A Citizen’s Perspective on Public Sector Performance and Service Delivery

Progress in Measurement and Modelling of Data from a Swedish Taxpayer Survey

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Taking Evaluation to the People - between Civil Society, Public Management and the Polity

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Summary

The Swedish National Tax Board conducts annual taxpayer surveys to gauge public opinion about the Tax Administration’s general performance and service delivery. These comprehensive surveys offer great opportunities for further statistical analysis of taxpayer attitudes to a number of tax issues.

In cooperation with Ingrid Munck of the Swedish Agency for Administrative Development (Statskontoret) and Professor Jan-Eric Gustafsson of the University of Gothenburg the National Tax Board applied the methodology of Structural Equations Modelling (SEM) to data collected through two large taxpayer surveys in the autumn of 1998.

One purpose of this project was to provide new information and knowledge to guide the development of the Tax Administration’s strategy and its business processes. Another purpose was to enhance its analytical skills and improve the taxpayer surveys as a means of data collection. A third purpose was to test the usefulness of SEM in this context. Specifically we addressed the following questions:

1. (a) What latent factors can best explain public perceptions of the general performance tax authorities? (b) Are there any background factors that significantly help to explain why public perceptions vary between different regions or are these variations primarily due to the relative performance of the tax authorities in respective regions?

2. What latent factors can best explain satisfaction or dissatisfaction with the tax system and how important are simplified tax procedures in this context?

3. What latent factors can best explain attitudes to tax evasion and tax control and how are they interconnected?

4. How does the inclusion into the survey of sensitive questions regarding respondents own tax behaviour affect response rates and response patterns?

With regard to the first question we found that the general public’s assessment of overall performance of the tax authority depended more on its ability to produce correct decisions and effective tax control than on the service it provided to taxpayers. We also found that regional differences with respect to background variables (such as gender, employment, income etc.) did not greatly influence the ranking of the county tax authorities in terms of performance.

The attitudes to the tax system were more influenced by views on tax policy and its functionality than on whether the system was complex or simple. Confidence in the effectiveness of tax control was found to influence both the perceived risk associated with tax evasion and taxpayer morale.

In one of the two surveys respondents were divided into two groups, one that received questionnaires that contained sensitive questions about their own tax morale and another group that received questionnaires without such sensitive questions. It was found that the inclusion of sensitive questions did not affect response rates, but they did, to some extent, influence the way respondents replied to related questions contained in both questionnaires.

In sum, the study confirmed that the methodology used could be a useful tool to extract more valuable information from surveys and to improve surveys as instruments for data collection.
1 Introduction

A strategic concern of the Swedish Tax Administration is to find out which combination of tax control and service to taxpayers will provide the best results in terms of general compliance with tax law. Citizens (most of whom are also taxpayers) expect the tax authorities both to facilitate compliance by providing information and service and to ensure that everyone pays the right amount of tax by making correct decisions and maintaining an efficient system of tax control.

If evaluators want to reach out to citizens, questionnaires to a representative survey sample are often used as the mode of communication and data collection. The Swedish National Tax Board conducts annual taxpayer surveys to gauge public perceptions of the Tax Administration’s general performance and service delivery. Every second year these surveys target the general public, every second year the business community.

These taxpayer surveys are very comprehensive and offer great opportunities for further statistical analysis of taxpayer attitudes to a number of tax issues. The toolbox of modern statistics provides new ways of extracting knowledge from available survey data. For the National Tax Board it is therefore important to cooperate with other state agencies and universities that can provide expertise in advance analytical methods.

This paper describes the approach, methodology and findings of a project that the National Tax Board has carried out in cooperation with Ingrid Munck of the Swedish Agency for Administrative Development (Statskontoret) and Professor Jan-Eric Gustafsson of the University of Gothenburg. The project applied the methodology of Structural Equations Modelling (SEM) to data collected through two large taxpayer surveys in the autumn of 1998. Both surveys targeted the general public and background information was available about sex, age, occupation, residence etc.

The main purposes of the project was to
• provide new knowledge on taxpayer perceptions and attitudes
• provide information to guide development of strategy and business processes on the national as well as regional level
• enhance the analytical and statistical skills of the National Tax Board
• provide a basis for further improvement of the Board’s taxpayer surveys

The methodological issues addressed in this project may also be of interest to evaluators in other parts of the public sector by illustrating
• the potential of statistical modelling to transpose information into knowledge about citizens’ attitudes and values regarding the systems and the service offered by public authorities
• ways to evaluate established instruments for the measurement of citizen’s attitudes to the service provided by public authorities.
• ways to develop strategies for improvement in measurement of client satisfaction with service delivery of public authorities.

When discussing citizens’ attitudes to service provided by public authorities in general it is important to distinguish between the direct beneficiaries of a particular programme and the population at large, which has to foot the bill as taxpayers. In a somewhat different way, this distinction also applies to the Tax Administration, although it is not a service provider in any normal sense. On the one hand there is a general demand for efficiency in the enforcement of tax law and on the other there are the demands of individual taxpayers for service in order to reduce their compliance costs, which vary a great deal between different
groups of taxpayers. The first demand reflects the interests of the entire taxpayer collective, which is roughly equal to all citizens, while the demand for service reflects the different needs among different sections of the taxpaying public. Both surveys contain questions concerning background factors, which allow for distinguishing between different groups with respect to gender, place of residence, form of employment, age and income. This study, however, deals with the dominant attitudes among the entire population, which explains its title: “A Citizens perspective …”. It is important to keep this in mind when interpreting the results.

2 Methodology

It is difficult to capture public perceptions of a particular aspect of the performance of a public authority by a single survey question. Therefore each relevant aspect is generally covered by a set of questions.

The way people respond to questionnaires is influenced by a number of background factors but closer analysis will detect typical response patterns. A person who responds in a particular way to question A is likely to respond in a certain way to question B. This mirrors underlying values and attitudes. In other words, the response pattern depends on an underlying latent factor or variable.

We derive latent factors from observed or manifest variables (in this case answers to questions in questionnaires) using a factor model. The relations are described in graphical form as a path diagram, where boxes represent manifest variables and ellipses represent latent factors. Single-headed arrows or paths are used to define causal relationships in the model and double-headed arrows indicate co-variances or correlations without a causal interpretation. Each observed variable in a factor model is also associated with a residual error term, which is also depicted by an ellipse.

Based on the survey data and practical experience, models can be constructed that reflect assumed relationships between underlying values and attitudes (latent factors) and the opinions that are actually expressed in the surveys (manifest variables). One such model used in this study can be depicted as in the path diagram below.
In other words, the analytic strategy of this study has been firstly to develop constructs or factors measuring different aspects of tax control and the service delivery. These constructs, so called latent variables or factors, are measured through a set of indicators assumed to measure the same underlying construct. The quality of the measurement was tested statistically by checking if the assumed dimensions also showed up in the data. It was found that citizens differentiated between Satisfaction with service and Satisfaction with correctness and control. Secondly these composite measures of Satisfaction were related to the answers about the general performance of the tax authorities. Regional differences were studied in a multi-group analysis, where means of constructs were ranked and also tested for significance. To be able to compute such means and statistically test mean differences for latent factors is a unique feature of the SEM-methodology that is not available in established statistical packages as SPSS. In addition more elaborated ranking lists were also calculated through SEM-modelling taking the differences in background variables into account. The technique is based on regression models with the new element working simultaneously with both latent and manifest variables.

The methodology offers a scientific tool to take measurement errors into account, to test models for goodness of fit, to give confidence intervals for explanatory variable’s importance, to test group differences, to get feedback about possible improvements of proposed models etc. With a proper design, representative samples without too much non-response, the SEM-modelling creates visible relationships of true importance for linking citizens attitudes and behaviour with societal efforts to match their needs of service and at the same time live up to other functions. This will be demonstrated in this report by a number of models and it should be kept in mind when interpreting and generalising the results that the pictures we get is balancing the whole Swedish population. In short, the statistical survey approach guarantees that every citizen has a fair chance to influence the modelling results, which is our way of taking evaluation to the people.
3 Data

In our study, structural equation modelling was applied to data from two parallel taxpayer surveys carried out in the autumn of 1998, which we will refer to as the regional survey and the national survey respectively.

- **The regional survey** focused on the service delivery of the ten regional tax authorities and public perception of the general performance of each of these authorities. The survey population was all inhabitants aged 18-74 and the sample size was 10,000 (1,000 for each tax region).¹

- **The national survey** focused on public attitudes to tax compliance and tax fraud as well as public perceptions of the effectiveness of tax control. In this survey the sample size was 3,000 and covered the entire country.

Both were postal surveys and the response rate in the regional survey was 62% and in the national survey it was 61%. Telephone interviews were then conducted which raised (the weighted) response rate to 69% and 68% respectively.

Most survey questions were posed as statements and respondents were asked to indicate to what extent they agreed with the statement on a scale 1-5, where 5 signifies full agreement and 1 complete disagreement.

Both surveys were carried out by TEMO AB (a private sector public opinion institute). The identity of respondents was protected by the institute and the results were delivered to the National Tax Board in the form of statistical tables as well as unidentified data sets used in in-house analysis. Results were analysed by the Board’s research unit and published in three reports (available only in Swedish)

- Allmänhetens synpunkter på skattesystemet, skattefusket och myndigheternas kontroll, RSV Rapport 1999:1
- Allmänhetens synpunkter på skattemyndigheternas sätt att arbeta, RSV Rapport 1999:2
- Allmänhetens synpunkter på indrivningssystemet och kronofogdemyndigheternas sätt att arbeta, RSV Rapport 1999:8

In preparation for this study data was brought together in two SPSS-files, one for each survey, and each survey question was designated a unique variable number (V1, V2 etc).

4 Questions

The surveys covered a wide range of issues. In this study we restricted ourselves to the following questions:

1. a) What latent factors can best explain public perceptions of the general performance of the tax authorities? (b) Are there any background factors that significantly help to explain why public perceptions vary between different regions or are these variations primarily due to the relative performance of the tax authorities in respective regions?

¹ In the autumn of 1998, when the survey was carried out, there were actually still 21 county tax authorities, but on 1 January 1999 these were combined into 10 regional tax authorities. The regional survey anticipated the formation of the regional tax authorities by stratifying the sample to 1,000 in each region. Results were, however also available on county level, which is the basis for the comparisons in section 5.1.2 below.
2. What latent factors can best explain satisfaction or dissatisfaction with the tax system and how important are simplified tax procedures in this context?

3. What latent factors can best explain attitudes to tax evasion and tax control and how are they interconnected?

4. How does the inclusion into the survey of sensitive questions regarding respondents own tax behaviour affect response rates and response patterns?

5 Execution of the study and its findings
The basic data analysis for the study was conducted at a series of three full day workshops in the autumn of 1999, where professor Jan-Eric Gustafsson of Gothenburg University and Ingrid Munck of Statskontoret (The Swedish Agency for Public Management) provided technical expertise and staff members of the National Tax Board’s Research Unit contributed data and field experience. The first workshop was based on data from the regional survey and focused on the first question in our study. The other two seminars were based on data from the national study and focused on the remaining three questions.

5.1 Performance of tax authorities
The first question that we addressed in our study can be broken down to sub-questions, the first of which concerns what latent variables best explain public perceptions of tax authority performance in general. The other is about background factors that can explain regional variation.

5.1.1 What influences the perception of tax authority performance most?
The model designed to address the first of the two sub questions is the one used to illustrate path diagrams in figure 1 above. It is reiterated below in figure 2 with the inclusion of factor loadings.
Figure 2: A model with two latent factors to explain different aspects of the perception of the regional tax authorities.

Of special interest is how well the latent factors explain the overall assessment of the Tax Authorities’ performance, here captured in the statement “All in all, the Tax Authority does a good job”. The factor loading of the residual factor for this variable indicates that the two latent factors explain 78% of the variation in responses to this statement. That is also an indication that the survey questions manage to cover most aspects that are relevant to explain public perceptions of tax authorities’ overall performance.

Figure 3: Model for estimation of relative importance of latent factors “Satisfied with service” and “Satisfied with correctness and tax control” for the overall assessment of the tax authority's performance ($R^2 = 78\%$)

2 RMSEA = 0.019, p-value for RMSEA < 0.05 = 1.00
The factor loadings of the two latent factors also indicate that perceptions of service delivery (captured by the latent factor “satisfied with service”) are less important for the assessment of overall performance than the perception of correctness and effectiveness in tax control.

A possible interpretation is that to the general public it is more important that the tax authorities make correct decisions and ensures that everybody carries their proper share of the tax burden than that they are service minded. Having said this, it should be pointed out that to most Swedish taxpayers the filing tax returns is quite easy and for ordinary taxpayers there is little need to contact the tax authority. According to the survey, most taxpayers (54%) had neither telephoned nor visited the tax authority during the preceding 12 months nor had they any written communication with the authority except filing their tax return. Had our model restricted itself to business taxpayers, who are faced with very complex tax rules, the priorities might have looked different.

### 5.1.2 Regional variations

The regional survey was designed to allow comparisons of the relative performance of different tax authorities. In this part of the study we applied the same basic model to a new model incorporating each county tax authority. This model also showed good fit with data.
Figure 4: Model for calculating regional differences in means of the latent factors “satisfied with service” and satisfied with correctness and control.  

RMSEA = 0.049, p-value for RMSEA < 0.05 = 1.00
Using Stockholm County as reference we then compared the means of the latent factors for each county. Since differences to some extent can be assumed to be caused by demographical and other structural differences between the counties, data were adjusted to neutralize such differences. The results are shown in the diagram below.

![Diagram showing deviations of means for latent factors concerning public satisfaction with service and with correctness and control from the mean for Stockholm County before and after adjusting for structural background variables. Not all deviations are statistically significant.](image)

**Figure 5:** Deviation of means for latent factors concerning public satisfaction with service and with correctness and control from the mean for Stockholm County before and after adjusting for structural background variables. Not all deviations are statistically significant.

There are two observations worth further comment. The first is that authorities that score high with respect to service also tend do score high with respect to correctness and control. One explanation is of course that good overall management tend to improve all aspects of performance. Another is that most people lack intimate knowledge of how the organisation actually performs and if they do not have any personal experience from dealing with officials at the tax authority their assessment is likely to be based on anecdotal information.
in the media. If media reports favourably or unfavourably on one aspect of performance this is likely to influence the general public’s view on overall performance.

The other observation is that differences between the Stockholm Authority and the other authorities tend to become smaller when the data are adjusted for background variables (gender; age, employment, income), but it does not significantly alter the relative position of each authority. This also means that taxpayers in the Stockholm area are somewhat more demanding than in other parts of the country.

### 5.2 The tax system

Public perceptions and attitudes to the tax system is a complex matter and the study showed that the questions in this section of the questionnaire are not entirely satisfactory. The concluding statement – “all in all, it is a good tax system” – includes a broad range of issues (simplicity, fairness, efficiency) that are not adequately covered in the questionnaire. Given these constraints we managed however to construct a model with three latent factors with a good fit to data.

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4 The survey contained questions to establish whether the respondent had first hand experience from personal contacts with the tax authority or not. In the general survey report most of the analysis of perceptions of service delivery has been based on responses from respondents who have been in contact with the tax authority during the last 12 months. This particular study, however, is based on the replies from all respondents.

5 RMSEA = 0.056, p-value for RMSEA < 0.05 = 0.17
In this model the attitude to the tax system is explained in terms of underlying attitudes to tax policy as well as to the functionality and the simplicity (or complexity) of the tax system. Tax policy with respect to tax rates and the distribution of the tax burden is of course not a concern for the Tax Administration. The Tax Administration does, however, have a responsibility to promote compliance and to reduce compliance costs by finding ways to make tax rules more simple and effective.

Against this background it is of great interest to what extent such efforts will affect overall public perceptions of the tax system. The model was therefore modified into a regression model, which shows the factor loadings of each of the three latent factors (satisfaction with tax policy, functionality, and simplicity) on responses to the statement “all in all, it is a good tax system” (figure 7). The model explains 74% of the variance in the overall attitude to the tax system.

![Diagram](image)

Figure 7: A regression model to show how latent factors explain public perceptions of functionality, tax policy and simplicity affects overall attitudes to the tax system\(^6\) \((R^2 = 74\%\)\)

The results show that different attitudes along the simplicity-complexity dimension do little to explain overall attitudes to the tax system. One interpretation is that simplification of rules and procedures cannot compensate for dissatisfaction with tax policy and the way the tax authority manages to uphold tax law (functionality). Again it must be stressed that these

\(^6\text{RMSEA} = 0.057, \text{p-value for RMSEA < 0.05} = 0.13\)
results reflect attitudes among the population at large, and that there may well be subgroups of taxpayers whose priorities are at odds with those of the majority.

### 5.3 Tax control and taxpayer morale

The Swedish Tax Administration operates on the assumption that the majority of all taxpayers comply voluntarily with tax law out of respect for decisions made by democratic institutions. This voluntary compliance is however to a large extent subject to the condition that the tax authorities are able to deter those less inclined to comply from tax evasion and to deal effectively with manifest cases of non-compliance.

The main task for tax control is to reduce tax evasion to a minimum by creating a deterrent effect. We define the deterrent effect of tax control as its effect on the perceived risk of detection and punishment.

In our study we wanted to find out what the application of SEM could tell us about public perceptions of tax control and the effect of tax control on taxpayer morale. The survey contained a number of statements, which are relevant to this issue. We decided to proceed step by step from a simple to a more complex model.

The first step was to find a latent factor related to taxpayer morale based on survey data and we came up with the following model with one latent factor, which we named “low taxpayer morale”. Observe that in some cases there is a negative relationship between the latent factor (low taxpayer morale) and the manifest variables (e.g. “I’m prepared to pay my taxes as long as everybody or almost everybody pay their taxes”). In other cases there is a positive relationship (e.g. “given the chance I would withhold income from taxation”).

![Figure 8: Model with one latent factor named “Low taxpayer morale”](image)

7 RMSEA = 0.048, p-value for RMSEA < 0.05 = 0.53
In the model there is no manifest variable that has a particularly strong link to the latent factor. The nature of the relationships (positive or negative) is, however, what can be expected. It can also be noted that the latent factor loads almost equally on the respondent’s personal willingness to evade taxes given the opportunity (V 43) and the respondent’s acquaintance with people who evade taxes (V25).

The next step was to create a model concerning tax control and taxpayer perceptions of the risk for detection. We came up with the following model:

![Diagram of the model showing two latent factors concerning tax control and perceived risks associated with tax evasion.](image)

**Figure 9: Model showing two latent factors concerning tax control and perceived risks associated with tax evasion**

The model fits well with observed data. It is interesting to note, however, that the latent factor “perceived risk” has a slightly negative loading with respect to the manifest variable “the tax authority is good at fighting tax evasion”. A likely interpretation is that most respondents believe that while they themselves cannot safely evade taxes, there are many others who can without being caught by the tax authorities.

In the third step models in figures 8 and 9 were combined into a new model with the intention to find out more about how tax control relates to taxpayer morale and how taxpayer morale relates to perceived risk.

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8 RMSEA = 0.043, p-value for RMSEA < 0.05 = 0.76
There is a negative relationship between “confidence in tax control” and “low taxpayer morale”, which means that higher confidence in tax control is likely to improve taxpayer morale. There is also a positive relationship between “confidence in tax control” and “perceived risk” associated with tax evasion.

The link between “low taxpayer morale” and “perceived risk” is less obvious. One interpretation is that low taxpayer morale is typically associated with a tendency to play down the risk of detection and punishment.

In a wider context the model supports the view that it is important to maintain the confidence in tax control not only in order to deter people who are contemplating tax evasion from actually realising their plans, but also in order to raise taxpayer morale in general, i.e. to make people less inclined to even contemplate tax evasion.

Before discussing what policy implications this and previous results of our study might have, we shall turn to one issue which is limited to the design of future surveys, namely how the inclusion of sensitive questions or statements affect response rates and results.

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RMSEA = 0.032, p-value for RMSEA < 0.05 = 1.00
5.4 How does inclusion of sensitive questions affect respondents

The national survey used two different questionnaires. Half of the survey sample (1,500 of 3,000) received a questionnaire containing sensitive questions concerning tax evasion on part of the respondent himself, the other received questionnaires, which did not contain such questions.

The reason for using two questionnaires in the national survey was
- to reduce the drop-out rate (this might be affected by sensitive questions)
- to study how respondents react to sensitive questions
- to study if some groups were more affected than other groups

There were four questions (or rather statements), which were deemed sensitive, and thus only appeared on one of the two questionnaires:

- Given the chance I would withhold income from taxation
- Some time during the last 12 months I have hired someone on the black market to do work for me (illicit work)
- I have personally carried out illicit work during the last 12 months
- In my latest income tax return I failed to report some income

Our first result was that the presence of sensitive questions did not affect the overall response rate. Neither was there any statistically significant difference in response rates within different groups (with respect to sex, age, employment and income) between those who had received questionnaires with sensitive questions and those who had not.

While sensitive questions did not have an effect on the willingness to reply to the survey, we found that they influenced the way respondents replied to other questions in the survey. There is a statistically significant difference between how respondents faced with the sensitive questions replied compared with respondents who did not receive these questions. More people in the sensitive questions group confirm that they know people who evade taxes and agree with the statement that people buying services on the black market should be liable to punishment (not only the seller). An explanation for this is that respondents who have faced the sensitive question have given the matter of tax evasion greater thought, which has led them to regard it as a more serious problem than those in the other group.

6 Conclusions

The study was carried out partly to provide new information to guide policy and process development, partly to enhance the analytical capabilities of the National Tax Board and improving future surveys as an instrument to gauge taxpayers opinion.

The study has not produced any results that seriously challenges the assumptions that existing policy is based upon, but it does provide a basis for discussing what emphasis should be put on different policy instruments, such as service to taxpayers, tax control and simplification of rules and procedures. The study does not support simplistic assumptions about service to taxpayers as the main way to strengthen voluntary compliance. Nor is there, as far as the average taxpayer is concerned, a great need for further simplification of
tax rules and procedures. This is, however, very far from saying that nothing needs to be done about service or complex rules. Quite the contrary, but efforts to improve service, rules and procedures must be directed at the needs of specific groups of taxpayers, such as small businesses.

The study has also provided valuable input for the development of future surveys. Some questions can be eliminated since they are clearly not relevant to the issues we want to examine. Other areas must be further developed. One such area concerns different aspects on the tax system, where a sharp distinctions must be made between, on the one hand, political issues concerning the size and intended distribution of the tax burden, and, on the other hand, instrumental issues concerning the complexity and functionality of the system.

The study as also found structural equations modelling (SEM) to be a useful tool to extract new information from taxpayer surveys and that this information can be used to test some of the assumptions concerning taxpayers that underlie operational strategy and policies. The results point at the flexibility of this tool and how powerful modelling can be performed on questionnaire data.

References