COST-BENEFIT ANALYSIS OF TAX ADMINISTRATION REFORMS IN FINLAND

Glenn P. Jenkins
Department of Economics, Queens University, Kingston, Ontario, Canada, K7L3N6
Cambridge Resources International Inc.
E-mail: jenkins@econ.queensu.ca

Mikhail Miklyaev
Department of Economics, Queens University, Kingston, Ontario, Canada, K7L3N6
Cambridge Resources International Inc.
E-mail: mikhail.miklyaev@cri-world.com

Owotomiwa Christiana Olubamiro
Cambridge Resources International Inc.
E-mail: christiana@cri-world.com

Siamand Hesami
Department of Banking and Finance Eastern Mediterranean University and
Cambridge Recourses International
Email: siamand.hesami@cri-world.com

Development Discussion Paper:

Abstract

In Finland, over 98% of the compliance costs incurred by VAT-registered entities are borne on micro, small and medium taxpayers. The Finnish Tax Administration (FTA) project "Design and Implementation of a New VAT Reporting Model" is an analysis of three interventions to enhance the current tax administration system. The three interventions are to expand the information collected on the VAT return (stage 1), to introduce electronic reporting of VAT invoices by all taxpayers to the FTA (stage 2), and finally, for the FTA to pre-fill the VAT returns for small, medium and micro taxpayers (stage 3).

A Cost-Benefit Analysis approach is used to evaluate these proposals for potential implementation by measuring the potential costs and benefits of each stage of the reforms. The project's main aim is to increase tax revenues (reduce the tax gap) and reduce the economic costs associated with administration and compliance with the value-added tax (VAT) legislated obligations.

Of the three interventions evaluated, the largest net economic benefits are created by the administrative pre-filling of the Value Added Tax returns.

Keywords: Cost-Benefit Analysis, VAT, Compliance Cost, Micro & SME enterprises, Electronic Invoicing, Pre-Filled VAT Returns, Finland.

JEL Classification: D61, H21, H24, H26

Acknowledgements

The initial phase of this research was financed through a contract with the World Bank.

Special thanks to Mr. Alberto Leyton, Mr. Munawer Khwaja Sultan, Ms. Emete Baylan, and Mr. Zoran Skopljak for their comments and suggestions during the completion of this study.

1. Introduction

The Finland Tax Administration (FTA) project "Design and Implementation of a New VAT Reporting Model" is an analysis of three interventions to enhance the current system of tax administration. The three interventions are to expand the information collected on the VAT returns, introduce reporting of e-invoices by all taxpayers to the FTA, and finally, have the FTA pre-fill the VAT return for taxpayers. These proposed reforms are consistent with the global trend of the digitization of the administration of public finances.

The work of VAT listings, automated VAT reporting, and the use of real-time data on e-invoices and e-receipt will also play an essential role in the "Real-Time Economy" project of the Finnish government. It is estimated that the real-time economy, including e-invoicing, electronic receipts, and the automation of the payment system, would generate substantial savings per year for the government and the residents of Finland.

Net VAT revenue in 2019 totalled EUR 19 billion or 9.9% of GDP, with an annual growth rate of approximately 2.2%. Over EUR 3.6 million in VAT returns are submitted annually. The VAT gap measures the difference between potential tax revenues and actual collections. It is estimated to be EUR 1.3 billion, which corresponds to 5-7% of the Total Tax Liability (TTL).

This study is being undertaken to estimate the costs and benefits of a series of reforms planned by the FTA over a time horizon of ten years. The main aim of the project is to increase tax revenues (reduce the tax gap) and reduce the compliance costs borne by the taxpayers as they strive to comply with the tax laws. A detailed spreadsheet model of cost-benefit analysis has been built and is available for future analysis of the cost-benefits of tax administration reforms in Finland.

2. Current VAT System

The VAT taxpayers are categorized as follows:

- 4,500 Large companies
- 217,000 SMEs
- Micro entrepreneurs 363 000 taxpayers (including about 270,000 agricultural producers)
    - 200,000 taxpayers with annual turnover < €100,000 but > €30,000.
    - 163,000 taxpayers with annual turnover < €30,000.

Of the total VAT returns, 95% are filed electronically. Paper filing represents only approximately 4% of the total. The registration threshold is EUR 10,000 annually, with a threshold for yearly filing being EUR 30,000. The taxpayers may opt to file quarterly or monthly if turnover is between 30,000 and 100,000 euros. Registration is not mandatory if the turnover of an enterprise does not exceed EUR 10,000 annually. However, enterprises

below this threshold may still opt for voluntary registration. Small-sized enterprises can also benefit from a particular scheme under the VAT Act articles 149a – 149f, if VAT taxable turnover for the accounting period (12 months) is less than EUR 30,000. The full VAT amount is refunded up to a turnover of EUR 10,000, and partial relief is available if the turnover is between EUR 10,000 - EUR 30,000 (European Commission, KPMG, GFK, 2018, p.72-73).

According to FTA, there is inadequate information on the current VAT return for the desired level of administration of the VAT. Third-party information is also limited. Currently, the VAT return is generally submitted electronically, and no other information is required for submission.

2.1. Compliance cost of VAT in Finland

An important variable in the analysis that follows is how these proposed tax administration changes will impact both the administrative costs borne by the government as well as the compliance costs that are borne by the taxpayers.

According to the European Commission's study of tax compliance costs for SMEs (European Commission, KPMG, GFK, 2018), the estimated tax compliance costs and tax burden for all types of VAT taxpayers in Finland as of 2018 are reported in Table 1, column 1.

Table 1: Average VAT Compliance Cost by Type of Taxpayer

	VAT Compliance Cost (Enterprise)	Mean Compliance cost/taxpayer (EUR) (1)	No. of Taxpayers (000's) (2)	Annual Total Compliance Cost (Million EUR) (3)	Per cent of Compliance Cost by taxpayer type (4)
1	Large-sized	3,136	4.5	13.95	1.83
2	Medium-sized	667	N/A	N/A	N/A
3	Small-sized	2,204	N/A	N/A	N/A
4	Average Small & Medium	1,436	217	314.65	41.17
5	Micro-sized	1,280	363	435.60	57.00
6	Average VAT Compliance Cost	1,306	N/A	N/A	N/A
7	Total	N/A	584.5	764.20	100

Source: Column 1; European Commission, KPMG, GFK, (2018), Study of tax compliance costs for SMEs
Column 2; Data provided by VERO

The average per taxpayer compliance costs associated with the VAT in Finland is estimated to be EUR 1,306 per year. According to the EU report, the compliance costs for large taxpayers averaged EUR 3,136, while for small and medium taxpayers, the compliance costs averaged EUR 1,436. For micro-sized enterprises, the compliance costs averaged EUR 1,280 per taxpayer. Because of the much smaller absolute amount of turnover, when expressed as a proportion of their turnover, the micro and small VAT taxpayers bear a much larger rate of compliance cost as compared to large taxpayers.

To obtain a clearer perspective on the problem of the allocation of the burden of the VAT compliance costs, the average costs per firm by type, as estimated in the EU study, are multiplied by the number of taxpayers of each type as reported by VERO (Table 1, column 2). The total annual compliance cost by the size of the enterprise is reported in Table 1, column 3. The proportions of the total costs borne by each firm type are reported in Table 1, column 4.

Although the large firms have the highest average compliance costs per firm, the costs they bear are less than 2% of the total compliance cost of the VAT in Finland. Small and medium taxpayers have been bearing approximately 41% of the compliance costs, while the micro taxpayers are incurring over 57% of the entire compliance costs of the system.

The classification of the taxpayers by the EU is not the same as that used in Finland. According to the EU, some of the medium enterprises are likely to be included in the large enterprise category as defined by the Finnish Tax Authority[1]. However, as the number of large taxpayers is relatively small in comparison to the number of medium, small and micro taxpayers, the bias created by this mismatching of the definitions of the type of enterprises in the overall estimates of change in compliance costs is expected to be quite small (Table 2).

Table 2: EU classification of enterprises

	Enterprise Category	**Turnover**
1	Large Enterprises	>EUR 50 million
2	Medium-sized enterprises	≤ EUR 50 mil
3	Small-sized enterprises	≤ EUR 10 mil
4	Micro-sized enterprises	≤ EUR 2 mil

Source: European Commission (2003), Commission Recommendation 2003/361.

The breakdown of compliance costs according to the nature of the tasks required to comply with the VAT is presented in Table 3. Data collection and preparation of the tax return accounts for between 71% and 93% of the entire compliance costs of the taxpayers (European Commission, KPMG, GFK, 2018). The costs associated with the review of the tax return and the submission of the return account for the remainder of the costs. The objective of the second and third stages of the reforms evaluated in this report deals with ways that might reduce the costs of data collection and preparation of tax returns.

[1] Turnover limit used in this case is 10 million euros, so medium-sized enterprises belong to large enterprises, but small-sized still belong to SME group.

Table 3: Percentage Components of Tax Compliance Cost in Finland

		Data collection (1)	Preparation (2)	Review (3)	Submission (4)
1	Large-sized enterprises	60%	17%	16%	6%
2	Small-sized enterprises	48%	23%	23%	6%
3	Medium-sized enterprises	48%	23%	23%	6%
4	Micro-sized enterprises	88%	5%	4%	3%

Source: (European Commission, KPMG, GFK, 2018 p. 250)

3. Cost-Benefit Analysis

Cost-Benefit analysis is a tool to evaluate and compare the potential costs and benefits of changes in regulations, administrative systems, or physical investments. The outcome of the analysis will determine whether the intervention is financially or economically feasible. These costs and benefits are both expressed in monetary units. The European Commission, in its guidance on cost-benefit analysis (Economic appraisal tool for Cohesion Policy, 2014-2020), states that evidence-based and successful policies require making such decisions based on objective and verifiable methods.

In this study, a conservative approach is followed while calculating the estimates of cost and benefits. For the evaluation of the costs and benefits that occur over time, a 5% social discount rate is used.

The Finnish Tax Administration (FTA) is planning to implement this reform strategy in phases.

- Stage 1: Increase information capture on VAT declaration
- Stage 2: Introduce e-invoice reporting to the tax administration
- Stage 3: Administrative (VERO) completion of VAT returns

3.1. Increase Information on VAT Declaration

The current VAT return provides limited information about the taxpayers' activities; therefore, sufficient information is not available to effectively administer the VAT as more complex tax evasion schemes are being created in the EU. The FTA aims to capture more information (stage 1) while not increasing the compliance cost for taxpayers.

The compliance burden is closely related to data collection and return preparation.

The FTA system is highly automated, and only 4% of the returns are submitted in paper format. For taxpayers who are familiar with the system, there will not be an additional cost for submitting the VAT return. Because the new tax return is clearer and more closely tracks the typical business accounting system, there will be some time savings for some taxpayers. At the same time, some taxpayers will need to provide more information to the FTA, which will come at some costs.

The breakdown of the various costs and benefits associated with the implementation of the extended VAT return is described below and presented in detail in Appendix 1.

3.1.1. Estimation of Costs and Benefits by Taxpayer Group

Tax Administration

For the implementation of the extended VAT return, the FTA will have to invest in computer software and educate the tax officers about the requirements of the new return. This is estimated in the first year to cost EUR 1.38 million to the FTA, as reported in Table 24, row 1.

Large Taxpayers

With the introduction of the extended VAT return, large taxpayers will be providing more detailed information about the new requirements. Therefore, they need to make an investment in modifying their computer software systems and also provide training to their bookkeeping/accounting staff. The estimated cost of EUR 15,200 each for a total cost of EUR 68.40 million will also be incurred in the first year. It is estimated that 100% of the taxpayers will be affected. In addition to this investment cost, the annual compliance costs are expected to increase by 15% of the current compliance costs of large businesses for 2% of the large businesses. The present value of these additional annual compliance costs over the ten years amounts to EUR 0.35 million. Combining the investment and compliance costs totalled a present value of EUR 68.75 million (Table 4, row 2).

Table 4: Summary of Stage 1 Results

	Stage 1 - Increase information capture on VAT declaration		
		NPV (Mil EUR) (1)	**Average Annual Values (Mil EUR) (2)**
1	Tax Administration	- 1.38	0.00
2	Large Taxpayers	-68.75	-0.05
3	Small & Medium Taxpayers	35.40	4.94
4	Micro Taxpayers	-9.38	-1.23
5	Total Economic Perspective	-44.12	3.66
	Tax Revenue		
6	Tax Revenue (If VAT gap remains constant @6%)	492.74	53.64
7	Tax Revenue (If VAT gap increases to 8.5%)	3,698.61	417.97

Small and Medium Taxpayers

Small and medium taxpayers will have to invest a total of EUR 2.39 million in computer software. This will be done through purchases of software from local suppliers. It is estimated that 100% of the taxpayers will need to purchase the software. About 2% of this group of taxpayers are expected to have VAT-exempt sales, so they will have to fill in the

new boxes. This will cause their annual operating costs to increase by EUR 218 per year per affected taxpayer. The reason is that they will have to record and submit more information with the new extended VAT return. When aggregated over ten years for the small and medium taxpayers, the adoption of the computerized system will cause the annual compliance cost to increase by EUR 8.16 million in present value terms. On the assumption that most of these taxpayers are outsourcing their accounting services, the education cost will be borne by the bookkeeping professionals and bookkeeping firms.

The estimated benefits arising from the reduction in the number of hours saved from fewer inquiries for small and medium taxpayers amounted to EUR 1.28 million. The value of time saved because the VAT form is more transparent is estimated to be EUR 44.67 million. The total benefits to SME taxpayers amount to EUR 45.95 million. Combining the present value of these benefits with the present value of the costs of EUR 10.55 million, the net result for the small and medium taxpayers is a positive net present value of EUR 35.40 million. This is reported in Table 4, row 3, column 1. Also, in column 2, the annual net benefit of EUR 4.94 million is reported.

Micro Taxpayers

Of the total number of micro-enterprises, 2% are expected to have VAT-exempt sales, so they will have to fill in the new boxes. This will cause their annual operating costs to increase by EUR 180 a year per affected taxpayer. When aggregated over all these taxpayers, the present value total costs calculated for the ten years will be EUR 11.30 million (compliance costs). The estimated benefits to the micro taxpayer amounted to EUR 1.92 million that arise only from the reduction of the time spent on the inquiries, as the FTA will send inquiries only when there is mismatching information. The overall impact on the micro taxpayers is a net cost of 9.38 million (Table 4, row 4).

Total Economic Impact

The overall economic perspective is found by adding up the impacts across the four groups of stakeholders. For stage 1, the economic net present value is EUR -44.12 million, with an annual value of net benefits after the first year of implementation of EUR 3.66 million.

3.1.2. Impact on Tax Revenue

In evaluating the impact on tax revenues, two sets of assumptions are made about what the situation would be if no measures were taken to introduce an extended tax return. The first assumption is that the tax gap would remain at its current level of 6% without a reform situation. In this stage, with the introduction of the extended VAT return, it is thought that the FTA will be able to reduce the current VAT gap by 5%, which amounts to a present value of EUR 492.74 million over the ten years. On an annual basis, the additional revenue would amount to EUR 53.64 million.

The second "without reform" situation assumes that if the FTA does not obtain the additional information from an extended VAT return, the VAT gap for revenue collections might deteriorate over time to 8.5%, which is the average VAT gap in the EU. Under this assumption, the VAT gap would increase by 0.5% a year until it reaches 8.5%. The savings

from the prevention of the deterioration of the collection effectiveness of the VAT administration amounts to EUR 3,205.87 million. This is likely to be an upper range of the possible destabilization of the VAT administration over time. This amount, plus the amount of revenue obtained from reducing the current VAT gap by 5%, yields a total present value of EUR 3,698.61 million. On an annual basis, this potential revenue, on average, is equal to EUR 417.97 million.

The parameters of whether stage 1 of this reform should be recommended as an end in itself are the economic costs of implementation of the extended return of EUR 44.58 million and a revenue gain of between EUR 492.74 million to EUR 3,698.61 million (Table 4, rows 6 and 7). If the tax administration can maintain a 6% VAT gap without these measures, then the trade-off is between incurring an estimated additional EUR 44.58 million of economic compliance costs to raise additional estimated revenues of EUR 492.74 million. This is a ratio of marginal compliance costs to incremental revenue of 9%, which is quite high. Alternatively, if it is anticipated that there will be serious revenue losses if this measure is not undertaken, then the compliance costs per euro of revenue preserved could be as low as 1.2%. The actual compliance costs per euro of revenue preserved will likely be somewhere between these two extremes. The actual result will depend on how well VERO would be able to manage VAT collections in the absence of the extended reporting initiative.

3.2. Mandatory E-invoice Reporting

Digitization is transforming how tax administrations operate, helping to improve process efficiency and service delivery (Gupta et al., 2017). A striking example is the adoption of electronic invoicing (e-invoicing), which allows for the automatic transfer of billing information between firms and the tax authority. Drawn by its potential to strengthen tax compliance and reduce costs, many countries around the world have already implemented reporting of e-invoicing, including eight countries of the EU (Seres Grupo Docaposte, 2019) and ten countries in Latin America and the Caribbean region (EY, 2018; Barreix and Zambrano, 2018).

E-invoicing is an innovation in business practices where the financial benefits are demonstrated to be greater than the financial costs because businesses are voluntarily making necessary investments and changing business practices to enhance their profitability and remain competitive. The percentage of enterprises sending e-invoices suitable for automated processing in Finland amount to 35% for small enterprises, 85% for medium enterprises, and 90% for large enterprises (Eurostat 2018).

Given that the modern VAT administration is an invoice-based system, e-invoicing presents several advantages. For taxpayers, electronic invoicing reduces storage costs and improves the quality of accounting records. For tax administration, electronic invoicing also reduces costs and greatly facilitates VAT control (Ehtisham Ahmad, 2010).

Reporting of e-invoicing will enable the FTA to capture the reliable data that the administration requires, as it will be a unique system in that all these taxpayers will log in and share information with the tax office. E-invoicing will allow real-time and reliable information for the FTA. For businesses in Finland, the cost of data collection is very

burdensome when complying with their VAT obligations. The average compliance costs for VAT data collection (by the size of the enterprise) vary between 48% to 88% of the total tax compliance costs (Table 3, column 1).

The breakdown of the various costs and benefits associated with the implementation of the e-invoicing system is described below and presented in detail in Appendix 2.

3.2.1 Estimation of Costs and Benefits by Taxpayer Group

Tax Administration

For the implementation of the e-invoicing system, the FTA will have to invest in computer hardware and provide education for the tax officers about the new system's requirements. In estimating the required up-front investment costs for computer hardware, the experience of Portugal was used where such costs amounted to EUR 2.5 million of computer-related hardware and software costs along with eight person-years of computer personnel to implement these enhancements (Pires, 2020, p.19). After consultations with the FTA, it was estimated that the investment costs required in Finland would be EUR 2.4 million, with eight person-years of computer personnel required for implementation. The personnel costs are estimated to be EUR 0.67 million, with further outlays to train the personnel of the FTA estimated to be EUR 1.8 million. The total incremental investment cost amounts to EUR 4.87 million. When this amount is added to the investment costs of stage 1 of EUR 1.38 million, the total investment cost of the tax administration to implement stage 2 is EUR 6.25 million.

The FTA has estimated the additional operating costs of the electronic invoicing system that would need to be borne by the tax administration between EUR 2 million and EUR 5 million a year. As recommended by VERO, additional annual operating costs of EUR 5 million are assumed. The present value of these operating costs amounts to EUR 42.59 million. In total, using these assumptions, the cost to be borne by FTA for implementation comes to a total present value of EUR 48.84 million Table 5, row 1, column 1.

A more realistic set of estimated operating costs have been developed based on the experience of Portugal, which has found that once their system was operational, four IT technicians maintained the functioning of the invoice system that processes 15 million invoices daily. Concerning the business areas (management and tax audit), there was no allocation of new resources but rather a reallocation of those already assigned to these functions. Significant economies were realized in terms of volume with the automated system. Using the same annual salary costs of EUR 84,000, the annual costs of the personnel would be equal to EUR 336,000 per year. As an upper estimate of these operating costs, we assume that the increased operating costs per year would be double those experienced by Portugal or EUR 672,000.

Using this set of assumptions with respect to the incremental capital and operating costs imposed on the FTA from e-invoicing, we find that the present value of these costs over the ten years of analysis would be EUR 11.74 million. When these incremental investments and operating costs are integrated into the costs incurred to implement the extended reporting

(stage 1), the present value of the total costs incurred by FTA would be EUR 13.12 million (Table 5, row 1, column 2). The cost-benefit analysis will be carried out, employing both sets of assumptions.

Large Taxpayers

Almost all large taxpayers already use e-invoicing in Finland, but this is only for their business-to-business use. To accommodate mandatory e-invoicing for VAT purposes, some of the large taxpayers will need to incur additional costs in upgrading their accounting software. For those whose e-invoicing system is obsolete, there likely will be a commercial incentive for these firms to upgrade their e-invoicing system at some point in the future, irrespective of the requirements imposed for VAT reporting.

FTA has suggested that the average investment costs incurred by the large taxpayers to comply with the e-invoicing requirement for the VAT administration could be as high as EUR 100,000 for each of the 4,500 large taxpayers. In addition to this investment cost, the annual additional compliance cost is estimated to be EUR 2,500 per firm. The maintenance cost is estimated to be EUR 10,000, which equals 10% of the software.

Consequently, the total present value of the investment and operating costs for large businesses, exclusive of stage 1, would be EUR 946.55 million. With the addition of the costs incurred in stage 1, the total cost to be borne by large businesses is estimated to increase to EUR 1,015.31 million in present value terms, with an annual cost of EUR 61.86 million (Table 5, row 2). This estimate of the likely cost imposed on large businesses through the e-invoicing of the VAT is surprisingly high, given the degree that large businesses in Finland have already adopted e-invoicing for business-to-business invoicing.

A more realistic set of cost estimates are derived from the Portuguese and other EU countries experience and data from Statistics Finland on IT personnel hourly cost. Following this approach, the tax administration needs to define the format of a web service (WSDL) and make it available to companies. Companies then must carry out the internal development of the web service. For this, they need to obtain the invoice data from their computer billing systems and establish the links between the web service and the tax administration system. For companies that do not yet have electronic invoice issuing systems, the standard cost for building and testing a WSDL in Portugal was 320 hours, corresponding to 1 computer technician working for two months. Using the hourly rates of EUR 86 per hour as posted by Statistics Finland for what they charge firms for such computer services, the cost of such computer application work for the software development cost would be EUR 27,520.

For companies that already have electronic invoicing systems and have a WSDL built to send invoices to their customers, it is enough just to change the communication and authentication module so that the system starts to send the invoice data also to the tax administration. The cost of this change corresponds to the work of a computer technician, two weeks (1/4 of the cost mentioned above, EUR 6,880) (Communication with Jose Maria Peris).

Given that such a high proportion of firms in Finland have well-developed e-invoicing systems (90% of large firms as reported by Eurostat), it is estimated that, at most, 25% of the firms would be included in the category of electronic invoicing systems is not compatible and will bear an investment cost of EUR 27,520 each. For the remaining 75% of the firms which already have a compatible electronic invoicing system, the investment costs will be EUR 6,880. Hence, the weighted average investment costs for large taxpayer firms would be EUR 12,040. In addition to the investment cost associated with software development, it is expected that there will be an education cost of EUR 5,000 per large taxpayer. In addition to this investment cost, the annual additional compliance cost is estimated to be EUR 2,500 per taxpayer. The maintenance cost is estimated to be EUR 1,204, which equals 10% of the software costs.

Using the e-invoicing reforms in Portugal to benchmark the costs of introducing e-invoicing for VAT administration, the total present value of the investment and operating costs for large businesses, exclusive of stage 1, is EUR 217.15 million. With the addition of the costs incurred in stage 1, the total costs to be borne by large businesses increase to EUR 285.90 million with an average annual recurring cost of EUR 18.36 million (Table 5, row 7).

From consultations by the FTA, the assumption is that there would be no reduction in compliance costs accruing to large taxpayers from e-invoicing.

Table 5: Summary of Stage 2 Results

	Stage 2 - Introduction of E-invoicing (plus increase information VAT declaration)		
		NPV (Mil EUR) (1)	**Average Annual Values (Mil EUR) (2)**
VERO Parameter Estimates			
1	Tax Administration	-48.84	-5.54
2	Large Taxpayers	-1,015.31	-61.86
3	Small & Medium Taxpayers	476.25	66.81
4	Micro Taxpayers	173.84	23.07
5	Total Economic Perspective	-414.06	22.48
EU Parameter Estimates			
6	Tax Administration	- 13.12	-0.89
7	Large Taxpayers	-285.90	-18.36
8	Small & Medium Taxpayers	476.25	66.81
9	Micro Taxpayers	173.84	23.07
10	Total Economic Perspective	351.06	70.62
Tax Revenue			
11	Tax Revenue (If VAT gap remains constant @6%)	1,350.12	146.98
12	Tax Revenue (If VAT gap increases to 8.5%)	4,555.99	511.31

Small and Medium Taxpayers

For the taxpayers operating within this scope, they will be able to reduce the time they spend collecting information to prepare the VAT return. The software will be developed, which

will allow them to share the information online with the FTA. Some countries (Bulgaria, Estonia, Portugal) provide the basic software free, and some member states offer free online invoicing software for the first year and apply a small fee for the coming years for micro-enterprises and SMEs. For example, the UK offers monthly packages with a small monthly fee of £6 for small taxpayers. Brazil offers free software on their website for small taxpayers.

According to the FTA, the cost of computer system changes per firm for small and medium taxpayers is estimated to be EUR 15, and the education cost per firm equals EUR 136. Hence, the total investment cost for small and medium taxpayers amounts to EUR 32.77 million. It is estimated that 100% of the taxpayers will be affected. In addition to the investment cost, the increase in the annual compliance borne by the firms associated with e-invoicing per firm is estimated to be EUR 210 (15% of their current compliance costs), with 100% of the small and medium taxpayers impacted. For 83% of the small and medium taxpayers, it is assumed that there will be annual maintenance or upgrading costs of the software estimated to average EUR 2 per firm. The present value of the total investment and operating costs expected to be incurred by the small and medium taxpayers amounts to EUR 440.58 million.

Bellon et al. (2019) state that e-invoicing primarily impacts small and medium-sized firms and suggests that it helps minimize tax return mistakes and reduce compliance costs. The FTA estimated that the compliance cost would be reduced by 32% of the current VAT compliance cost for small and medium taxpayers. This amounts to EUR 870.88 million in present value terms. (The net impact, given the increased operating costs, is to reduce the overall compliance costs of small and medium businesses by only 17%).

Combining the benefits and costs for medium and small businesses of stage 2 with the benefit and costs from stage 1, we find that the present value is a net benefit of EUR 476.25 million with an annual benefit of EUR 66.81 (Table 5, row 3).

Micro Taxpayers

Approximately 9% of the micro taxpayers (or their bookkeepers) will also have to incur the cost of obtaining the computer software that would enable them to submit their VAT invoices electronically. Averaged over all the micro-enterprises affected by this intervention, the cost is estimated to be EUR 15 per firm. In addition to the computer software cost, there are education costs equal to EUR 68 per firm. The total investment cost of e-invoicing to micro taxpayers is estimated to be EUR 2.71 million. The compliance cost of managing the e-invoicing system for micro taxpayers is estimated to be EUR 120 per firm. It is estimated that the same 9% of the total micro taxpayers will be affected. The average maintenance cost of the software for e-invoicing to micro taxpayers is EUR 2 per firm; only 9% of the micro taxpayers will be affected. The estimated total amount of the investment and operating costs of e-invoicing to micro taxpayers equal in present value terms EUR 37.19 million.

The FTA estimated that 9% of the micro taxpayers brought into the e-invoicing system while having some new operating costs will reduce their current compliance cost of the VAT by 65%. Over ten years, the present value of these savings amounts to EUR 220.41 million.

Combining the benefits and costs for micro taxpayers of stage 2 with the costs and benefits from stage 1, we find that the present value is a net benefit to the microenterprises of EUR 173.84 million with an average annual benefit of EUR 23.07 (Table 5, row 4).

Total Economic Impact

Using these two sets of parameter values for the estimation of stage 2, the economic net present value of the reform is estimated at between a negative EUR 414.06 million with the high-cost assumptions that the reform would impose on large businesses and the VERO. After the initial investment period, the average annual benefit is EUR 22.48 million (Table 5, row 5).

The second set of estimates of the implementation costs of the reform was developed by taking an upper estimate of the number of hours to implement and administer the e-invoicing reform in Portugal but using the wage rates of Finland. The result is a very substantial positive economic net present value of EUR 351.06 million. After the initial investment period, the average annual benefit is EUR 70.62 million (Table 5, row 10).

3.2.2. Impact on Tax Revenue

Using the same sets of assumptions used in stage 1 in evaluating the impact on tax revenues, two sets of assumptions are made about what the situation would be if no measures were taken to introduce e-invoicing. The first assumption is that the tax gap would remain at its current level of 6% in the without reform situation. In this stage, with the introduction of e-invoicing, it is thought that the FTA will be able to reduce the current VAT GAP by 13.5%, which amounts to a present value of EUR 1,350.12 million over ten years. On an annual basis, the average additional revenue would amount to EUR 146.98 million.

The second "without reform" situation assumes that if the FTA does not set up the e-invoice system and the VAT gap revenue collections deteriorate over time to 8.5% (which is the average VAT gap in the EU) under the assumption that the VAT gap would increase by 0.5% a year until it reaches 8.5%, the savings from the prevention of the deterioration of the collection effectiveness of the VAT administration amounts in present value terms to EUR 3,205.87 million. This is likely to be an upper range of the possible destabilization of the VAT administration over time. This amount, plus the amount of revenue obtained from reducing the current VAT gap by 13.5%, yields a total present value of EUR 4,555.91 million. On an annual basis, this potential revenue is equal to EUR 511.31 million.

It is quite clear that the conclusion of the economic attractiveness depends on one's view of the cost of introducing e-invoice reporting for VAT administration. With VERO's assumptions on the investment and operation costs, the incremental economic costs of EUR 414.52 million would not justify this intervention if the incremental increase in tax revenues were between EUR 1,350.12 and EUR 4,555.00 million. However, with the set of cost estimates based on EU experience, it is a win-win situation with significant net economic benefits of EUR 351.06 million accruing to the economy because of the reduction in compliance costs and a greater increase in total VAT revenues. These results are consistent

with the observed enthusiasm of several governments within the EU and worldwide toward implementing e-invoicing reporting to assist in administering tax systems.

3.3. Pre-Filled VAT Returns

The pre-filling of the VAT returns by the tax administrations is an intervention that is designed primarily to reduce the compliance costs incurred by small and micro taxpayers. Some OECD countries have moved (Chile) or are moving (Spain) towards pre-filled tax returns for these classes of VAT taxpayers. For example, in Chile, a system for pre-filled VAT returns was implemented in 2017. The result has been lower compliance costs and better revenue performance (CIAT, 2018). Pre-filled returns also reduce the psychological or irritation costs that almost all EU taxpayers in every member state experience (European Commission, KPMG, GFK. (2018)).

With the introduction of pre-filled returns (stage 3), taxpayers will have greater confidence that they are reporting their activities properly. Honest businesses will benefit as the e-invoicing and pre-filled return will ensure an equal environment for all businesses. A system of pre-filled VAT reports by the tax administration is expected to minimize the combined compliance and administrative costs of taxpayers and the FTA, respectively.

The breakdown of the various costs and benefits associated with the implementation of the pre-filled VAT returns system is described below and presented in detail in Appendix 3.

3.3.1. Estimation of Costs and Benefits by Taxpayer Group

Tax Administration

The FTA will have to incur the additional personnel cost of four computer technicians for the implementation of the pre-filled VAT returns system. The total present value of the investment cost of the FTA is estimated to be a present value of EUR 0.34 million. When this amount is added to the previous two estimates (Stages 1 & 2) of the investment and operating costs, the total cost now becomes EUR 49.17 for the high-cost scenario and EUR 13.45 for the lower cost estimates obtained from the experience of other European countries (Table 6, row 1 and row 6).

Large Taxpayers

In this stage, there are neither costs nor benefits attributed to the large taxpayers for pre-filling. The additional costs incurred to enable the tax returns to be pre-filled by the large businesses when they develop their systems for issuing e-invoices suitable for invoice matching by the VAT administration. The two estimates of the costs to be incurred by large businesses to implement all the changes required to enable the VAT tax returns to be pre-filled by the tax administration are reported in Table 6, rows 2 and 7.

Table 6: Summary of Stage 3 Results

	Stage 3 - Pre-filled VAT returns (plus e-invoicing reporting and increasing information on VAT declaration)		
		NPV (Mil EUR) (1)	**Average Annual Values (Mil EUR) (2)**
VERO Parameter Estimates			
1	Tax Administration	-49.17	-5.54
2	Large Taxpayers	-1,015.31	-61.86
3	Small & Medium Taxpayers	476.25	66.81
4	Micro Taxpayers	1,699.74	222.42
5	Total Economic Perspective	1,111.50	221.83
EU Parameter Estimates			
6	Tax Administration	- 13.45	-0.89
7	Large Taxpayers	-285.90	-18.36
8	Small & Medium Taxpayers	1,374.34	184.15
9	Micro Taxpayers	1,699.74	222.42
10	Total Economic Perspective	2,774.72	387.31
Tax Revenue			
11	Tax Revenue (If VAT gap remains constant @6%)	1,350.12	146.98
12	Tax Revenue (If VAT gap increases to 8.5%)	4,555.99	511.31

Small and Medium Taxpayers

According to the FTA estimates of the benefits and costs, there will be neither investment nor operating costs for pre-filling for small and medium taxpayers. This is understandable as it is the tax administration that is taking over the function of preparing the tax return. At the same time, the FTA also estimates that there will be no additional reduction in the compliance costs that would benefit the small and medium taxpayers. This assumption is used in the estimation of the present value of the benefits using VERO parameter estimates, as reported in Table 6, row 3. These values are the same as those following the implementation of e-invoicing and are reported in Table 5, row 3.

At the present time, most of the small and medium taxpayers have their tax returns prepared by tax preparation firms using computer programs. This work is being done at a cost that will be largely eliminated if the FTA were to complete the returns for the taxpayers. It is generally the case in Europe that businesses that use private tax preparation firms tend to have tax systems that create higher compliance costs. (EU 2018). At present, 71% of the entire SME tax compliance costs of the VAT system are associated with data collection and return preparation (EU 2018 pg. 245-246). Furthermore, VERO estimates that the compliance costs will be initially raised by 15% to operate the e-invoicing system before a reduction of compliance costs of 32% of current costs is realized. Hence, the net benefit that VERO estimates will be created by electronic invoicing is only 17% of their current level of compliance costs.

It would appear that this assumption of the cost savings from the entire reform is rather conservative. A 17% reduction in total compliance costs represents only 24% (17/71) of the data collection and return preparation costs alone. Yet, the purpose of the combination of e-invoicing and pre-filing of returns is to eliminate all these costs. It would seem more likely that the combined impact of electronic invoicing and pre-filling of the returns would reduce the current compliance cost of small and medium businesses by at least 50% in total. Given that electronic invoicing is estimated to reduce the total compliance costs by 17%, if a target of a 50% reduction of compliance costs is to be reached, this would imply that at the stage of pre-filling, there would be a further reduction of 33% of the current level of compliance costs. This would add a further EUR 898.10 million to the total benefits of the combined impact of all three phases of the tax administration reform.

Combining net benefits from stages 1 & 2 with the pre-filled VAT return system (stage 3), the net present value for the small and medium taxpayers amounts to EUR 476.25 million using the VERO's estimates (no additional benefits). Alternatively, with the assumption of an additional 33% reduction in compliance cost for small and medium enterprises, the total benefits amount to EUR 1,374.34 million.

Micro Taxpayers

The FTA estimated that there would be no investment cost or operating costs for pre-filling implementation for the micro taxpayer. It is expected that approximately 81% of the micro taxpayer's current compliance cost would be reduced by EUR 600 (approximately 50% of their current compliance cost) as a result of the pre-filled VAT returns system. The total amount of these benefits in present value equals EUR 1,525.90 million. Combining the costs and benefits from stages 1 & 2 with the pre-filled VAT returns system (stage 3), the net present value for the micro taxpayers would amount to EUR 1,699.74 million.

Total Economic Impact

Using the two sets of parameter values for the estimation of stage 3 for this reform, the economic net present value of this reform is estimated at between a positive EUR 1,111.04 million with the VERO-based input parameter values (Table 6, row 5) and EUR 2,774.72 million based on the EU parameter estimates (Table 6, row 10). On an annual basis, after the initial investment period, the average annual benefit is between EUR 221.83 million and EUR 387.31 million (Table 6, row 10).

3.3.2. Impact on Tax Revenue

VERO estimates that the pre-filling of the tax returns will not have an additional impact on tax revenues. This corresponds to the experience of Chile when it first introduced their system with pre-filing tax returns in 2017 (CIAT 2017). Hence, these three phases of tax administration reform are expected to raise annual revenues by EUR 146.98 million on average if the VAT gap remains at 6%. The annual revenue associated with phase 1 is EUR 53.64 million. The incremental revenue from phase 2 is EUR 93.34 million. Without the reform, if the VAT gap deteriorates to 8.5%, the revenue impact of the three phases

would raise average annual tax revenues by EUR 511.31 million. In this case the annual revenue associated with phase 1 is EUR 417.97 million. The incremental revenue from phase 2 is EUR 93.34 million.

An estimation of the impact on tax revenues over the ten years yields, in present value terms, a value of EUR 1,350.12 million and EUR 4,555.99 million under the two respective sets of assumptions.

4. Conclusions and Policy Implications

This cost-benefit analysis of the proposed tax administration reforms in Finland identifies two potential beneficial objectives for implementing such reforms. The first reason for conducting such a reform is to enhance or preserve revenues so that they are available to finance public expenditures. The second reason to carry out such reforms is to reduce the economic waste of resources that the costs of tax administration and business compliance costs inflict on the economy and well-being of the jurisdiction's residents.

The results of this study show that the initial stage of the reform that would increase information capture on the VAT declaration is expected to increase tax revenues by between EUR 53.64 million and 417.97 million a year or a net present value of between EUR 492.74 and 3,698.61 over ten years. At the same time, however, it would increase both the administration costs as well as the compliance costs of large taxpayers and micro taxpayers while benefiting the small and medium taxpayers. For the economy as a whole, the economic burden of collecting the value-added tax would be increased by approximately EUR 3.66 million a year or a present value of costs over ten years of EUR 44.12 million. In such a situation, it is the tax policy decision-makers that will need to decide, given the options available, if this is a cost-effective and fair way to raise additional revenues.

The second stage of the reform combines the increase in information capture on the VAT declaration with the introduction of e-invoicing. If this combined reform were introduced, the annual tax revenues are expected to be either increased or preserved between EUR 146.98 million and EUR 511.31 million, while the present value of the increase in tax revenues over ten years would be between EUR 1,350.12 million and EUR 4,555.99 million. However, the economic resource cost implications are quite different than in stage 1. Overall, the economic costs either rise in net present value from EUR 44.512 million to EUR 414.06 million or become a net present value benefit of EUR 351.06 million. Again, in this situation, the stakeholder impacts are not evenly distributed. The tax administration and the large business firms will bear the additional net investment and operating costs. The beneficiaries are the small and medium taxpayers and the micro taxpayers, who are presently bearing a disproportionate amount of the compliance costs of the VAT system.

In the third stage of the reform, there is expected to be little or no revenue impacts beyond what is expected from that obtained through e-invoicing. However, the improvements in tax administration at this stage yield very substantial economic benefits through the reduction in compliance costs of small and medium taxpayers and micro taxpayers. At the same time, there is a net cost to large businesses and the tax administration. The annual economic value

created per year (excluding investment costs) is estimated to be between EUR 221.83 million and EUR 387.31 million. The economic net present value over ten years is between EUR 1,111.04 million and EUR 2,774.72 million.

With such large benefits to be realized, policymakers should consult with large business firms so that these reforms can be implemented. Certainly, the benefits arising to the SMEs and micro-businesses would be a welcome relief to a sector that, up until now, has borne the largest share of the total compliance costs. While stage 1 is a necessary phase to implement in order to proceed to stages 2 and 3, the economy would benefit significantly from the implementation of all three stages of the proposed tax reform as quickly as possible.

References

Alberto Barreix and Raul Zambrano (2018). Electronic Invoicing in Latin America. IADB. http://dx.doi.org/10.18235/0001038

Barbone, L., Bird, R. M., & Vázquez Caro, J. (2012). The costs of VAT: A review of the literature. *CASE Network Reports*, (106).

B2mos, "Interoperability Analysis of the Electronic Commercial and Transportation Invoice" Document Version:2.

Ehtisham Ahmad, A. A. (2010). Fiscal Reforms in the Middle East: VAT in the Gulf Cooperation Council. In A. A. Ehtisham Ahmad, VAT in common markets: lessons from Central America (pp. 152-155). Edward Elgar Publishing. Retrieved 07 07, 2020.

European Commission, KPMG, GFK. (2018). Study on tax compliance costs for SMEs. European Commission. doi:10.2826/02329.

European Commission (2019). *Study on the Evaluation of Invoicing Rules of Directive 2006/112/EC: Final Report.* European Commission, DG TAXUD, Brussels.

European Commission (2019). European Commission (2019). *VAT Listings – Implementation in EU Member States: Report.* European Commission, DG TAXUD, Brussels.

European Commission (2020). *Commission Staff Working Document, Country Report Finland*. p. 4. European Commission, Brussels.

European Commission (2020). https://ec.europa.eu/info/sites/info/files/2020-european_semester_country-report-finland_en.pdf

Eurostat. https://ec.europa.eu/eurostat/databrowser/view/sdg_08_10/default/table?lang=en

EY. 2018. Worldwide electronic invoicing survey. https://go.ey.com/2XLaBBB.

Gupta, Sanjeev, Michael Keen, Alpa Shah, and Genevieve Verdier. eds. 2017. Digital Revolutions in Public Finance. International Monetary Fund. doi: http://dx.doi.org/10.5089/9781484315224.071.

HM Revenue and Customs (Budget 2020). Making Tax Digital: An evaluation of the VAT service and update on the Income Tax Service.

Hielkema, H (2008) Making the tax office processes real-time-estimating the benefits, MSE Thesis, Helsinki School of Economics.

Highfield, R., Evans, C., Binh, Tran-Nam, and Walpole, M., (20- Diagnosing the VAT Compliance Burden: A Cross-Country Assessment.

IHS, Institute for Advanced Studies (2019), Study and Reports on the VAT Gap in the EU-28 Member States: 2019 Final Report TAXUD/2015/CC/131, Vienna, Austria www.ihs.ac.at

IMF (2020). *World Economic Outlook, Chapter 1 – The Great Lockdown (April 2020).* International Monetary Fund, Washington, DC.

Koch, B., (2019) "The e-invoicing journey 2019-2025" euro data-Group

Lee, Hyung Chul, "Can Electronic Invoicing Improve Tax Compliance? A Case Study of the Republic of Korea's Electronic Tax Invoicing for Value-Added Tax" Policy Research Working Paper 7592, World Bank Group 2016.

Marinagi, C., Trivellas, P., Reklitis, P., and Skourlas, C., "Adoption and Use of E-invoicing in Greece'., (2015) International Conference on Integrated Information, AIP Conference Proceedings 1644 pp 279-286.

Matthieu Bellon, Jillie Chang, Era Dabla-Norris, Salma Khalid, Frederico Lima, Enrique Rojas and Pilar Villena, "Digitalization to Improve Tax Compliance: Evidence from VAT E-invoicing in Peru" 2019 International Monetary Fund.

Mendez, V. I. V. (2018, January 29). Pre-filled VAT form in Chile. Retrieved 22 July 2020, from https://www.ciat.org/pre-filled-vat-form-in-chile/?lang=en.

Najim Abd Aliwie Al Karaawy (2018), The Impact of Making Tax Digital Application on the Accounting Costs University of Al Qadisiyah Research Article Vol: 22 Issue: 3.

N., Ali, "Adapting E-invoicing: Benefits, Challenges and Future Strategies to Overcome Challenges: A comparative case study of Finnish Companies.", 2016.

OECD (2018). Revenue statistics 2018, *Tax revenue trends in the OECD,* https://read.oecd-ilibrary.org/taxation/revenue-statistics-2019_0bbc27da-en#page68

OECD (2019). *Tax Administration 2019: Comparative Information on OECD and other Advanced and Emerging Economies.* OECD Publishing, Paris.

OECD (2016). *Advanced Analytics for Better Tax Administration: Putting Data to Work.* OECD Publishing, Paris. www.oecd.eco.org/eco/workingpapers

OECD Working Papers (2018). *Tax Reform to Support Growth and Employment in Finland.* OECD Economic Department Working Papers.

Penttinen, Esko (2008) "Electronic Invoicing Initiatives in Finland and the European Union – Taking the Steps towards the Real-Time Economy" Helsinki School of Economics.

Pires, Jose, Maria (2020) The Portuguese VAT Reporting Model, World Bank.

Seres Grupo Docaposte "Electronic VAT reporting in Europe: implementation and evolution" (2019). http://blog.groupseres.com/en/electronic-vat-reporting-in-europe-implementation-and-evolution

Soto, Francisco Rodarte, (2015 June) "Electronic Invoicing in the VAT Reporting Process of Small and Medium Size Companies in Finland, Business Administration Thesis, Helsinki Metropolia University of Applied Sciences.

Statistics Finland, "Charging Basis and Prices" https://www.stat.fi/tup/hinnat/index_en.html

The Council of the European Union, "Directive 2014/55/EU", Official Journal of the European Union, (2014), Brussels. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014L0055

Vero Skatt (2019). *The Future of VAT Reporting: Project Proposal.* Vero Skatt, Helsinki.

Vero Skatt (2019). *Tax Administration Strategy* – PowerPoint presentation. Helsinki.

Vero Skatt (2019) *VAT Gap in Finland* – PowerPoint presentation. Helsinki.

Vero Skatt (2019). *Customer Data Knowledge Process* - PowerPoint presentation. Helsinki (October 2019)

Vero Skatt (2020). *Sources of Information for pre-completed tax returns* - PowerPoint presentation. Helsinki (January 2020).

Vero Skatt (2020). *VAT reporting: supporting 3rd party information, final conclusions* - PowerPoint presentation. Helsinki (January 2020).

Vero Skatt (2020) *VAT Listings -project in Finland* - PowerPoint presentation. Helsinki (2020).

Vero Skatt (2020) *VAT Listings -project in Finland* - PowerPoint presentation. Helsinki (May 2020).

World Bank (2020). *Comparative Benchmarking Report on VAT Reporting Models*. World Bank. Washington DC. (June 2020)

World Bank (2020). *World Bank Development indicators, http://wdi.worldbank.org/table/4.2#.* World Bank, Washington DC.

World Bank (2020). https://data.worldbank.org/indicator/NY.GDP.PCAP.CD

World Bank (2020). https://data.worldbank.org/indicator/SP.POP.TOTL

World Bank (2020). *Cost benefit analysis Model for the VAT Reporting Reform in* the *FTA* – submitted to the FTA (June 2020).

Appendices

Appendix 1. Input Parameters (Values) for Stage 1

Component 1 - Increase Information on VAT Declaration	
1. Investment Costs	
1.1. Tax Administration	
Tax administration computer programming cost	€1.14 Million
Education cost for VERO	€0.24 Million
1.2. Taxpayers	
Large Taxpayers	
Cost of computer system changes per firm	€10,200
Education Cost per firm	€5,000
Percentage number of large taxpayers affected	100%
Small & Medium Taxpayers	
Cost of computer system changes per firm	€7
Education Cost per firm	€4
Percentage number of small & medium taxpayers affected	100%
Micro Taxpayers	
Cost of computer system changes per firm	€7
Percentage number of micro taxpayers affected	0%
2. Operating Costs	
2.1. Administration Operating Costs	
Personnel Cost	
Annual number of working hours	0hr
2.2. Compliance Operating Costs (per firm)	
Large Taxpayers	
Annual additional compliance cost of declaration per firm	€465
Percentage of number large taxpayers affected	2%
Small & Medium Taxpayers	
Annual additional compliance cost of declaration per firm	€218
Percentage number of small & medium taxpayers affected	2%
Micro Taxpayers	
Annual additional compliance cost of declaration per firm	€180
Percentage number of micro taxpayers affected	2%
3. Benefits	
3.1. Benefits to Tax Administration	
Time Savings to Tax Administration	
Annual number of hours saved	0hr
Additional Revenues to Tax Administration	
VAT Gap	
Annual net VAT revenue	€19,000 Million
Annual percentage change in net VAT revenue (real rate)	2.2%
VAT gap % of net VAT revenue	6 %
VAT gap growth rate	0.5%

VAT gap (% of net VAT revenue) - Max. rate	8.5%
Increase in annual VAT revenue (% of Total VAT Gap)	5%
3.2. Benefits to Taxpayers	
Large Taxpayers	
Time Savings to Large Taxpayers (Fewer inquiries)	
Annual number of hours saved from fewer inquiries per firm	0hr
Percentage number of large taxpayers affected	100%
Additional Benefits to Large Taxpayers	
Annual reduction in psychological cost per firm	€0
Percentage number of large taxpayers affected	100%
Small & Medium Taxpayers	
Time Savings to Small & Medium Taxpayers (Fewer inquiries)	
Annual number of hours saved from fewer inquiries per firm	2hrs
Percentage number of Small & Medium taxpayers affected	1%
Additional Benefits to Small & Medium Taxpayers	
Annual number of accounting hours from VAT form per firm	0.7hr
Percentage number of Small & Medium taxpayers affected	100%
Additional Benefits to Small & Medium Taxpayers	
Annual reduction in psychological cost	€0
Percentage number of Small & Medium taxpayers affected	100%
Micro Taxpayers	
Time Savings to Micro Taxpayers (Fewer inquiries)	
Annual number of hours saved from fewer inquiries	2hrs
Fewer inquiries as percentage number of micro taxpayers complying	0.9%
Additional Benefits to Micro Taxpayers	
Annual reduction in psychological cost	€0
Percentage number of micro taxpayers affected	100%

Appendix 2. Input Parameters (Values) for Stage 2

Component 1plus Component 2; Electronic Reporting of E-invoices	
1. Investment Costs	
1.1. Tax Administration	
Computer Upgrade cost	
Computer software cost	€0
Computer hardware upgrade cost	€2.4 Million
Personnel Cost	
Working hours	2000hrs
Number of workers	8
Education cost	€1.8 Million
Development of Software for Business use	
Development of Software for Business use by VERO	€0
1.2. Taxpayers	
Large Taxpayers	
Cost of computer system changes per firm	€100,000 or €12,040
Percentage number of large taxpayers affected	100%
Education Cost	€5,000
Percentage number of large taxpayers affected	100%
Small & Medium Taxpayers	
Cost of computer system changes per firm	€15
Education Cost	€136
Percentage number of small & medium taxpayers affected	100%
Micro Taxpayers	
Cost of computer system changes per firm	€15
Education Cost per firm	€68
Percentage number of micro taxpayers affected	9%
2. Operating Costs	
2.1. Administration Operating Costs	
Commercial software and maintenance cost (Annual)	€5 million or €672,000
Storage facilities cost (Annual)	€160,000
2.2. Compliance Operating Costs (per firm)	
Large Taxpayers	
Annual additional compliance cost (e-invoice)	€2,500
Annual maintenance cost of software	€10,000 or 1,204
Percentage of number large taxpayers affected (Compliance cost)	100%
Percentage of number large taxpayers affected (Maintenance cost)	100%
Small & Medium Taxpayers	
Annual additional compliance cost (e-invoice)	€210
Annual maintenance cost of software	€2
Percentage number of small & medium taxpayers affected (Compliance cost)	100%

Percentage number of small & medium taxpayers affected (Maintenance cost)	83%
Micro Taxpayers	
Annual additional compliance cost (e-invoice)	€120
Annual maintenance cost of software	€2
Percentage number of micro taxpayers affected (Compliance cost)	9%
Percentage number of micro taxpayers affected (Maintenance cost)	9%
3. Benefits	
3.1. Benefits to Tax Administration	
Time Savings to Tax Administration	
Annual number of hours saved	0hr
Additional Revenues to Tax Administration	
VAT Gap	
Annual net VAT revenue	€19,000 Million
Annual percentage change in net VAT revenue (real rate)	2,2%
VAT gap % of net VAT revenue	6 %
VAT gap growth rate	0,5%
VAT gap (% of net VAT revenue) - Max. rate	8,5%
Increase in annual VAT revenue (% of Total VAT Gap)	13,7%
3.2. Benefits to Taxpayers	
Large Taxpayers	
Reduction in compliance cost for Large Taxpayers	
Reduction in compliance cost (as a % compliance cost)	0%
Percentage number of large taxpayers affected	100%
Small & Medium Taxpayers	
Small & Medium Taxpayers	
Reduction in compliance cost for Small & Medium Taxpayers	
Reduction in compliance cost per firm	32%
Percentage number of Small & Medium taxpayers affected	100%
Micro Taxpayers	
Reduction in compliance cost for Micro Taxpayers	
Reduction in compliance cost per firm	65%
Percentage number of Micro taxpayers affected	9%

Appendix 3. Input Parameters (Values) for Stage 3

Component 1 plus Component 2 plus Component 3; Pre-fill VAT Returns	
1. Investment Costs	
1.1. Tax Administration	
Computer Upgrade cost	
Computer software cost	€0
Computer Hardware upgrade cost	€0
Personnel Cost	
Working hours	2000hrs
Number of workers	4
1.2. Taxpayers	
Large Taxpayers	
Cost of computer system changes per firm	€0
Percentage number of large taxpayers affected	100 %
Small & Medium Taxpayers	
Cost of computer system changes per firm	€0
Percentage number of small & medium taxpayers affected	100%
Micro Taxpayers	
Cost of computer software changes per firm	€0
Percentage number of micro taxpayers affected	0%
2. Operating Costs	
2.1. Administration Operating Costs	
Pre-filled returns	
Software licensing and maintenance cost	€0
Additional personnel cost of pre-filled returns	
Number of workers	0
Working hours (Annual)	0hr
2.2. Compliance Operating Costs	
Large Taxpayers	
Annual additional compliance cost (Pre-Filling) per firm	€0
Percentage of number large taxpayers affected	100%
Small & Medium Taxpayers	
Annual additional compliance cost (Pre-Filling) per firm	€0
Percentage number of small & medium taxpayers affected	100%
Micro Taxpayers	
Annual additional compliance cost (Pre-filling)	€0
Percentage number of micro taxpayers affected	9%
3. Benefits	
3.1. Benefits to Tax Administration	
Time Savings to Tax Administration	
Annual number of hours saved (Reduction in tax investigation)	0hr
Additional Revenues to Tax Administration	

VAT Gap	
Annual net VAT revenue	€19,000 Million
Annual percentage change in net VAT revenue (real rate)	2,2%
VAT gap % of net VAT revenue	6 %
VAT gap growth rate	0,5%
VAT gap (% of net VAT revenue) - Max. rate	8,5%
Increase in annual VAT revenue (% of Total VAT Gap)	0
3.2. Benefits to Taxpayers	
Large Taxpayers	
Reduction of time for receiving refunds	
Interest cost per day	€0/day/refund€
Small & Medium Taxpayers	
Reduction in compliance costs from VERO completion of tax return	
Reduction in compliance cost (as a % of compliance cost)	0% or 33%
Percentage number of Small & Medium taxpayers affected	100%
Reduction of time for receiving refunds	
Interest cost per day	0 €/day/refund€
Cumulative amount of refunds per year	100,000 €
Percentage number of Small & Medium taxpayers affected	50%
Micro Taxpayers	
Reduction in compliance costs from VERO completion of tax return	
Compliance cost saved (Pre-Filling)	€600
Percentage number of Micro taxpayers affected	81%
Reduction of time for receiving refunds	
Interest cost per day	€0/day/refund€
Cumulative amount of refunds per year	500 €
Percentage number of micro taxpayers affected	9 %