis, and the current systems offer limited or no alternative treatment of the selected issues.

53 To address these limitations, a flowchart was developed (see Figure 1), which describes a concept of operations (CONOPS) for the future state of risk-based compliance in the IRS campuses. Narrative descriptions indexed to the numbers in Figure 1 follow the graphical presentation (see Table 1). This CONOPS envisions four distinct modules for effective workload selection, classification, routing and treatment:

- **FAM** - Filing Analysis Module (FAM) will identify returns as they are being processed. The FAM will classify, score and select tax returns for appropriate treatment. The FAM database will be rule driven. If rule conditions are met, the rule "fires". Each rule would receive points based upon established scoring methodologies;
- **PFAM** – Based upon scoring, the Post Filing Analysis Module (PFAM) will sort the cases into high and low-risk categories, and then assign work for subsequent treatment/consideration. If no rules fire in the previous module, the returns will be accepted as filed;
- **WAM** - Workload Analysis Module (WAM) will balance high-risk and other inventory with available staffing. This module will then assign work to specific Service Centre Exam sites for enforcement action or to the appropriate function for alternative treatment;

- **PTAM** – Post Treatment Analysis Module (PTAM) will gather treatment results from all returns considered in the process. The PTAM information is fed back into the FAM for planning and case tracking purposes.

54 In order to identify risk-based issues and provide for centralised case selection, the current DDb would have to be modified to include all envisioned FAM functionality (e.g. additional business rules would have to be developed), and the other three modules (PFAM, WAM and PTAM) would have to be created.

55 The first step in the research being conducted is to increase the number of issues the DDb can identity. This functionality resides in the Filing Analysis Module (FAM) box in Figure 1. The FAM augments DDb by detecting and selecting additional potentially noncompliant issues either as returns are going through processing or later in the post-filing and processing analysis of the filing season. Phase I of the FAM research effort is focused on expanding the number of detectable issues by nine:

- passive activity loss;
- self employment tax;
- alternative minimum tax;
- investment interest expense;
- duplicate credits;
- alimony;
- education credit;
- child care credit;
- charitable contributions.

56 These particular issues were selected for Phase I because both the Wage and Investment (W&I) and Small Business/Self Employed (SB/SE) operating divisions of the IRS determined there was a high degree of non-compliance, business rules could be developed, and Campus employees could successfully conduct the audits. Researchers developed the rules by conducting intensive knowledge acquisition sessions with subject matter experts, who had operational and tax law knowledge at the technical and managerial levels.

57 Since the type of audit conducted by the IRS Campus employees is not face to face (i.e. it is conducted through mail and phone correspondence), and since the skill level of these employees is not as high as the field Revenue agents, the scope and difficulty of the audits conducted by Campus employees is limited. So, after two or three more phases of research, the total number of detectable issues in DDb will be close to 50, which is most likely the limit in the Campus environment.

58 Research needed to create the other modules has not yet been undertaken.

**Figure 1: Concept of Operations for the IRS Campus Risk-Based Compliance**

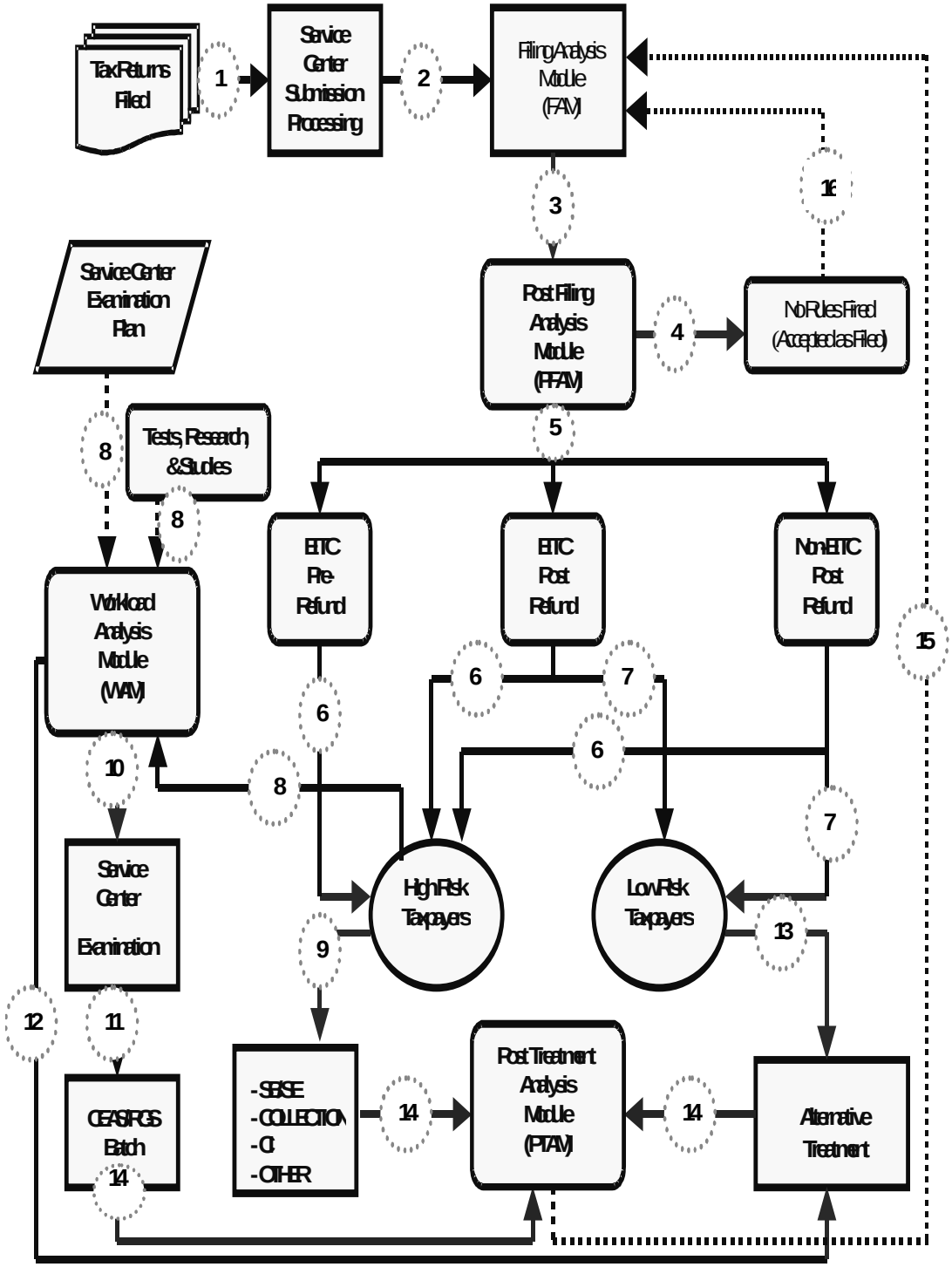


**Table 1: Examination Proposed Risk-Based Selection Strategies**

| |
|---|
| The process begins when a return is filed with Service Centre (i.e. Campus) Submission Processing. |
| This step begins with the processing of the filed returns, which would include Forms 1040, 1040A, and 1040EZ. The Filing Analysis Module (FAM) performs an analysis for business rule violations. The FAM scores, classifies, and selects returns. The classification process will compare return data with other databases. The returns are sent to the Post Filing Analysis Module (PFAM) for analysis and sorting. |
| The PFAM records and analyses the results of the FAM. Returns are sorted into appropriate categories. |
| If no business rules fire, returns are accepted as filed. |
| If selected, returns are classified as one of three categories:<br>EITC Pre-Refund Inventory;<br>EITC Post-Refund Inventory; or<br>Non-EITC Post Refund Inventory. |
| Appropriate workload is classified as high-risk-based upon the PFAM analysis. |
| Appropriate workload is classified as low-risk-based upon the PFAM analysis. |
| The high-risk returns are sent to the Workload Analysis Module (WAM) to balance staffing resources based on the Service Centre Exam work plan. Returns identified for tests and research will also be fed into the WAM. The WAM will balance staffing and return inventory with the Exam Plan factoring in experience levels per Campus, time per case, response rates, etc. |
| If appropriate, high-risk returns are transferred to other functions, such as SB/SE, CI, or Collection. |
| Based on the WAM, returns are sent to the appropriate Service Centre Exam site. |
| High-risk returns are forwarded to CEAS for enforcement action. |
| If appropriate, high-risk returns are assigned for an alternative treatment. This could involve a soft notice or other alternative treatment. |
| Low-risk inventory is assigned for an alternative treatment. This could involve a soft notice or other alternative treatment. |
| Results of all treatments are fed into the Post-Treatment Analysis Module (PTAM). |
| PTAM results are provided to the FAM for future use in classification and selection. |
| For those returns accepted as filed, data is fed directly from the PFAM into the FAM to provide a history. |

## Moving Toward the New RBC Vision in the IRS Field Offices

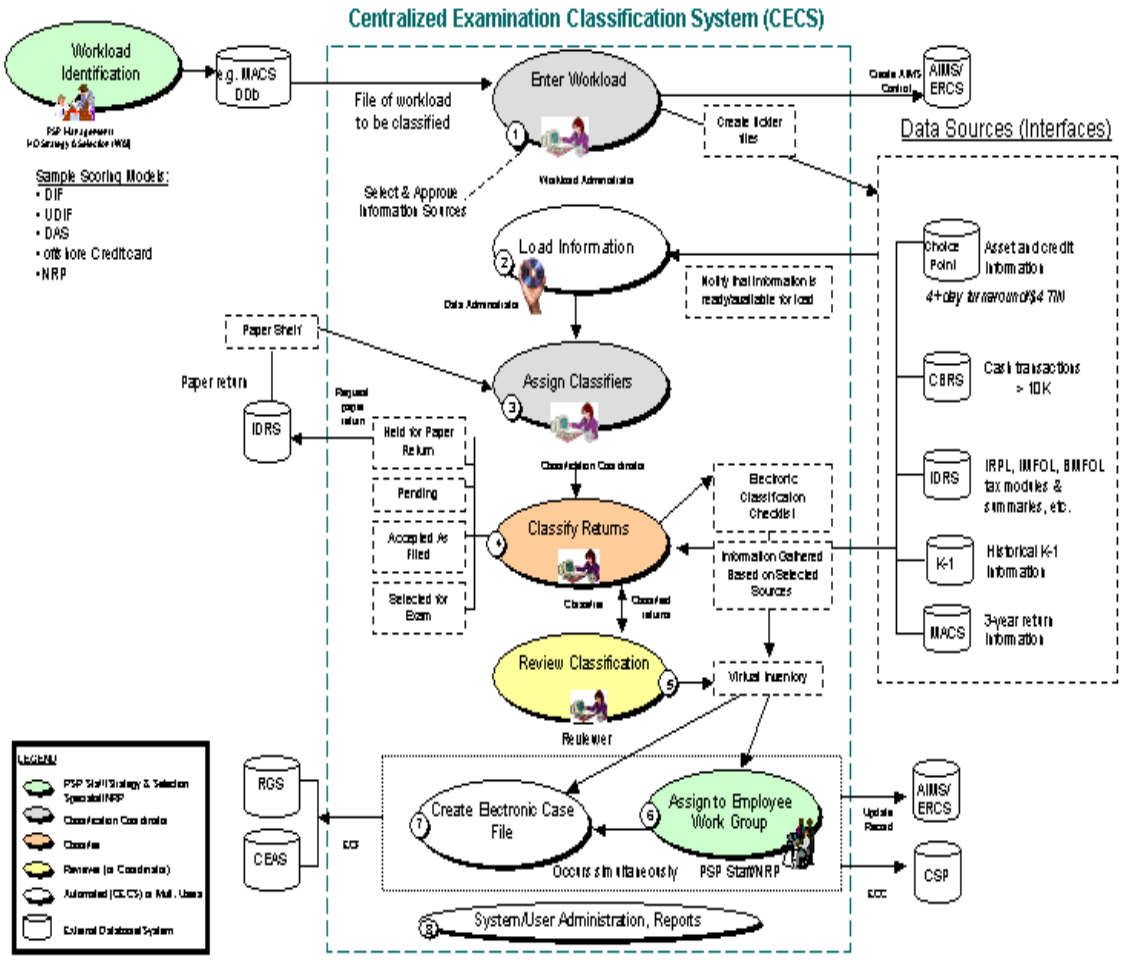
59 The SB/SE Centralised Workload Selection and Delivery organisation has identified the need for a system to automate the Workload classification process. Currently the

process is manual and labour intensive. Data must be obtained from several different systems and status updates are made on a return-by-return basis.

60 The Centralised Examination Classification System (CECS) is a major step forward toward the new IRS Field RBC vision. While CECS will not totally automate the classification process, it will provide a single source for all information required for classification. The information required to classify a return will be available within the system, including the three-year return facsimile, as well as entity and related information from external data sources.

61 Figure 2 below illustrates the high-level process flow for the classification and electronic case building process. The processes within the dotted line depict those that will be automated by the proposed CECS application.

**Figure 2: CECS System Diagram**




62 CECS allows the Workflow Administrators, Classification Coordinators, Classifiers, Reviewers Data Administrators, and Planning, Special Programmes (PSP) Managers, and National Repository Person (NRP) to be located in different areas throughout the country, thus eliminating the need to travel to perform classifications. In addition to its functional duties, CECS will also provide several administrative capabilities. These functions include: generating reports, adding information sources, registering users, assigning roles to users, and maintaining user information.

63 CECS will manage the Classification process. Workload Data will be loaded into CECS either through the User Interface (UI) or through a backend process. CECS will enable a Classifier to complete an Electronic Classification Checklist (ECC), classify the returns using online access to available information sources, and submit them to a Reviewer. Reviewers will screen the classified returns and pass those returns that have been selected for exam into the Virtual Inventory. Once a return is in the Virtual Inventory, a Manager will be able to assign returns to be worked in the field.

64 While CECS will provide many benefits, it will not automate issue identification for the IRS Field examiners like DDb does now (and FAM will in the future) for the IRS Campus employees. However, research is on going to achieve this capability. A project called Issue Detection Expert System (IDES) National Model Development has been commissioned to provide automated issue identification for Forms 1120, 1120S, 1065 and 1041. IDES builds on the success of a prior research endeavour called Small Corporation Issue Identification System (SCISS).

65 The SCISS project produced a research prototype of an automated issue identification and scoring system for the small corporation construction market segment. The last phase of the project demonstrated that the system is capable of identifying issues more consistently and more accurately than the current manual classification process. The requested next step in the process (IDES) is to expand the system to include all SB/SEforms 1120, 1120S, 1065 and 1041, and mid-range Large and Mid-Size Business (LMSB) Operating Division Forms 1120, 1120S, and 1065.

66 This effort will move the IRS towards the future risk-based field examination process. Potential system benefits include:

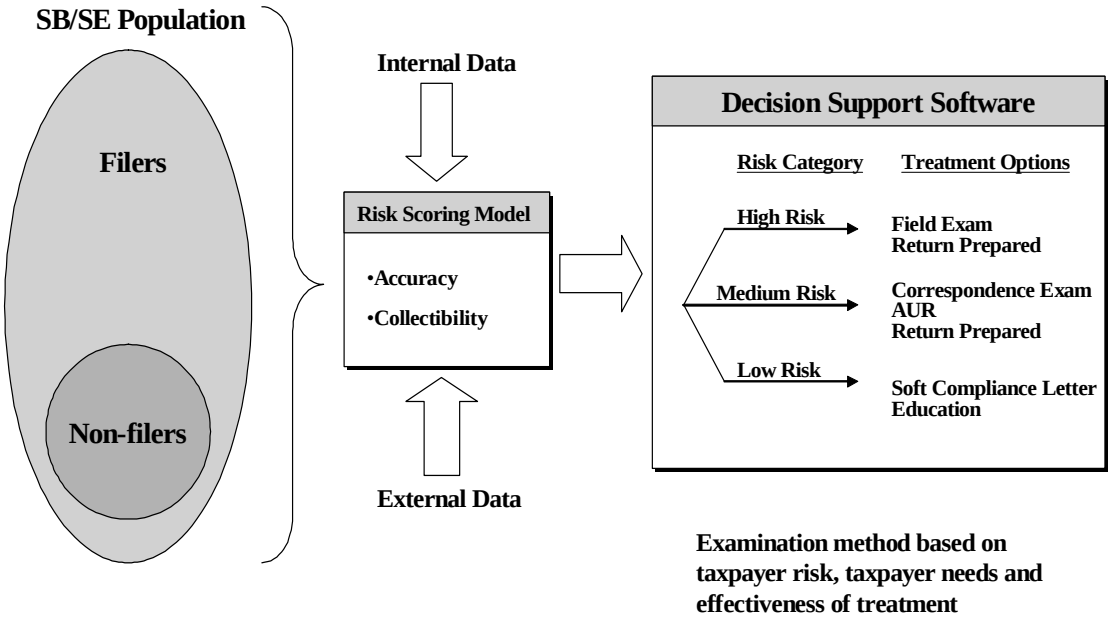
- making classification consistent, fair, and effective nationwide;
- eliminating the cost of manual classification by high-graded employees (Revenue Agents);
- improving the quality of issue classification by applying the combined knowledge of expert market segment classifiers to all returns;
- providing automated issue explanations to agents;
- providing the basis for a feedback loop which tracks issues identified and their final result in examination for continued feedback for the system, identification of potential training needs for examiners and TEC;
- focusing the workload selection by applying IDES after the use of multiple filters, such as DIF, UIDIF and data mining.

## General Model for an Automated RBC Capability

67 In the previous paragraphs, specific models were described that will bring the IRS closer to an automated RBC capability for its Campus and Field environments. In this section, a general model for automated RBC will be described. This model is the framework for most of the research that the IRS and its outside vendor partners have conducted in the past several years.

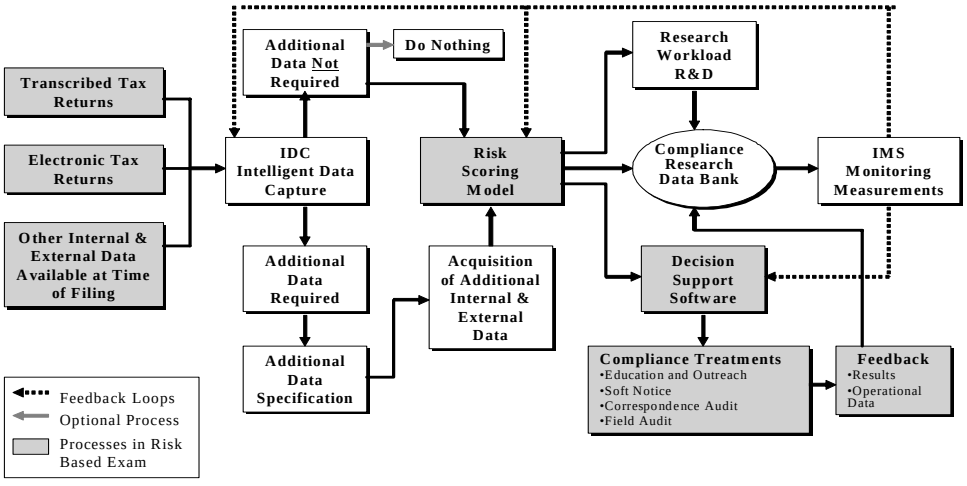
68 During the recent IRS redesign, a team was formed to look at RBC. In their report, they proposed the following general model, presented as Figure 3. This model has many of the features needed in an automated RBC capability: internal population data and external data, risk scoring models and decision support capabilities that will route cases to the appropriate treatment based on the level of risk.

**Figure 3: Conceptual description of a Risk Based Examination Process**




69 While this is adequate, the model does not address key contingencies. Figure 4 provides a more complete picture of what an all-inclusive, integrated RBC capability would look like. It is based on an internal IRS Research design called Compliance Improvement Monitoring Study (CIMS), which was developed in 1997. In Figure 4, the CIMS design is merged with the key components shown in Figure 3 to show how the RBC capability expressed in Figure 4 is a subset of the CIMS approach.

**Figure 4: Mapping of Processes for Risk Based Examination**




70 A final key functionality provided by the CIMS conceptual model is that all of the data risk scores and monitoring capabilities are accessible by both Compliance and Research staffs. This would enable quicker deployment of successful research projects and findings, and it would enable more agile adjustments to model and rule specifications as well as audit and non-enforcement compliance treatments.

71 There are several features worth mentioning. First, in the CIMS approach, there is a cost effective, intelligent way to determine what data are needed based on the characteristics of the taxpayer. This key piece of infrastructure is called Intelligent Data Capture (IDC). Another key component of CIMS is the Intelligent Monitoring System (IMS). IMS provides the feedback loop necessary to learn from and eventually improve both the risk scoring models and business rules and the IDC rules and algorithms.

## Case Study 2: Centralised/Automated Method (Canada Revenue Agency)

72 The operations of the Canada Revenue Agency (CRA) are guided by its primary objective of promoting compliance with Canada's tax legislation and regulations. This objective forms the context within which its risk management process is used to achieve tax compliance. Compliance with tax laws typically means registering when required, filing returns on time, reporting complete and accurate information to determine tax liability, and paying all amounts owing when due. Non-compliance occurs when any of these obligations is not met, for whatever reason.

73 The CRA has a responsibility to maintain public confidence in the fairness and integrity of the tax system. This means providing ample support to those who wish to comply with the law, while taking appropriate measures to identify and deal with cases of non-compliance. In dealing with non-compliance, importance is attached to both ensuring a highly visible presence, as well as focusing on areas where the risk is highest. Achieving the right balance between these fundamental responsibilities is important for effective revenue administration.

74 The tax compliance risk management process at the CRA is founded on several key elements:

- identifying non-compliance and properly distinguishing compliant taxpayers from those that are non-compliant;
- understanding the factors that are driving or enabling non-compliance;
- prioritising our compliance efforts based on our assessment of tax compliance risks;
- developing targeted approaches to achieving compliance that focus on the underlying drivers of non-compliance, as well as approaches that maintain existing compliance;
- leveraging, where possible, strategic partnerships to achieve either complementary or common goals; and
- measuring success in achieving compliance and establishing continuous learning processes to help refine our approach.

### Identification of Tax Compliance Risks

75 Fundamental to managing tax compliance risk is having effective processes for identifying and measuring non-compliance. The extent, to which these processes can accurately assess non-compliance, is the extent to which programme resources can be applied to areas of highest risk.

76 The CRA employs a variety of means to assess tax compliance risk:

- macro-level and aggregate-level analyses identify compliance trends. For example, economic time series data comparing domestic retail sales to goods and service tax collections may be used to highlight potential changes in compliance patterns. Aggregate-level risk assessment data can be used to help assess whether particular industries or particular geographic regions of the country have a disproportionate distribution of revenue risk.

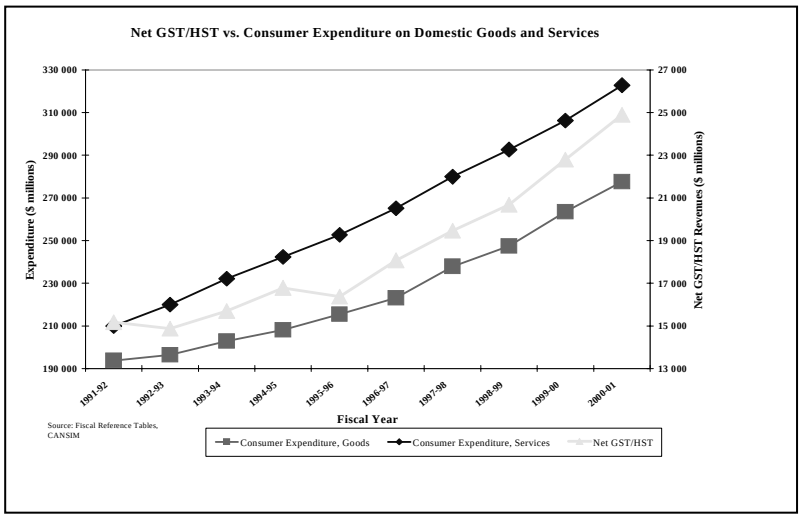
- national systems examine the characteristics of each and every personal and corporate income tax filer, as well as every goods and services tax account, and flag areas of potential non-compliance. Broad estimates of the possible taxes at risk are developed for each case, in order to help prioritise further examination. Experienced auditors access these systems. They use their local knowledge in deciding whether further compliance actions, such as audit, are warranted.

> *"Taxes at risk" represent estimates of taxes that may not have been properly declared as a result of non-compliant behaviour. They are used in national systems to help prioritize compliance workload on the basis of risk.*

## Macro-Level Analysis

77 Macro economic analyses are performed to evaluate compliance trends, and to determine whether the trends in economic data may give an early indication of a change in the levels of compliance. For example, in the chart below, net GST/HST revenues were tracked against changes in consumer expenditures and levels of imports. A comparison of consumer expenditure on domestically produced goods and services shows that, on the whole, it tracks the movement in net GST/HST revenues over time quite well. Similar tracking is noted with changes in import levels, indicating that GST/HST compliance levels are remaining fairly consistent.

**Figure 5: Net GST/HST vs. Consumer Expenditure on Domestic Goods and Services**



78 Other macro indicators are tracked, such as the number of individuals filing income tax returns in comparison to statistics on the population of individuals more than fifteen years old, or comparing corporate income tax revenues assessed to corporate profits. More than forty such macro indicators have been identified for tracking.

## National Case-Based Risk Identification Processes

79 National-level risk identification and assessment processes are incorporated into several tax compliance areas at the CRA. They provide taxpayer-level analysis of tax revenue risks, and support focussing our compliance efforts in areas where the risk is highest. These include processes:

- at the business registration stage;
- at the stage where taxpayers who are inappropriately outside the tax system are identified;
- at the tax return processing stage;
- at the post-processing or audit stage; and
- at the tax collection stage.

## National Risk Assessment Systems and the Audit Process

80 Once tax returns have been processed and accepted as filed, they are subject to further processes to identify and estimate tax risk. This information is in turn used by audit staff responsible for addressing non-compliance through our national audit programme. They use the information to target their compliance and enforcement efforts to areas where the risk is highest.

81 The national risk assessment systems that support this process examine the compliance attributes for each and every taxpayer. In Canada, this includes all 23 million individual income tax filers (including self-employed individuals), all 1.3 million corporate income tax filers, and all 2.5 million goods and service accounts.

82 The national audit programme has been segmented along several lines, each responsible for a specific type of tax compliance risk. Some are client specific, while others are oriented to the particular type of compliance issue. They include general income tax, tax avoidance, international tax, underground economy, large businesses, goods and services tax accounts, electronic commerce, and criminal investigations. The national risk assessment systems are supported by risk analysis along each of these compliance-specific lines. Specialists in each of these areas actively support programme efforts aimed at identifying and addressing these types of specific risk by applying their programme experience and analytical expertise to the task of identifying and estimating risk.

83 In order for the national risk assessment systems to be effective, they must have sufficient data with which to assess compliance risk, and must also have the criteria or knowledge parameters to be able to make inferences about non-compliance from that data. Considerable effort is made to bring together the right data to evaluate risk, and to capture the criteria by which risk may be identified.

84 A wide variety of data is brought together in a relational database (i.e. data mart) in order to support the risk identification and risk estimation processes. This includes:

- tax return information;

- financial statement information from businesses, including line items from income and expense statements, balance sheets, and reconciliation statements;
- cross-programme matching that establishes client-specific linkages between income tax information, employer payroll accounts, goods & services accounts, importer accounts, corporations and their major shareholders, and taxpayers and their spouses' accounts;
- industry classification coding;
- links to certain provincial (state)-level data files such as retail sales tax and property assessment; and
- Internally developed databases useful for assessing risk, such as net and gross profit norms for industry sectors and economic regions of Canada, other financial ratio norms, and family income norms for neighbourhoods defined by the Canadian postal system.

## Knowledge-Based Identification of Non-Compliance

85 The knowledge of experienced auditors, as well as statistical techniques and data mining, are used to develop the criteria that when run against the database will identify potential non-compliance and estimate the possible revenue risks. In the case of auditors, they identify the issues of non-compliance that they most frequently encounter in their day-to-day audit activities. Based on their expertise and knowledge, they then provide the criteria by which the computerised national systems can identify these types of non-compliance. To date, more than 190 different sets of criteria have been developed to identify non-compliance. For example:

- an area of concern in the rental income sector is the failure to use fair market pricing when renting residential property, resulting in improper loss claims. These situations are identified in a number of ways, including the use of property tax and interest expense data to estimate the true market value of the property and its associated rental value;
- unreported income is a key issue facing tax compliance with the underground economy. A number of criteria are used to identify potential abuses, including source and application of funds testing, and comparing taxpayers' reported family incomes to that of families living in the same neighbourhood.

## Data Mining

86 The knowledge of experienced auditors is supplemented by the power of sophisticated computer software to improve the effectiveness of the systems. Data mining is the process of exploration and analysis, by automatic means, of large quantities of data in order to discover meaningful patterns and rules[1]. Typical techniques employed include such processes as neural networks and regression trees. Basically what happens is that with a given set of data, the data mining software is asked to distinguish the characteristics of taxpayers that have been non-compliant (usually on the basis of past audit results) from those that are compliant. The software can analyse thousands of characteristics simultaneously, and find patterns in the data that can be used to provide new criteria for identifying non-compliance.

[1] Berry and Linoff, "Mastering Data Mining", 2000

## Automated Workload Selection Tools

87 The national systems are made available to programme managers as well as local tax service offices across the country through the Compliance Measurement, Profiling, and Assessment System (COMPASS). COMPASS is a business intelligence/decision support software tool. At the heart of the system is integrated information on the filing characteristics and potential compliance risks for each Canadian taxpayer. This information comes from the risk identification and estimation processes, as determined by the national risk assessment system. Using COMPASS, programme managers can quickly analyse risks by industry sector, geographic area, as well as other statistical and demographic breakdowns. This can help them establish risk-based programme plans. Audit workload developers across the country use COMPASS to:

- gain quick point and click access to high risk workload in a Windows-like environment;
- view comprehensive taxpayer compliance profiles to make audit workload decisions;
- test compliance theories by using individually established criteria to detect new areas of non-compliance and fraud; and
- access compliance research analyses and reports to support the decisions they take in addressing non-compliance.

## Local Knowledge in the Audit Process

88 Audit workload developers apply their own local knowledge to make final decisions about whether an audit or other compliance action should be undertaken. For example, the national systems may point out a taxpayer in the farming sector where the net profit is well outside the norm for that particular type of business. A local audit workload developer, however, may know that the low net profit can be explained by hail damage. This type of information is not available to national systems, and an example of where local knowledge adds value in the decision making process. Workload officers may also have information in the form of leads that may be used to support their decisions. Leads typically are uncovered during the course of an audit when, for example, the auditor finds a payment to another business taxpayer that may be suspicious. Informants are another source of leads. These types of leads are currently being integrated into the national systems.

## National Systems and Strategic Information (Aggregate Analysis)

89 The national systems provide an identification of the possible areas of non-compliance and the risk estimates for all taxpayers. Because of this, system results from individual cases can be categorised and aggregated. The information provided in the aggregate analysis can be used to show how non-compliance is distributed across industry sectors, geographic areas of Canada, or other demographic or statistical parameters. This allows us to more broadly focus our compliance efforts.

90 For example, seventeen different areas of risk were identified (using criteria established by experienced auditors) for the rental income sector. By running the criteria against all taxpayers in the sector, it is possible to determine the frequency of occurrence of the various compliance risks. The following chart illustrates the distribution of the top five risks in the sector, both in terms of their frequency and in terms of the dollars at risk. This type of analysis allowed us to focus our attention more specifically to the two major risks identified, that is the failure to use fair market rental values, and the inappropriate expensing of capital items.

**Table 2: Rental Sector - Analysis of Issues**

| Issue | Frequency | Tax at Risk |
|---|---|---|
| Fair Market Value Not Used | 56,799 | $150,317,464 |
| Capital vs. Current Expense | 59,114 | $ 48,925,547 |
| Personal Portion Low | 15,590 | $ 14,547,613 |
| Other Expenses | 17,727 | $ 12,348,795 |
| CCA Creates Loss | 3,894 | $ 5,170,858 |

91 The systems can also be used to analyse revenue risks for specific types of compliance problems. For instance, the CRA has analysed risks associated with unreported income, commonly associated with the underground economy[2]. For the issue of unreported income, non-compliance is identified primarily when it appeared that the taxpayer's source of funds is not adequate to support his/her lifestyle. This is determined through comprehensive data analysis using a variety of tests and criteria.

92 It was recognised that certain segments of the underground economy, including moonlighters (individuals who are typically employed, but have secondary self-employed income sources that are often not reported), as well as non-filers, were not factored into this particular analysis. Although moonlighters were risk assessed for unreported income, they were not included in this analysis, as there was no *a priori* knowledge of the sector in which the individual was moonlighting. In spite of these exclusions, the information provided a good profile of the underground economy on an industry sector basis for self-employed individuals and hence was able to be used to support decisions relating to resource allocation and targeting efforts.

## Measuring the Performance of National Risk Assessment Systems

93 The performance of the national systems is measured on an ongoing basis to determine its effectiveness in identifying risk. This typically involves comparing audit results for different groupings of estimated risk. One expects that as the estimated risk increases, so too will the audit adjustment amounts. By examining that relationship, one can then compare the effect of targeting using the national systems to what might be expected if audits were selected randomly. Recent CRA studies show that the 'lift' factor from targeting using the national systems is from 4.0 times to 10.0 times what one would expect without targeting, depending on the particular risk system (i.e. individual income tax, corporate income tax, or goods and services tax).

> ***Lift*** *is a measure of the effectiveness of a predictive model calculated as the ratio between the results obtained with and without the predictive model. It measures the degree of improvement in selecting files on the basis of the risk estimates provided by the national systems.*

## Continuous Improvement Processes

[2] Unreported Income: Analysis of Revenue Risks, Compliance Research Directorate, February 2000

94 The audit results are also used in the continuous improvement process. For example, research is performed to examine cases where the national risk assessment systems estimated no risk, but where significant audit adjustments were made. A recent CRA study of this nature on self-employed individuals found gaps in the non-compliance modelling related to one area of the business income and expense statement. As a result of the analysis, eleven recommendations for improvements were made.

95 Other continuous improvement processes are also in place. These include having a team of audit specialists from across the country identify new business and compliance trends, model new criteria for identifying non-compliance, and validate and refine existing criteria. Integrating new sources of data relevant to assessing risk is also an ongoing activity aimed at improving the national systems.

## The Compliance Measurement Framework (CMF)

96 This is a method for monitoring compliance and evaluating and refining our approach to addressing it. It is a systematic approach and will establish a consistent view of compliance at any point in time. The CMF will enable decision-makers to:

- understand compliance trends and how they relate to current programmes and initiatives;
- help identify areas where compliance strategies need to be modified or adjusted; and
- be aware of emerging trends in non-compliance that will need close attention in the future.

97 At the heart of the CMF are c*ompliance indicators* that track compliance trends using a set of proxy measures derived from a variety of internal and external data sources. The indicators are also used to identify compliance risks and issues for further study and assess compliance impacts of programme strategies and initiatives. They are based on clearly defined compliance definitions, and are developed for specific client segments.

98 Some one hundred and fifty compliance indicators have been identified for development and implementation within the CMF. They will be tracked annually and, together, they will draw the macro picture of compliance within each aspect of compliance (registering, filing, reporting, and paying). An information system is being developed that will enhance our compliance monitoring and reporting capabilities.

99 In conclusion, the CRA has set out to achieve tax compliance by following an approach based on risk management. It endeavours to identify and assess compliance risks and to understand the underlying factors contributing to the risk. In developing our compliance strategies, we focus on addressing those underlying factors and ensure that the impacts of the strategies are measured and feedback and monitoring processes are developed to ensure continuous improvement. Analysis forms the basis for decision-making, and our approach brings together data, computer technology, statistical and economic methodologies, and human knowledge and insight.

## Case Study 3: Decentralised/Non-Automated Method (Switzerland Federal Tax Administration)

100 A short introduction to the Swiss tax system is necessary to understand this risk assessment method. Switzerland is a Federation (the term Confederation also being used frequently) consisting of 26 Cantons – often referred to as States - with their own tax laws, tax administrations, specific practices and relations with their citizens. It is one of the very few Countries where there is no self-assessment regime for direct taxes.

101 In general, the tax file of every single taxpayer (individuals and companies) is subject to an initial check and income and capital determined in consideration of law and local practices. If doubts arise from this first check, more specific information is requested and, if perceived necessary by the tax officer, the audit department is tasked to examine the last few years' accounts. Random, in-depth audits, with the actual strict control of costs are not generally carried out for the purposes of direct taxes, but other tax departments (mainly VAT and source tax on dividends) provide valuable data for forward surveys.

102 Such a system is consistent with a tax authority assessment method, where the compliance history of every individual or company is known and filed by their own tax officer. Input for choosing cases mainly originates from tax officers responsible for assessment and partly by courts, which often order audits to solve controversial cases. There does not exist a formal process for audit selections - these are entirely based on human skills and intuition.

103 However, the vast majority of tax adjustments are made directly by the tax officer and there is neither a need for an audit, nor penalties for the taxpayer. In general these corrections, for minor amounts, are necessary in 75% of all cases (companies) and they concern tax deductions not admitted because they are excessive or not substantiated. In about 72% of tax returns filed, additional information is requested from the taxpayer and only 2% receive a visit from a tax auditor.

104 This system is only consistent with a regime of non self-assessment and, in fact, for self-assessed taxes such as VAT (introduced in 1995), social security contributions for employers and source taxes for non-residents, it is showing its limits. For this the VAT department is working on a database of compliance risks in order to increase the effectiveness of their audits.

105 At the moment the most important challenge is not at the level of technical expertise for the creation of such an automated method, but the lack of data available in a standardised format and organisational obstacles. This is because VAT is a federal tax administered by the Federal Tax Administration, while all direct taxes are administered by the Cantons (with a considerable variety of different IT systems).

## Case Study 4: Combined Centralised/De-Centralised Risk Identification Process (UK Inland Revenue)

106 The current system of risk identification for small and medium enterprises used by the Inland Revenue in administering direct taxes in the UK is relatively new. Its origins are based on the introduction of a system of Self-Assessment for income tax in 1996/97.

107 Before describing in detail the process of risk assessment used for self-Assessment returns it should be noted that the structure of administration of the UK tax system inherently recognises a different level of risk between different groups of the taxpayer

population. The UK has approximately 27 million taxpayers subject to income tax, but only 9 million of those taxpayers are required to complete an annual income tax return.

108 The remainder is predominantly made up of taxpayers whose sole or main income is from employment and/or savings income subject to tax deduction at source. Income from employment is generally subject to deduction at source by the employer under the UK's Pay As You Earn scheme. The fact that the majority of these employees are not required to complete an annual income tax return recognises that the opportunity for non-reporting, and potential for non-compliance, is significantly lower in this sector of the population.

109 Employers are required to complete annual returns, which are subject to compliance checks.

110 The process described below is focused on identifying risks of inaccurate reporting as the basis for a programme of enquiries. (In this context enquiries can be taken as synonymous with audit).

111 The risk scoring and profiling capabilities have also proved very useful in other contexts:

- they support the identification of customers and customer groups that will benefit from alternative treatments such as enabling or leverage (see companion OECD document Managing and improving Tax Compliance, page 11 onwards);
- the TPI part is invaluable in identifying risks in the population that is not required to make an annual tax return.

112 In dealing more broadly with risks within the non returns population, and with the risks around failure to register with the system in the first place, this process needs to be supplemented by additional intelligence and information systems:

- our hidden economy strategy relies on the cross referencing of information from a number of official sources, customer hotlines, publicly available information and our own proactive intelligence to find and risk assess those unknown to our system;
- in addition to the use of our TPI databases, risks in the non returns population are identified through active review at points of contact with us (for instance when claims for expenses are made), and through information found during our formal audits of employers and contractors.

## Statutory basis for risk assessment

113 In the UK, as in other territories, Self-Assessment introduced a shift in the respective responsibilities of the taxpayer and the Revenue Authority. Prior to Self-Assessment, tax Inspectors were required to consider each tax return and decide whether to issue an assessment to tax based on the returned figures, or to ask questions. Under Self-Assessment there is no statutory requirement for Inland Revenue to consider every return, but the Authority does have the statutory right to enquire into any return.

114 This has enabled the Inland Revenue to:

- introduce new risk identification techniques, focusing on high-risk returns;

- carry out a programme of enquiries on returns selected at random, to provide valuable information on levels of compliance in the population and in different taxpayer groups;

- separate processing of tax returns from risk identification, allowing greater objectivity and consistency in the risk identification process.

115 IT infrastructure which supports Self-Assessment includes the facility to capture standard accounts information in respect of small and medium enterprises. Prior to 1996/97 small businesses would include with their tax return financial statement/accounts of business income and expenditure. There was no standard format for production of these accounts and the information was not captured electronically. The Self-Assessment tax return requires businesses to include Standard Accounts Information (SAI) in a specified format allowing financial statement data to be used in an automated risk assessment process**.**

116 An integral part of the IT system is a knowledge-based decision support system, which allocates risk scores to each income tax return. This is accompanied by a profiling tool that allows Inland Revenue Compliance Managers to select for further examination returns which satisfy a specified profile.

117 This information is housed in a data warehouse. The data warehouse also stores information obtained from other sources, mainly from annual statutory returns made by financial institutions or other bodies, who receive or pay money on behalf of others (an example is annual returns made by banks of amounts of interest paid on savings accounts). The generic term Third Party Information (TPI) is used to describe information received from someone other than the taxpayer. TPI is also stored in the data warehouse, and can be matched against tax return information.

118 Details of types of information held and use of risk profiling are provided later in this narrative.

## Organisational structure

119 The Inland Revenue has also changed the organisation of its local tax office network in a way that supports the move away from individual officer examination of tax returns to a process of objective, profile-driven risk assessment.

120 Prior to reorganisation the process of risk identification was carried out by the same team that would perform the enquiry or audit. Each local area office structure now includes a dedicated risk intelligence and analysis team (RIAT) whose main role is to carry out risk assessment on all tax returns in that geographical area, and identify the individual cases which are to be subject to enquiry. Enquiries are carried out by other teams in the Area office.

121 The network of local Area offices is managed through seven geographical regional offices. The Service Delivery Support (Compliance) team within Inland Revenue Head Office set the aims, policies, processes and priorities for risk identification in Areas.

## Types of enquiry tailored to risk

122 The causes of incorrect reporting can be varied, ranging from error, misunderstanding or ambiguity over interpretation of a particular piece of tax legislation, to dishonesty. The Inland Revenue's enquiry programme splits enquiries into two types:

- full enquiry - all risks present in the return to be addressed, including the risk that the return is fundamentally incorrect;
- aspect enquiry - an enquiry focusing on one or more specific issues or risks in the return.

### Risk identification process

123 The Inland Revenue's risk identification process can be described as a hybrid of centralised/de-centralised processes for two reasons:

- a proportion of full enquiries are selected locally under central direction, with the remainder selected locally;
- all local case selections are supported by a central automated risk assessment system, allowing local offices to profile taxpayers using a nationally consistent system of risk rules and parameters.

124 In addition, a proportion of full enquiries is selected at random. Detailed information on the Inland Revenue's random enquiry programme is contained in the companion publication to this paper, *'A Survey of Random Audit Programmes in OECD Countries'*.

125 The table below demonstrates the estimated make-up of the Inland Revenue Full Enquiry Programme for 2003/4.

**Table 3: Inland Revenue Full Enquiry Programme 2003/04**

| Method of Selection | Central/Local Selection | % of Enquiry Programme |
|---|---|---|
| Random Enquiries | Cases selected centrally | 10% |
| Central Direction | Specific high risk trade sectors or issues identified centrally - individual cases selected locally | 35% |
| Local Selection | Enquiries selected locally | 55% |

### Segmentation of business taxpayer population

126 Within each area office the business taxpayer population is segmented according to level of risk. The self-employed small and medium enterprise segment is split between small, medium and large businesses on the basis of business turnover. Companies/corporations are segmented using a slightly more sophisticated system, which recognises business turnover level, nature of group structure, trade type, presence of International tax issues and any history of tax avoidance. Non-business taxpayers with particularly complex affairs are risk assessed in specialist offices.

### Process of risk assessment in local Area offices

127 Individual case selection in local Area offices is carried out on a project basis, organised by the RIAT manager. Each project's aims are set out before any actual risk identification work is commenced, and will include a definition of the type of risk, trade sector or taxpayer being addressed.

128 Often, at an early stage in the process, a profile of target taxpayer/risk features is constructed which will form the basis for a query of the SA Data Mart. The resulting report listing of returns that meet the criteria set is termed a 'profile'. Further detail on the types of data that can be included in a query, including the risk score allocated to a return, is given later in this section.

129 An important feature of the SA Data Mart is the calculation of a risk score for each return. An extensive set of rules and parameters is used to score complexity, inconsistency, and business ratios present in each return.

130 It is important to note that for individual case selection the risk score generated by the automated system is used only as a guide to potential high risk cases. It is only one piece of information considered prior to making the final selection of cases for enquiry.

131 Other important factors taken into account in identifying cases for enquiry include local sources of intelligence, historical results of enquiry indicating particular high risk trade sectors or issues, and personal knowledge and experience of RIAT staff.

### Random enquiry programme

132 More recently, the results from the programme of random enquiries have been used to inform risk based case selections. Data mining and cluster analysis exercises have been carried out on the results of random enquiry programme cases to identify groups of features indicative of high-risk tax returns. Those results have been used to inform the central selection of a proportion of enquiry cases, and have been made available to local RIATs to aid local case selection.

### Organisational change

133 The UK has experienced a degree of organisational resistance to the introduction of the current method of risk assessment, based on an initial lack of confidence on the part of Enquiry Officers used to selecting their own cases or enquiry/audit. This issue is common to all administrations that have introduced centralised risk assessment processes to replace auditors 'intuition'. It is being addressed by prioritising the improvement of partnership and exchange of expertise between risk assessment and enquiry teams.

### SA Data Mart and Risk Scoring System

134 The SA Data Mart is a Decision Support System, developed to provide an indicator of risk and complexity for SA returns and assist in identifying potential enquiry cases. It provides:

- risk scores for returns and third party information held within a Data Warehouse;
- a profiling tool to aid selection of potential enquiry cases;
- standard forms to help staff plan profiles. It is important to plan these carefully before any work is carried out in the SA Data Mart.

135 Users access the SA Data Mart through their desktop IT system. Managers are responsible for ensuring that Enquiry Officers know how the SA Data Mart can aid them with their enquiry work.

136 The SA Data Mart currently holds SA data and TPI data in separate areas. For SA it holds a copy of selected taxpayer data, including:

- tax return and supplementary pages data;
- liability period data;
- risk scores and detailed risk assessment.

137 TPI mostly relates to savings accounts or other financial vehicles obtained from financial institutions' annual returns. For TPI it holds a copy of selected;

- aggregated TPI data and signals;
- risk scores and detailed risk assessment.

138 The information in the SA Data Mart comes from details captured from SA returns, designatory data transferred from the SA taxpayer records during the course of day to day work, for example, compliance signals, TCNs and addresses, and also aggregated TPI data and signals.

139 Return information held on the SA system is passed to the SA Data Mart on a weekly basis. The system determines risk scores for taxpayers using rules which are applied to data captured from the SA return, some supplementary pages, certain designatory details and compliance signals held on the SA taxpayer records. The rules and parameters used have been built up using a number of years of research, building on the experience of compliance officers and methods previously used to select cases manually.

140 The rules allocate risk scores to particular features present in the return. In general they are designed to identify complexity, inconsistency and business ratios falling outside expected ranges, or indicating significant change. Separate sets of rules exist for other, non-business, income and gains.

141 Complexity increases the chance of non-compliance through error, misunderstanding, ambiguity, and opportunity. A tax return with multiple sources of income or gains of varying nature will attract a higher risk score than one featuring a single, low value source.

142 Inconsistency is identified through anomalies in the information held, e.g. a prior year loss shown at a different figure to that in last year's return; a balance sheet which does not balance; interest on savings income not corresponding to information received from a third party such as a bank.

143 Business ratios focus on a range of indicators that can be compared against norms for the trade sector, unusual changes, or tested for internal consistency. Examples include gross profit rates, stock/purchases, business income/labour costs, etc. Almost 170 separate business rules are included in the knowledge base.

144 Once risk scoring has taken place all information is passed to the SA Data Mart to enable profiling on the data and the rules to be carried out. Users can;

- specify what reports to profile;
- select the data on which to profile;
- prepare profiles for compliance review;

- save the information to private files;
- print the lists of cases selected, if required;
- manipulate reports in Excel format;
- send cases from the SA profiles to Work Lists;
- request an SA Individual Risk Score report and send cases from it to the Work List.

145 Profiles are mostly requested for processing overnight, in view of the quantity of data involved. To use the information within the SA Data Mart in an effective way users must know the nature of the information, and how it is processed.

146 Types of SA report available are generally named according to the appropriate pages in the tax return. Full details of each report, and the complete list of facts users can select when compiling reports, are made available;

- SA Cross Schedule – summarises risks from all parts of the tax return;
- SA Designatory information;
- SA Employment;
- SA Individual Risk Score;
- SA Individual Tax Form;
- SA Land and Property;
- SA Partner;
- SA Partnership;
- SA Risk;
- Self Employment;
- SA Small Schedules.

147 Risk SA, Risk TPI and Risk Total are scores generated by the automated risk assessment process and are available in most of these reports. They relate to the total risk across all schedules not just to the total risk within the particular schedule pertinent to the report requested:

- risk SA - the total of any SA rules fired;
- risk TPI - the total of any TPI rules fired;
- risk Total - the sum of the two totals above.

148 Users can enter further facts to refine their selection, for example, Risk Total greater than 25. Users can restrict the number of cases by using the risk score. Note that scoring for each rule differs considerably so the score used must be compatible with all the rules used.

149 The SA Risk report enables users to profile on risk rules that have triggered, including the score associated with those rules. A multiple rule report will show each individual

rule with a list of taxpayers where the rule has fired. By exporting the report to Excel, users can sort the list in a different suitable order.

150 The system can also be used to generate a calculation of the taxpayer's means, that is a calculation of the net income and gains of the taxpayer taking into account all known income and expenditure details. Reports can specify whether to include or exclude information from third party information sources, and to produce figures for total income only.

151 Each taxpayer's self-assessment is associated with a specific tax year and users can request profiles which cover more than one year by entering the appropriate years as selection criteria in any of the available reports.

152 Each Self-Employment page submitted by a taxpayer is associated with a trade classification number (TCN). The TCN for each trade is held in the SA Data Mart, and can be used in the SA Partnership, SA Self Employment and SA Risk reports.

153 Area Compliance Plans are used to plan the compliance work of each office. Offices need to know what range of cases they have. A range of research profiles can be produced to give a reasonably good picture of the SA population for an office (remembering that the profiles are of cases where the return has been captured).

154 The best, and certainly most comprehensive, profiles can only be made after the bulk of the returns for the year have been captured, and so planning needs to address the question of when the various profiles should be produced.

## Case Study 5: Income Tax and VAT Risk Analysis (Austrian Federal Ministry of Finance)

155 Taxation of all Austrian Income-taxable profits/revenues and VAT-taxable turnovers (for Income Tax and VAT separately, but under a unified tax ID; both are federal level only taxes; considering advance payments) usually takes place within a few months following the end of the calendar (=tax) year, shortly after filing of tax returns by the taxpayer. For some taxpayers the tax year can differ from the calendar year, and there may also be a lengthening of the period for filing tax returns.

156 As for VAT purposes, businesses must also file "preliminary VAT returns" on a monthly or quarterly basis (depending on the amount of their turnover); until recently this actual filing could be replaced by a proper VAT payment on time for all standard VAT cases.

157 A formal assessment notice (through IT) is sent to the taxpayer on base of the filed (paper) returns (the numbers in it have to be self-assessed by the taxpayer and they are input in the tax office) - some with, but most without any specific checks before (apart from regular "simple" checks like e.g. completeness checks; formal correctness/"context logic" of numbers; etc.)

158 In the "old" system selection for specific checks (e.g. tax audits in the field) was not based on risk analysis, but on annually pre-defined capacity considerations for random selection, and other particular selection criteria (e.g. for businesses not having been tax audited for a long time); all returns being "simply checked" by IT (see above) after input.

159 For Income tax and VAT there are two separate (and currently independent) Risk Analysis Systems (RAS), the one for VAT has been in operation for some years. The one for Income Tax will be implemented and will start operation for the tax year 2003 in early 2004.

## (Corporate) Income Tax RAS

160 A regular business taxpayer also has to file a balance sheet and a profit and loss statement with the actual tax return. It is sufficient to send a (now standardised with the tax return) summary statement of receipts and expenditures to the tax office for those taxpayers whose profit/turnover is below the "bookkeeping threshold" (in some smallest cases even a flat rate lump sum taxation applies).

161 The taxpayer has to self-assess his annual income and split it into seven different categories of income (e.g. income from agriculture and forestry, from professional services, from commercial business, etc.). In case there are several "sources of income" within one category, the category must sum up the sources of income within it. And he has to specify any other tax allowances/credits/special rates/"extra-ordinary burdens" and "special expenditures" (as defined by tax law)/etc. he wants to claim in calculating his tax amount. The tax office also receives some data in electronic version from withholding at source taxation (e.g. from employers, from banks,).

162 This is where the changes by introducing the new RAS will begin. From the tax year 2003 on it is envisaged that a (business) taxpayer basically will send his tax return through the internet, giving the relevant information (as specified above) in electronic version. And he will have to file additional operating figures from specific positions in the balance sheet and the profit and loss statement (or from the summary of receipts and expenditures; a final decision on dropping paper versions completely is still pending). He will also have to disclose and file some more general information, e.g. detailed information on the different (sub)types of business he is actually working in; or a change of the (sub)type of business he is (was) working in during the year; etc.

163 The new RAS will cross-check and interlink all this information (including case history) and evaluate/compare it according to defined rules and other risk evaluation criteria, assigning "risk levels" (currently on base of yes/no-criteria) to each tax return. The result will be a list of taxpayers by risk levels (especially earmarking those with a "high" risk):

- if the risk is higher than a defined threshold, the tax return (taxpayer) will be audited by a tax inspector in the field (or thoroughly scrutinising the tax return in the tax office), BEFORE the assessment notice will be sent to the taxpayer (as planned: about 5% of returns);
- if the risk is below the threshold, the assessment notice will be sent automatically (through IT) to the taxpayer on the spot. An additional check of his tax return (taxpayer) will/can be done LATER within 1/5/10 years (as planned: about 20% of returns) - or not at all (depending on risk ranking and experts' judgement); the legal number of years (1/5/10) depends on the kind of "check" and its findings, as well as procedural details;
- furthermore tax returns (taxpayer) will be chosen for standard tax audit within regularly 5 (or 10) years by applying other selection criteria than in the RAS (e.g. free audit capacities; random selection; for a long time not audited cases; etc.) This should also serve as a "control group" for the RAS.

164 The findings and results of any kind of (further refined) checks/tax audits should improve the risk identification/evaluation/(and later also: assessment) capabilities of the RAS software (feedback/"learning system").

165 The system will be developed/implemented in stages, and has already started with e-filing through Internet ("Finanz-*Online*") for simple non-business cases in February 2003 and will begin for all (Corporate) Income Taxpayers and a first "rough" risk based selection capability in early 2004 ("*e-Finanz*"). Non e-filed returns will have to be input into the IT-system through the tax office (for the time being).

### VAT RAS (as currently operating)

166 Some years ago a manual, single criterion-based selection of peculiar VAT cases at some few points in time for specific checks (e.g. tax audits) had no longer produced good hit-rates. Also considering the shrinking manpower capacities and the high tax amounts at risk, an improved "multi-dimensional" selection system for better targeting showy (and possibly fishy) VAT cases, had to be found. The system is based on the following parameters:

- objective risk factors (hard and soft);
- frequent update of base data (daily / weekly / monthly, according to availability);
- a “permanent" risk evaluation process;
- only for small and medium to large businesses (currently roughly 1 million cases); not appropriate for the (few) biggest cases.

167 Currently there are about 35 objective risk factors in use (e.g. filing and paying behaviour/irregularities; numbers in the returns; comparisons between numbers and periods showing irregularities; risk produced by system changes; case history/current situation; liquidity issues; VAT reclaiming/refunds information; etc.). Risk factors can be changed easily. Due to practical and political reasons there are no "subjective" risk factors in use (e.g. assumed intention to fraud).

168 For now the VAT RAS only assists in selecting the "right" (=risky) cases, as they are defined by the risk factors. The system cannot evaluate legal problems, nor can it substitute (human) expertise in applying knowledge and audit technique, which are the qualities that actually generate extra revenues. This is because the system was not designed to do so. Neither does this system - intentionally - indicate audit areas. As many factors are only "soft" ones (especially as "interdependencies" with other factors), they do not necessarily indicate "the" wrong number (e.g. heavily changing input VAT between different tax periods), but they indicate a higher risk as compared to other cases in one specific topic.

169 Risk factors can be subdivided into defined quality levels (they regularly are). For each of those levels of a specific risk factor distinct risk points are set. This risk point definition work is done by a group of (human) experts, and it is subject to comprehensive ongoing tests (especially their "balancing" in terms of importance of single factors for the impact on the overall result), and it is permanently reviewed and adjusted if necessary. A control group of about 2000 cases yearly (by random sample) is part of the ongoing validity testing of the system.

170 These risk points are assigned (per risk factor/quality level) for each actual case and are permanently accumulated for this specific taxpayer by updating the risk points following certain "events" (e.g. on non/filing a return; on non/performing a tax payment; no/findings of a tax audit; no/results of an annual assessment; etc). So, some of them even become obsolete after a certain time/event and are replaced by "newer" ones. The sum of risk points at a certain point in time shows the actual risk of the case.

171 As this system of "accumulation of risk points" regularly cannot show any high risk for "new" companies (i.e. existing less than 2 years; that constitutes about 15% of cases), they require a "special risk" category insofar. Furthermore a manual selection of a case is still possible.

172 The use of the system is obligatory for the tax offices. All data of the taxpayers that have been identified by the system as "risky" are available on local PC; so is the list with taxpayers' RAS ranking (daily update). Before actually selecting a case there is a process of sifting through, carried out by local (human) experts in the responsible control units in order to target the "best" cases and to use up about 20% of overall tax auditing capacity (about 2/3 from ordinary cases and about 1/3 from new businesses - see above). The purpose of this sifting process specifically is to bring in local knowledge into the "central" system and to identify possible data trash, "mistakenly" indicating risk (for its immediate correction).

173 The VAT RAS gives a complete "risk-picture" of Austria's VAT taxpayers and it proved to be an excellent tool to allocate scarce resources (staff, budget) in a most effective way, as far as hit-rate and extra revenues and preventive effects are concerned.

174 The hit-rate changed from overall 20 - 30% for the "old" manual selection to 60 - 80% for the risk based one (the control group by random sample still shows 15 - 20%); the largest cases covered by the VAT RAS showed about 40%. A "hit" is defined by a minimum additional VAT revenue (regularly about 400 Euros; but also follow-up effects of findings are important). A different calculation of the VAT RAS hit-rate showed overall 20%, provided a hit is defined by an additional VAT revenue of minimum 18000 Euros. The extra revenues overall are considerable. The VAT RAS also seems to be highly preventive! Openly confessing fraud or misconduct before a specific control starts (thus reducing penalties) is 20 - 30% for VAT RAS selected cases, as compared to other control measures at about 7%.

175 Monthly / quarterly "preliminary VAT returns" basically must be filed through internet since April 2003. And e-filing of the annual VAT tax return through Internet ("Finanz-*Online*") for all VAT taxpayers will start in early 2004.

176 A considerable problem of the present VAT RAS is its dependency on accurate base data and their regular update, as well as a quick input of "events" (see above), and complete and topical availability of RAS-relevant but actually non-tax data (e.g. information on closing down of operations, causing "missing" VAT-payments). Another important factor is that those experts who "select" the case from the list and the tax auditor fully understand the scope of the VAT RAS (as showing "risk" as defined by the risk factors and not necessarily showing audit areas or "wrong" numbers).

177 As a future development, the VAT RAS will be integrated with the Income Tax RAS to gain from synergy effects, a broadened data base and an integrated handling. The present system leaves lots of room for improvements and extensions in functionality. Furthermore the current reforms / reorganisation efforts in the Austrian tax administration and also legal changes will impose a modified administrative framework for the existing VAT RAS.

# Case Study 6: VAT Risk (UK Customs & Excise)

## History of the approach to VAT Risk

178 The remit of HM Customs has for many years been to apply the resources allocated to it to the greatest risk. Although VAT was introduced only in 1973, HM Customs & Excise has several hundred years' experience of tax administration. This experience, which was heavily reliant on physical controls of dutiable goods and frontiers was not however directly transferable to administration of a widely-based tax like VAT. Here it was not realistic to expect administration resource to be provided to perform close physical controls. Instead C&E had to find ways of profiling its VAT paying population according to perceptions of risk. In the years following the introduction of VAT the assurance of other taxes administered by Customs also moved more towards risk-based controls away from physical checks.

179 In the early days of VAT there was some crude profiling based on the size of businesses, but effort was concentrated most on achieving coverage of the register. This was right for the time, with over 1.5m businesses on the register about whom there was nothing known, and the aim was to perform audit visits to all registered businesses over a three year period.

180 As time progressed and experience was gained the visit cycle was first modified to provide for less frequent audit of the less risky businesses, then dropped altogether. Risk indicators such as trade/business type and turnover were used to determine audit frequency, each VAT registered business being allocated an Assignment Value which was a crude indicator of the length of time the audit should take, the skills and experience required of the auditor, and the gap between audits. The very largest businesses were generally assigned to individual teams and were subject to almost continuous control.

## Pre-Repayment Credibility System; VAT Repayments

181 A fundamental aspect of the UK VAT system is that where an individual tax return shows that tax on purchases exceeds that on sales the balance is repaid to the taxpayer. It was recognised from the start of the tax that this facility was at risk of incorrect payments, either through error or by deliberate fraud or attacks on the system, and an additional risk management system was developed to protect VAT repayments. Because of the numbers involved it is impossible for each to be verified before repayment is made, so from the first days of the tax repayments were subject to risk analysis to select the highest risk claims for pre-payment verification. This system which is still in use uses a rules-based method of parameters which are applied to all repayments returns as they are processed.

182 UK VAT registered businesses make periodic returns of tax due. Where a return shows that the VAT incurred by a business on its purchases exceeds the VAT it has charged on its sales (a "repayment return") the balance is usually repaid to the business within one month.

183 Some businesses receive regular repayments, usually because their sales are wholly or mainly of goods or services liable to tax at a reduced or zero rate. These businesses, called "repayment traders", usually submit returns at monthly intervals. Most businesses' returns show tax due and submit their returns every 3 months. However occasionally these businesses ("payment traders") may submit returns showing tax repayable, for example because of a large capital purchase.

184 Each year UK Customs receive about 2.5 million repayment VAT returns, with a total amount of tax repayable of some £40bn.

185 Whilst the prompt repayment of tax due to businesses can be seen as an essential business facilitation measure in support of the UK economy, the system is vulnerable to incorrect repayment, either through erroneous claims made by legitimate businesses or fraudulent claims.

186 For this reason the Pre-Repayment Credibility System is in place to examine all repayment claims prior to repayment and to detect those claims which appear not to be credible given the nature and history of the claimant; show indications of a fraudulent attack on the system; or otherwise indicate that the claim may not be correct.

## The Process

187 The Credibility programme is part of the VAT Mainframe computer which processes all VAT returns. The programme runs each working day compares each repayment return to 18 different credibility codes and 84 individual parameters which are hard-coded into the computer. Each year about 144,000 (6%) of repayment returns fail these credibility checks.

188 Once the return has failed credibility it enters a process of scrutiny which may, if the query cannot be resolved otherwise, result in a visit to the business premises to verify the claim.

## Further Safeguards

189 The repayment system is vulnerable to internal fraud as well as external fraudulent and incorrect claims. There are a number of safeguards within the system to help combat internal and external risks, including:

- confidentiality of credibility parameters and regular changes to them;
- random selection of a proportion of apparently credible claims for verification;
- manual and computer-based checks by Intelligence staff using departmental and external data sources.

## Central Risk Analysis

190 Central Risk Analysis is a multi-variable risk modelling tool which uses a statistical technique called Regression Analysis. It applies the results from all VAT audits except those to the very largest businesses to the tax return and standing data for all VAT-registered businesses (VAT mainframe data). The analysis is carried out on a stand-alone processor using downloaded data and takes place annually, although after 6 months the analysis results are applied to refreshed data.

191 The following is a brief outline of the process.

**Stage 1 - Identifying Risk Factors:**

- between 12 and 18 months of audits are examined;
- each year current and potential 'risk-related' variables are tested;
- ideas for new variables come from Operational Policy teams, research, and experience from the field;
- impacts of all variables change over time so variables need checking each year;
- separate variables for 'previously audited' and 'unaudited' traders are tested (fewer data items available for unaudited businesses).

192 What are the 'risk factors'?

- generally VAT mainframe data fields;
- information available for all businesses;
- examples of risk factors (or variables) are:
  - trade classification (22 groups);
  - size - taxable turnover, net tax payable, etc.;
  - 'average delay' (in sending in VAT returns);
  - 'return-type' (missing returns or recent central assessments); and
  - debt history (recent debtor to the Department), etc.

193 Variables are not weighted. They are either 'in' or 'out' so any variables included have similar weights. Variables do emerge as being more important in relation to risk, e.g. missing returns, or previous under declaration are usually most important

**Stage 2 - Evaluating risk profiles**

- use statistical techniques to find the relative 'strengths' of the risk variables;
- select the strongest 'hit' and 'money' variables;
- apply the risk profiles to every trader that the variables apply to (audited or unaudited).

194 From the risk analysis is produced:

- a set of hit rates for each business;
- average hit rate for each business;
- predicted amount of money per business.

195 From these an overall 'risk score' is calculated. Risk score is calculated as:

*Maximum hit rate x Average money amount*

196 This method of calculating the risk score gave the greatest discrimination in values between businesses, it also allows 1,000,000 audited and 700,000 unaudited businesses to be ranked.

197 Application of scores. The calculated 'risk scores' are ranked, then grouped into 'risk groups':

- group 1: Unaudited
- group 2: Low Risk
- group 3: Medium Risk
- group 4: High Risk
- group 5: Exceptional Risk

198 The number of traders in each group is a policy decision. The results of risk ranking (numbers of traders in each 'risk group') are used to inform audit staff numbers and allocation to regional offices.

## Case Study 7: Decentralised Risk Identification Process (French General Tax Directorate)

199 In France, the risk identification process is not managed centrally, but at the level of a local or specialised directorate in charge of audit activities. Selection of cases to be audited is made through different channels, all using a specific form (3909) which details the reasons why the taxpayer file is proposed for a possible audit. There are two different approaches used, one based on information collected at the local level, the other based on risk assessment.

### Intelligence gathering & reporting

200 At local level, tax district staffs have the knowledge of compliance records of each taxpayer, and are aware of any particular event with potential tax issues. In such a case, they fill in a form 3909. In each directorate, dedicated teams are in charge of gathering intelligence concerning taxpayers' compliance. When they collect intelligence leading to presumed tax risks, they also fill in a form 3909. Also, any tax official in a specialised structure (collection or solicitors office, land registry, etc.) can fill in such a form when informed of tax risks.

201 At the national level, the DNEF (directorate specialised in serious frauds schemes) is allowed to search premises of deemed fraudsters. In cases of positive action, a form 3909 is sent to the directorate in charge of auditing the fraudster's file.

### Centralisation and Risk Analysis

202 All forms 3909 are centralised at the directorate level and scrutinised by a specialised team, which is also in charge of risk assessment. A computerised risk analysis is carried out through two main software tools, OASIS and SYNFONIE.

203 OASIS is a software programme which allows studies and comparisons of business tax returns for VAT, corporation tax or self employed activities. It allows calculation of a set

of ratios between different lines of balance sheets, financial statements, etc. It is also possible to make comparisons and ratios between the previous tax returns of the same taxpayer (for a three or four year period), and between taxpayers with the same activity and the same level of turnover, locally, regionally or on a national basis. It also allows cross checks between elements on different returns, such as VAT and profit returns.

204 When applied to a specific taxpayer, OASIS issues a report showing the economical environment of taxpayer, the ratios regarding its business activities and the possible discrepancies or errors.

205 SYNFONIE is a new software issued in 2001, principally dedicated to risk assessment. It uses the resources of the main data bases of the French DGI (for VAT, Income Tax, corporation taxes, VAT credit refunds), from European bases (intra-community transactions), information from audit activities of the taxpayer over the last ten years (amount and nature of assessment, compliance infringements). It is also linked to the OASIS analysis.

206 The main purpose of SYNFONIE is risk assessment, through giving a risk rating for each file. In an interregional directorate, the SYNFONIE data basis can include seven to eight hundred thousand enterprises, mainly small and medium sized. There are eight categories of risk (personal background, carrying out risky operations, change of compliance behaviour, discrepancies, type of risky concern, intelligence, local policy). In each category, there are around ten different situations, which are mathematically designed. It is possible to locally modify the list of risks by adding new ones if necessary.

207 Each risk is rated with a number of points (from 1 to 5). The more points a file is granted, the more risky it seems from a fiscal point of view. Usually, a file scoring more than 20 points is considered suspicious.

208 All risks included in the software, and especially new risks created, are validated by a correlated calculation made on all the enterprises in the database. A calculation is made on the sample of concerns detected with the new risk. If this sample matches the outcome of tax audits made in the three previous years on enterprises with the same activity, the new risk is validated and included in the software.

209 In each directorate, specialised teams work with OASIS and SYNFONIE software, in order to make the selection of cases to be audited. Forms 3909 sent by local services or others are also examined through the OASIS and SYNFONIE process. Afterwards, proposals of cases to be audited are sent to audit team managers, in order to screen and analyse the taxpayer file, with a view to possible audit. The outcomes of this screening process are sent back to the directorate, where the final decision to audit is taken.