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This article is a follow up on a previous article from the same authors. In that article the authors concluded that keeping the current system for intra EU trade between businesses and addressing VAT fraud by using technological solutions may be the best way forward. In this article the authors address potential technological solutions that can help to solve the issue of VAT fraud. The technical solutions that are addressed are: split payment, blockchain technology, real time reporting and SAF-T. All these solutions have or are being considered by some EU Member States or even the European Commission.

1 INTRODUCTION

In October 2017 the European Commission made its outlines for a definitive Value Added Tax (VAT) system for intra-EU trade known,¹ followed by a detailed proposal of these rules in May 2018.² Under this proposal intra-EU supplies will be subject to VAT in the Member State of arrival of the goods. As a main rule the supplier has to pay this VAT to the tax authorities. As a temporary relieve VAT can be reverse charged to reliable taxable persons, so called Certified Taxable Persons or CTPs.³ Before these proposals were even accepted by EU Member States, the EU Member States agreed on a temporary general reverse charge mechanism.⁴ Under this system VAT fraud is addressed because the supplier will no longer collect VAT from its customer on domestic Business to Business (B2B) supplies that it will need to remit to the tax authorities (and won't in case of VAT fraud). Both systems have been criticized in

literature.⁵ In our previous article we concluded that both systems have benefits compared to the current system, but also downsides as regards simplicity of the system and the ease of audits. We also established that in both systems that in order to make the system more fraud proof there will be an increase of compliance burdens and administrative costs for tax authorities.⁶ We therefore came to the conclusion that keeping the current system and addressing VAT fraud by using technological solutions may be the best way forward. According to the OECD, depending on developments in technology, automated systems may play a central role in facilitating tax collection in the future. Currently, it sees technology as a tool to support the operation of the existing collection regimes.⁷ The OECD encourages tax authorities to allow the use of electronic record keeping systems as business processes have become increasingly automated. Tax authorities can make use of reliable business records and accounting systems in order to acquire the information needed (e.g. type, date and place of supply and VAT payable).⁸ In this follow up on our previous article we will address potential technological solutions that can help to solve the issue of VAT fraud. After discussing the issue of VAT fraud in section 2, we will discuss some important

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¹ Proposal for a Council Directive amending Directive 2006/112/EC as regards harmonising and simplifying certain rules in the value added tax system and introducing the definitive system for the taxation of trade between Member States, 4 Oct. 2017, COM (2017) 569 final.

² Proposal for a Council Directive amending Directive 2006/112/EC as regards the introduction of the detailed technical measures for the operation of the definitive VAT system for the taxation of trade between Member States, 25 May 2018, COM (2018) 329 final.

³ For a more detailed review of the proposed system we refer to: Madeleine Merckx, John Gruson, Naomie Verbaan & Bart van der Doef, *Definitive VAT Regime: Stairway to Heaven or Highway to Hell?* 27(2) EC Tax Rev. 74–82 and M. Merckx & J. Gruson, *Definitive VAT Regime: Ready for the Next Step?*, 28(3) EC Tax Rev. 136–149 (2019).

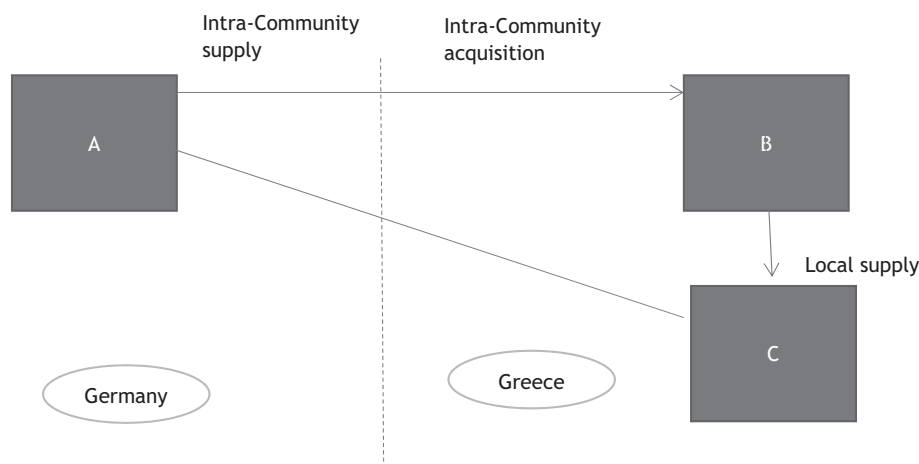
⁴ Council Directive (EU) 2018/2057 of 20 Dec. 2018 amending Directive 2006/112/EC on the common system of value added tax as regards the temporary application of a generalized reverse charge mechanism in relation to supplies of goods and services above a certain threshold, OJ 2018, L 329/3.

⁵ Merckx, Gruson, Verbaan & van der Doef, *supra* n. 3, at 74–82 and Gorka Echevarria Zubeldia, *Definitive VAT Regime ... Really?*, 29(4) Int'l VAT Monitor (2018) for the definitive VAT system and Petr Toman, *Reverse Charge in VAT – Possibilities and Limitations*, in *Closing VAT GAP through Reverse Charge Mechanism* 47–48 (Prague: Ministry of Finance of the Czech Republic, Dec. 2015), Fabrizio Borselli, *Pragmatic Policies to Tackle VAT Fraud in the European Union*, Int'l VAT Monitor 341 (Sept./Oct. 2008) and Robert F. van Brederode & Sebastian Pfeiffer, *Combating Carousel Fraud: The General Reverse Charge VAT*, Int'l VAT Monitor 153–54 (May/June 2015) as regards the general reverse charge mechanism.

⁶ M Madeleine Merckx, Naomie Verbaan & Rianne Starkenburg, *VAT and International Trade's Crossroads: Right, Left or Straight On*, 28 (5) EC Tax Rev. 233–244.

⁷ OECD, *Mechanisms for the Effective Collection of VAT/GST When the Supplier Is Not Located in the Jurisdiction of Taxation* 17 & 27 (Paris: OECD Publishing 2017a.).

⁸ OECD, 46–47 (2017a).



technological solutions in sections 3–6. Technical solutions can be implemented to prevent VAT fraud or detect this fraud more easily and/or more quickly. We however stress that when the risk of detection is higher this will also have a preventive effect.⁹ The technical solutions that we will be looking at are: split payment, blockchain technology, real time reporting and Standard Audit File for Tax (SAF-T). All these solutions have or are being considered by some EU Member States or even the European Commission. We stress that other technological solutions are also conceivable.¹⁰ In particular we mention Transaction Network Analysis (TNA) that has been promoted by the Dutch government.¹¹ This is a technological solution that detects fraud by analysing transactions. However currently there is not enough information available to duly analyse this instrument. We will conclude the article with a conclusion in section 7.

2 THE ISSUE OF VAT FRAUD

VAT fraud is a big problem in the EU. With an estimated VAT gap of EUR 152 billion a year within the EU, EUR 50 billion is ascribed to VAT fraud.¹² The CJEU describes what VAT fraud is in a number of cases.¹³ Technically VAT fraud is no more than the non-payment of VAT where it should have been paid. Important is that this is done with intent

(in other words in case VAT is not paid by accident or because the taxable person does not have sufficient funds we won't speak of VAT fraud). The most persistent VAT fraud is carousel fraud. VAT carousel fraud, also known as Missing Trading Intra-Community Fraud or simply MTIC fraud, in its simplest form requires three parties (A, B and C) and most likely high value goods with a compact volume or services. To conceal the VAT fraud from the tax authorities often more parties are used in the fraud supply chain, including innocent businesses. However, irrespective of the length or complexity of the supply chain the principle of the fraud is always the same.

In our example party A is established in Germany. It supplies goods to B established in Greece. The goods are transported from Germany to Greece in relation to this supply. The supply therefore qualifies as an intra-Community supply and is exempt from VAT. B is required to report an intra-Community acquisition in Greece. It can deduct this VAT in the same VAT return. B subsequently sells the goods to party C established in Greece. This is a local supply. Party B will charge Greek VAT to party C. C will pay this VAT to B. Normally B pays this VAT to the tax authorities and C deducts this VAT in its local VAT return. In case of VAT fraud, however, B does not report the intra-Community supply and supply to C, but instead disappears with the VAT that party C paid to him. To make it a carousel fraud party C must supply the goods to party A so the fraud can start again with the same goods.

The fraud is lucrative because of the exemption applying in the A-B transaction followed by a local supply that is subject to the general VAT rate.

3 SPLIT PAYMENT MECHANISM

The split payment mechanism is a VAT collecting system that divides the payment for a supply of goods or services into an amount excluding VAT (i.e. the net amount or taxable base) and the VAT amount due. There are

⁹ OECD, *The Changing Tax Compliance Environment and the Role of Audit*, 245 (2017).

¹⁰ See e.g. Marta Papis-Almansa, *The Polish Clearing House System a 'Stirring Example of the Use of New Technologies in Ensuring VAT Compliance in Poland and Selected Legal Challenges*, 28 (1) EC Tax Rev. 43–56 (2019)–1.

¹¹ Letter of the State Secretary of Finance of 10 Nov. 2017, BZDOC-1015490419-119, Fiche 5: Mededeling, richtlijn en verordening betreffende een definitief BTW-systeem, 2, 5 and 7.

¹² See Press release 28 Sept. 2017, http://europa.eu/rapid/press-release_IP-17-3441_en.htm, and the full report Study and Reports on the VAT Gap in the EU-28 Member States:2017 Final Report, TAXUD/2015/CC/131.

¹³ For example in CJEU 7 Dec. 2010, C-285/09 (R.), ECLI:EU:C:2010:742, para. 49.

several versions of the split payment mechanism. One of them, for example, is a model in which the purchaser pays the net amount to the supplier's business bank account and the VAT amount to a blocked bank account, which is used specifically for VAT purposes by the supplier. This bank account can only be used for paying VAT to either another taxable person's blocked VAT bank account or to the tax authorities.¹⁴ The customer can make the two payments mentioned above. However, it is also possible that the customer makes a single payment, which subsequently will be split by the bank into the taxable base paid to the supplier and the VAT amount paid directly to the tax authorities.

Different types of split payment mechanisms are already in place in a number of third countries and in some Member States. For example, Italy has introduced a split payment system as of 1 January 2015 for payments to public authorities.¹⁵ In 2017 Italy obtained approval of the Council of the European Union to derogate from articles 206 and 226 of the VAT Directive to expand the scope of the split payment mechanism to companies controlled by central and local public authorities and to companies listed to the stock exchange.¹⁶ The Polish parliament approved a proposal to introduce a voluntary split payment system for B2B transactions in October 2017. Under this system the customer will have to include specific references in the payment instructions given to its bank. Subsequently, the bank will split the payment and only transfer the net amount to the supplier's general bank account. The VAT amount will be transferred to a special blocked VAT account in the name of the supplier. It may only be used for VAT settlements with the tax authorities or to pay the VAT on acquisition invoices to the VAT account of a supplier.¹⁷ The Romanian government approved on 30 August 2017 the proposal for introducing a VAT split payment mechanism. The new mechanism is mandatory as from 1 January 2018 and also based on blocked VAT accounts.¹⁸ In addition, the system is applicable to taxable persons and public institutions which have tax debts above given thresholds or which are subject to insolvency proceedings. End of November 2017, Romania filed a request for derogation for the implementation of this VAT split payment mechanism. However, Romania started applying the split payment mechanism on 1 January 2018 without awaiting the Commission

reply to its request. On 8 November 2018, the European Commission replied to the request. It takes the view that certain elements of the Romanian split payment model raise serious concerns regarding their proportionality. It also states that the split payment system puts an unjustifiable and disproportionate burden on the customer. As a result, the Commission objects to the request made by Romania.¹⁹

The European Commission has analysed the feasibility of the split payment mechanism in 2010²⁰ and 2017.²¹ The 2010 study concluded that the split payment system is an effective way to ensure the payment of VAT to the Member State, as missing trader fraud would become impossible.²² However, this study was limited in scope. The 2017 study analysed a wide range of technical split payment models and options. Results of the cost-benefit analysis show that all options are expected to reduce the VAT gap to some extent ranging from 27% to 56% reduction under the current regime. In addition, it was found that the split payment mechanism would also considerably reduce non-compliance due to new reporting requirements and increased transparency. At the same time, the study shows that implementations of the split payment mechanisms significantly increase the administrative costs of businesses and public bodies. The study found no strong evidence that the benefits of split payment would outweigh its costs. The main identified effects were that a wider scope of split payment would potentially provide a larger decrease of the VAT gap and hence have a positive impact on the Member States' budgets, but would also significantly increase the related administrative costs for businesses, especially when applied on broad scale. However, the analysis was highly dependent on the specific design of the policy options as well as on the assumptions that had to be made in order to carry out the quantitative analysis. Therefore, a different design of the mechanism for split payment may come to considerably different results.²³

As mentioned above, the split payment mechanism is an effective means to combat missing trader fraud as suppliers cannot disappear without paying VAT to the tax authorities. However, fraud is still possible with cash transactions or transactions in cryptocurrencies, such as

¹⁴ See also European Commission, *Analysis of the Impact of the Split Payment Mechanism as an Alternative VAT Collection Method*, Final Report, 20 (Dec. 2017).

¹⁵ Law 190 (Stability Law) (23 Dec. 2014); European Commission 29–30 (2017).

¹⁶ See Council Implementing Decision (EU) 2017/784 of 25 Apr. 2017 (OJ L 118, at 17–19 (6 May 2017)).

¹⁷ Legislative proposal of 12 May 2017 to amend the VAT Law, Later Finance Bill 2018; R. Prätzler, *Split Payment in VAT Systems – Is This the Future?*, Intl. VAT Monitor 2 (2018).

¹⁸ Ordinance no 23 of 30 Aug. 2017, published in the Official Journal of Romania (no 706); European Commission 42 (2017).

¹⁹ European Commission, Communication from the Commission to the Council in accordance with Art. 395 of Council Directive 2006/112/EC, Brussels, 8 Nov. 2018, COM(2018) 666 final.

²⁰ PricewaterhouseCoopers, Study on the feasibility of alternative methods for improving and simplifying the collection of VAT through the means of modern technologies and/or financial intermediaries, 2010.

²¹ European Commission, Analysis of the impact of the split payment mechanism as an alternative VAT collection method, Final Report, Dec. 2017.

²² PricewaterhouseCoopers, Study on the feasibility of alternative methods for improving and simplifying the collection of VAT through the means of modern technologies and/or financial intermediaries, 2010.

²³ European Commission, Analysis of the impact of the split payment mechanism as an alternative VAT collection method, Final Report, Dec. 2017.

bitcoin. If thresholds are put in place or if only transactions to certain customers are in scope of the split payment mechanism fraudsters will most likely reroute their transactions through customers not within the scope of the split payment mechanism. To be entirely effective in preventing VAT fraud the mechanism in the authors' view should cover all B2B transactions, maybe even transactions to consumers. Banks should make the split to avoid any heavy administrative obligations on smaller businesses or even consumers. Thresholds or application of split payment on certain transactions may also affect the neutrality of the system. A split payment mechanism will increase administrative costs as often a special VAT bank account must be opened. Furthermore, the obligation to make payments to two accounts may increase the administrative burden of businesses. Facilitation of the process by banks decreases the burden for businesses but increases it for the banks.²⁴ When the VAT is directly paid to the tax authorities, the split payment mechanism has a negative impact on the supplier's cash flow position as the input VAT can no longer be directly offset against the output VAT. The use of special VAT bank accounts for both output VAT and input VAT (like the model in Poland) can solve this problem.²⁵ This will facilitate cash flow neutrality for both businesses and tax authorities. A split payment mechanism is also much easier to audit as the VAT flows are transparent.

4 BLOCKCHAIN TECHNOLOGY

Blockchain is suitable as a means to record transactions and other data. It is best known as the technology behind the popular cryptocurrency bitcoin, but the application of blockchain is much wider. Blockchain technology can be used in smart contracts. Smart contracts are no real contracts. It is merely a recording of agreements made in a contract by the parties involved on the blockchain. Once the event mentioned in the contract occurs the smart contract will automatically implement the related effect. For example, a seller of e-books can settle with his buyers that if the download is completed and received, the agreed payment for the e-book takes place automatically. Neither of the parties in the contract will thus run the risk of non-performance by the other party. The payment of VAT can automatically take place via smart contracts too. This offers possibilities for preventing VAT fraud. When the tax authorities are part of such a smart contract, VAT can be transferred automatically to the tax authorities instead of being received and paid by the supplier.²⁶ Such a

system is in fact a combination of split payment and blockchain technology.

Other solutions using blockchain technology can also be considered. Ainsworth and Shact²⁷ propose to use a system called Digital Invoice Customs Exchange (hereinafter: DICE) (see also section 7.4).²⁸ Within this system, in case of cross-border transactions, the buyer, seller and the tax authorities of both countries concerned are aware of the transaction before a formal VAT invoice is issued. There is time for a risk analysis.²⁹ With the help of artificial intelligence, transactions with a high risk can be spotted. Suspicious transactions can be delayed or blocked by the tax authorities. In Ainsworth and Shact's proposal, DICE technology is combined with a blockchain solution in which all EU countries participate. Ainsworth and Shact admit that with their proposal VAT fraud cannot be resolved completely, but it can be reduced.³⁰ In a later publication, Ainsworth, Alwohaibi and Cheetham claim that a combination of the system outlined above with a VAT coins system can prevent VAT fraud altogether.³¹ VATcoin is a digital currency like bitcoin. Only the government can convert VATcoins into real money. In the VATcoin's system entrepreneurs do no longer own the VAT as real money. All VATcoins are held in the 'cloud'. According to the authors VATcoins are not sensitive to cyberattacks. If VATcoins are stolen, they are immediately worthless. VATcoins may only be exchanged by the government. A sale or purchase of VATcoins is therefore illegal. In addition, a payment with stolen VATcoins will be refused by the blockchain. It will be immediately clear from where the stolen VATcoins originate. The underlying transaction will be refused, the stolen VATcoins will be cancelled and an audit will be activated.³²

In our opinion blockchain technology is promising in addressing VAT fraud. It can both be used to prevent

²⁴ See also Prätzler, *supra* n. 17.

²⁵ *Ibid.*

²⁶ See also Tommie van der Bosch, Dolf Diederichsen & Christoper Demetrius, *Blockchain in Global Finance and Tax*, 20(1) *Derivatives & Financial Instruments* (2018), para. 3.3. Compare: Deloitte, *Blockchain Technology and Its Potential in Taxes* 13 (Dec. 2017). As such the system is comparable to Real Time VAT or RTvat described by some authors: Lubka Tzenova, *The Myth of the*

Neutrality of VAT, Int'l VAT Monitor 271–78 (Sept./Oct. 2014), Richard T. Ainsworth, *Technology Can Solve MTIC Fraud – VLN, RTvat, D-VAT Certification*, Int'l VAT Monitor 153–60 (May/June 2011), Charles Jennings, *The EU VAT System – Time for a New Approach?*, Int'l VAT Monitor 257–59 (July/Aug. 2010) and Christian Amand & Kris Boucquez, *A New Defence for Victims of EU Missing-Trader Fraud?*, Int'l VAT Monitor 239 (July/Aug. 2011).
²⁷ Richard T. Ainsworth & Andrew Shact, *Blockchain (Distributed Ledger Technology) Solves VAT Fraud*, Boston University School of Law, Law & Economics Working Paper No 16–41.

²⁸ An extensive description of DICE can be found in Ainsworth & Alwohaibi, *supra* n. 27, Working Paper No. 17–05.

²⁹ See also Danil Getmantsev, *Electronic VAT Administration System in Ukraine: Comparative Analysis With the European Union*, Int'l VAT Monitor (2018), no. 5.

³⁰ For example, a first link of VAT fraud cannot be detected if the prices are normal and the trading volumes are not exceptionally large, but it is possible to prevent further fraud in that specific chain.

³¹ Richard T. Ainsworth, Musaad Alwohaibi & Mike Cheetham, *VAT Coin: The GCC's Cryptocurrency*, Boston Univ. School of L., Law & Economics Paper No. 17–04.

³² More on VAT and blockchain in: Madeleine Merckx, *VAT and Blockchain: Challenges and Opportunities Ahead*, 2 *EC Tax Rev.* 83–89 (2019).

VAT fraud or to detect VAT fraud. However there are issues to consider. First of all using blockchain technology requires an investment from EU Member States. Split payment through the use of smart contracts seems the simplest option to apply. However still many legal questions arise as regards smart contracts, such as: who sets up these smart contracts, who checks them, are the smart contracts publicly available and how are they secured? Such issues need to be solved before we can use smart contracts. The split payment and blockchain technology combination also has an impact on cash flows. However different than the split payment mechanism on a stand-alone basis, the smart contract can pay and refund the VAT automatically and – depending on the necessary checks – (almost) real time. The combination of DICE and blockchain technology has clear benefits but it will require a bigger investment and involves more legal questions, such as legal protection of taxpayers in case ‘the system’ considers the transaction a suspicious transaction, while it is in fact not.³³ VATcoin too can contribute to the prevention and detection of VAT fraud, but again requires a bigger investment and more legal issues arise as regards the exchange of money for VAT coins and vice versa. Businesses might be willing to invest in blockchain technology together with the EU Member States when the solution prevents them from unintentionally getting involved in a fraudulent supply chain or from otherwise being affected negatively by VAT fraud (e.g. because fraudsters use lower prices than market prices). Especially when the blockchain solution matches other business needs, such as supply chain management needs or trade checks, businesses may be willing to support the technological solution financially.

5 REAL TIME REPORTING

When talking about real time reporting within the EU the Spanish Immediate Information System or IIS directly comes to mind. Under the system certain businesses are required to provide information to the tax authorities almost real time using VAT books where invoices are registered. The deadline for submitting invoices issued by the business is four calendar days from the issue date (eight calendar days in case the invoice is issued by the recipient or a third party). For purchase invoices the deadline is four calendar days from the date of the accounting entry. Next to IIS taxable persons still need to file monthly self-assessment returns and pay the VAT based on the return filed.

Italy has a mandatory e-invoicing system called Sistema di Interscambio (SdI). This system requires taxable persons to file electronic invoices in an XML-format with the tax

authorities for an automatic approval before the invoice is being sent to the customer. The obligation applies to supplies of goods and services between parties resident, established or VAT registered in Italy, regardless of whether the customer is another taxable person or a final consumer.³⁴ In order to implement these new rules Italy has obtained derogations to deviate from the VAT Directive.³⁵ From the request it becomes clear that the objective of these new rules is to acquire invoices in real time to do timely and automatic checks of the consistency between VAT declared and paid. This measure should bring effective results in the fight against tax fraud due to the greater comprehensiveness, timeliness and traceability of the information. However tax authorities must have enough human and technical resources to duly analyse this information. Italy submits that before the SdI system it takes around eighteen months for the tax authorities to become aware of the existence of a missing trader. The SdI would allow this interval to be reduced to up to three months according to Italy.³⁶ The derogation provided to Italy applies until 31 December 2021. This allows for an assessment of whether the special measure is appropriate and effective in light of its objectives. From the proposal it becomes clear that an assessment report should include an evaluation of the measure on taxable persons and in particular the increase of their administrative burdens and compliance costs. Qualifying taxable persons will also have to submit data on cross-border transactions they have supplied or received from persons established abroad. The data that needs to be reported includes: data on the parties involved in the transaction, the date and number of the related document, the taxable amount, the applied VAT rate and VAT amount or the nature of the transaction when VAT is not due. The communication of this data is optional in case of supplies for which a customs bill or qualifying electronic invoices have been issued.³⁷

The SdI is comparable to the DICE system as described by Ainsworth and Todorov. Of particular interest is their proposal to apply DICE for international transactions. Their proposal includes a DICE system that is used by both origin and destination country and consists of eight steps:

1. The seller generates a file in XML format and digitally signs it. The file is transmitted to the tax authorities in the origin country.

³⁴ Simonette La Grutta, *Italy – Budget Law for 2018 – Value Added Tax* (12 Jan. 2018) IBFD Database and Simonette La Grutta, *Italy – Law Decree on Urgent Tax Measures – Further Details of VAT Measures* (31 Jan. 2019), IBFD Database.

³⁵ Council Implementing Decision (EU) 2018/593 of 16 Apr. 2018 authorizing the Italian Republic to introduce a special measure derogating from Arts 218 and 232 of Directive 2006/112/EC on the common system of value added tax, OJ 2018, L 99, 14–15.

³⁶ Proposal for a Council Implementing Decisions authorizing the Italian Republic to introduce a special measure derogating from Arts 218 and 232 of Directive 2006/112/EC on the common system of value added tax, Brussels 5 Feb. 2018, COM (2018) 55 final, p. 1 and 3.

³⁷ Simonette La Grutta, *Italy – Electronic Invoicing – Implementing Rules Issued* (30 May 2018), IBFD Database.

³³ Compare: M. B. A. van Hout, *Rechtsbescherming in het tijdperk van big data* (Legal protection in the era of big data), WFR 2017/165.

2. A check is done on the XML-file for accuracy and completeness.

3. If the file is in order the tax administration of the origin country will send an access key to the seller and simultaneously notifies the destination country by sending it a copy of the XML file and the access key.

4. The seller will produce a pro-forma invoice that includes relevant access codes

5. The seller transmits the pro-forma invoice to the buyer.

6. The buyer creates an XML file reproducing all necessary contract information and digitally signs the file. He transmits the file to the tax administration of the destination country.

7. The tax administration of the destination country will match the buyer's XML file with the seller's XML file. If the data is correct the tax administration of the destination country will issue a second access key to the buyer. The buyer transmits the XML file and the second access key to the seller.

8. The seller will process an exempt intra-Community supply to the buyer from the origin country.³⁸

IIS is considered a clear increase of the VAT-related compliance burden. On the other hand the taxable person will have access to information on the website of the Spanish tax authorities and information from third parties. They are therefore able to check this information prior to filing their monthly VAT returns. There is also a reduction in the requests for information by the Spanish tax authorities.³⁹ The SdI has not been in place long enough to say something about the increase of administrative burden. This concern has however been expressed in the proposal. Another benefit of both systems is in the authors' view that transactions can be matched. With IIS a customer can see whether a supplier has reported a transaction and vice versa. If a mismatched is detected, however, the transaction has already taken place and invoices have been issued. This is different for SdI and DICE, where transactions have to be approved before taking place. Tax authorities can do automated checks within both systems.⁴⁰ Within both systems fraudsters can still report the transactions in the system, but fail to file their VAT returns and disappear. Tax authorities will however more quickly track the fraudsters and have more information on the transactions on which they have not paid VAT. On the other hand fraudsters have a smaller time frame to commit the VAT fraud and therefore it will be less lucrative. What's more there is scientific evidence that if people know they are being watched they are less likely to commit fraud. Fraud may thus shift to other jurisdictions

that have not implemented real time reporting.⁴¹ Cash flow is not affected by IIS.

6 SAF-T

SAF-T stands for Standard Audit File for Tax and is developed by the OECD in relation to the consequences of globalization where businesses are confronted with a variety of accounting requirements around the world and tax administrations have an increased need for co-operation through exchange of information and, where necessary, joint audits.⁴² SAF-T's objective is to minimize compliance costs for businesses and administration costs for revenue authorities.⁴³ It provides for tax reporting and filing standards and ensures tax audit processes can be carried out with greater reliability.⁴⁴ SAF-T is an accounting file with data exported from the original accounting system relating to a specific time period. It is easily readable because of the standardization of its layout and format. It also provides for computer-assisted audit.⁴⁵ It will help auditors in testing electronic accounting data for the purposes of identifying risks and quantifying possible errors. This allows auditors to target their resources more effectively at those errors with a material impact. Depending on the way SAF-T is designed it may also allow more detailed analysis of business transactions, because it allows for testing transactions down to line level.⁴⁶ Because more detailed information must be provided it may lead to an improvement of compliance.⁴⁷ It is designed to be used by multinational enterprises as well as small and medium enterprises. Using SAF-T does not fully discharge the taxpayer from providing information to the tax authorities. Information not normally found in accounting system may be necessary to determine the tax liability for VAT. SAF-T can also be used by other parties such as private accountants.⁴⁸ Management of the business can also get access to reliable information and use this in its decision making process.⁴⁹ The idea behind SAF-T is that all OECD Member States use the same format which will minimize administrative burdens for businesses. Any deviations from the SAF-T concept of the OECD will place a corresponding burden on businesses and international software developers.⁵⁰

³⁸ Richard T. Ainsworth & Goran Todorov, *DICE – Digital Invoice Customs Exchange*, Boston University School of Law Working Paper No. 13–40 (22 Aug. 2013).

³⁹ Luis Maria Romero Flor, *The New Spanish Immediate Information Supply System*, *Int'l VAT Monitor* 220–24 (Nov./Dec. 2018).

⁴⁰ See also Isabelle Desmeyere, *EU Standard VAT Return – A Real Tool or Just 'Nice To Have'?*, *Int'l VAT Monitor* (Nov./Dec. 2014).

⁴¹ OECD, *The Changing Tax Compliance Environment and the Role of Audit* 245 (2017).

⁴² OECD (2005), *Guidance on Tax Compliance for Business and Accounting Software* 6 (May 2005) and OECD (2010) *Guidance for the Standard Audit File – Tax Version 2.0* 7 (Apr. 2010).

⁴³ OECD 3 (2005).

⁴⁴ *Ibid.*, at 4.

⁴⁵ *Ibid.*, at 26.

⁴⁶ *Ibid.*, at 7 & 8.

⁴⁷ Katarzyna Bronzewska, *Introduction of the Standard Audit File for Tax (SAF-T)* *Eur. Tax'n* 569 (Dec. 2016).

⁴⁸ OECD 26 & 27 (2005).

⁴⁹ Alicja Majdanska & Karol Dziwinski, *The Potential of a Standard Audit File – Tax in the European Union: A Chance for Coordinated VAT Administration?*, *Bull. for Int'l Tax'n* 585 (Oct. 2018).

⁵⁰ OECD 12 & 14 (2010).

SAF-T has been designed to capture the following data:

- (1) General ledger
 - (a) Journals
- (2) Accounts receivable
 - (a) Customer Master Files
 - (b) Invoices
 - (c) Payments
- (3) Accounts payable
 - (a) Supplier Master Files
 - (b) Invoices
 - (c) Payments
- (4) Fixed Assets
 - (a) Asset Master Files
 - (b) Depreciation & Revaluation
- (5) Inventory
 - (a) Product Master Files
 - (b) Movements⁵¹

Some EU Member States have implemented SAF-T. However, because the approach lacks harmonization multinational enterprises are faced with different local requirements.⁵² As mentioned before this reduces the added value of SAF-T for businesses. But this applies to tax authorities too. In case data has a different format or scope it cannot be easily matched with data from other jurisdictions.⁵³ From experience it becomes clear that many companies have serious implementation costs such as the purchase and installation of new reporting solutions or reviews of the systems and the quality of data.⁵⁴ On the other hand, Poland is the first EU country that announced to abolish VAT returns because of its mandatory SAF-T for all types of businesses. SAF-T will also enhance voluntary compliance, because the tax authorities have more information on the taxpayer. There is evidence that if taxpayers believe they are observed or if information is known they are more likely to comply.⁵⁵ SAF-T has no impact on cash flows.

The authors are however of the opinion that SAF-T will contribute to the solution in addressing VAT fraud if the information can be accessed (nearly) real-time and if EU Member States operate together.⁵⁶ A harmonized EU approach will contribute to a reduction of administrative

burden for businesses and tax authorities. SAF-T originally intended to do so. However as EU Member States failed to reach agreement on the standard VAT return and EU Member States have already implemented SAF-T using their own standards the authors fear that a fully common approach is not likely.

7 CONCLUSION

It is difficult to compare technological solutions that prevent VAT fraud to solutions that contribute to the detection of VAT fraud. In general prevention is of course better than curing. Where SAF-T and IIS and SdI may (in the long run) contribute to the reduction of compliance and administrative costs, blockchain and split payment require a continuous investment by either businesses banks or tax administration. Split payment as such is a VAT only solution and therefore should not be preferred in the authors' opinion. Blockchain solutions may match other business needs and businesses may be more willing to invest. Most importantly a harmonized EU approach is necessary to prevent high compliance and administrative costs and blocking systems implemented to communicate to each other.

A change of the current VAT system for intra EU trade will have up and downsides compared to the current system. The same is true for the general reverse charge mechanism. Some of the technological solutions look promising, but require initial investments and have recurring costs. These investments should in the authors' view be made by businesses and governments together. In particular the EU should perform research on the options of blockchain technology and focus on a harmonized SAF-T implementation. If information within SAF-T can be accessed real time there seems no need to require real time reporting of invoices or VAT books and VAT returns can be abolished. According to the author's these technological developments should be given a chance before the new system is adopted. The effect of Transaction Network Analysis should also be considered first. Only if these mechanisms fail a new system should be considered.

⁵¹ *Ibid.*, at 10.

⁵² Bronzewska, *supra* n. 47, 569 & 572. See Majdanska & Dziwinski, *supra* n. 49, at 582–92 describe the state of play as regards SAF-T in six EU Member States.

⁵³ Majdanska & Dziwinski, *supra* n. 49, at 591. Compare: Amand & Boucquez, *supra* n. 26, at 239.

⁵⁴ Bronzewska, *supra* n. 47, at 572.

⁵⁵ OECD, *The Changing Tax Compliance Environment and the Role of Audit*, 245 (2017). See also Majdanska & Dziwinski, *supra* n. 49, at 585.

⁵⁶ See also Majdanska & Dziwinski, *supra* n. 49, at 585.