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Real-time collection of the Value-added tax: Some business and legal implications *

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Abstract

Recent estimates of the level of VAT fraud in the EU are commensurate with the EU budget. With the Green paper on the future of VAT, the European Commission stressed the urgency and necessity of comprehensive VAT reforms. This paper analyses the business and legal implications of the recently proposed split-payment mechanism, which, if implemented, would move VAT's method of collection to real-time. The discussion is positioned in the context of two increasingly visible trends in the EU – the general shift towards greater reliance on indirect taxation and the growing popularity of electronic payment instruments. The potential implementation of VAT withholding would be a radical reform, given its shift of the taxation system from voluntary to forced compliance. We argue that, on the one hand, real-time VAT collection would constitute a potent preventive measure against VAT fraud, which could generate synergetic effects within SEPA, and further deepen integration through the harmonisation of VAT policies. On the other hand, real-time audit/refund would require tax authorities' access to confidential business information that may be incompatible with EU privacy rules. The trade-off between efficient tax collection and privacy concerns mirrors the general debate on data protection in a cashless economy.

Keywords: Value added tax, Fraud, Real-time collection, Tax design, European Union
JEL Classification: H25; H26; K34; K42

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1 Introduction

The consequences of value-added tax (VAT) fraud within the European Union (EU) have assumed gargantuan proportions, not only in terms of syphoned off liability, but also with the crippling compliance burden imposed on honest businesses. The general sense of practitioners is that "...tax authorities in the European Union are increasingly losing control of the VAT system and that honest businesses pay the price for it..." (Zubeldia, 2011). An economic evaluation ordered by the European Commission (EC) estimates that compliance costs for businesses range between 2% and 8% of collected VAT (European Commission, 2011a).

Unlike personal income tax (PIT) and corporate income tax (CIT) evasion, whose effects, if socially unacceptable are normally limited to the fraudster and his relationship with the fiscal authorities, VAT fraud is very different. VAT fraud rolls through the supply chain increasing compliance cost and exposing innocent businesses to crippling penalties. With estimates varying from 1% in Luxembourg to 30% in Greece, the VAT gap is only one measure of VAT fraud. Another, and equally important measure, is the uncertainty it injects into the business environment. For example, a 2006 decision by the European Court of Justice in relation to missing-trader fraud (MT) states that if the tax administration can prove that traders "knew or should have known" that they engage in purchase transactions connected with VAT evasion, the traders do not have the right to deduct the tax on these purchases (Terra and Kajus, 2011).[1]

While it is important that courts unequivocally signal that neither fraud, nor inaction given awareness of fraud will be tolerated, the possibility that an honest business may become liable for VAT stolen by others in the VAT chain is not a normal business risk (Amand and Boucquez, 2011). In effect, the theft of VAT by fraudulent firm A transforms into a tax on production for bona fide firm B. Thus, in addition to distorting competition, VAT fraud leads to heavy compliance costs for honest traders, who, inter alia, are compelled to research their suppliers, cover possible litigation costs, and even face bankruptcy as a result of fraudulent actions committed by others.

Final consumers, who effectively bear the incidence of VAT, are not insulated from the effects of fraud either. VAT scams exacerbate already strained public finances and may lead to jumps in VAT rates to compensate for lost revenue, which the Reckon Report estimated at €106.7 billion in 2006 (Reckon LLP, 2009). To put this number into perspective, the EU budget in 2006 was €106.6 billion.

The fact that VAT is collected by firms, and thus inevitably passes through private bank accounts, makes the tax especially susceptible to fraud. Various proposals for reform targeting the source of the fraud incentive were put forth as early as 2000. Bulgaria, for example, experimented with VAT accounts in 2003, effectively eliminating traders' access to the tax (Pashev, 2007). The viability of real-time VAT collection was also discussed in the UK, where the problem of carousel fraud is severe (House of Lords, 2007).

[1] The specific ECJ decision concerns the joined cases C-354/03 (*Optigen*), C-355/03 (*Fulcrum*) and C-484/03 (*Bond House*), as well as joined cases C-439/04 (*Axel Kittel*), and C-440/04 (*Recolta Recycling*). According to the Court of Justice decision, the EU law cannot be relied upon for fraudulent ends, which also includes the case where a trader is aware of VAT fraud, but stands aloof without gaining any advantage (Terra and Kajus, 2011).

The debate intensified recently with PriceWaterhouseCoopers' (PWC) report on the usefulness of technology and financial intermediaries regarding VAT's method of collection. In 2010, the EC launched a public debate on the problematic aspects of VAT's current design via the Green paper on the future of VAT, with VAT collection being one of the most contentious points (European Commission, 2010). In particular, PWC examined a split-payment mechanism, which would break up the value of each transaction into a taxable amount and a VAT amount in real-time, transferring the tax to a blocked VAT account. The idea of a blocked VAT account was first developed by the Ifo Institute in 2003, and was called a "VAT trust account"(Sinn et al., 2004).

According to the EC's follow-up on the public debate, the reaction of businesses and tax specialists to VAT withholding was predominantly negative, with concerns about its effects on cash flow and compliance costs. Nevertheless, the Commission's intention is to "...further analyse the feasibility of the split payment and its design in order to allay the concerns expressed." (European Commission, 2011a).

This paper analyses the split payment mechanism in the context of two specific proposals for VAT reform: PWC's proposition for the introduction of blocked VAT accounts and Chris William's real-time VAT (RTvat). In particular, we examine compliance and cash flow effects of VAT withholding as well as the implications of the likely expansion of firm data reporting under real-time audit. The discussion is further positioned at the background of two increasingly visible trends, namely the greater reliance on indirect taxation in the EU, which makes VAT reform all the more pressing, and the gradual movement to payment digitisation, given the rising popularity of cashless transactions and targeted initiatives such as the Single European Payment Area (SEPA).

The RTvat proposal claims that technology used in the credit card industry and inter-bank payment systems makes VAT withholding a feasible alternative to the current method of collection. While undisputedly such a step would serve as a powerful preventive measure against VAT scams, it raises numerous points of concern. First and foremost, it would eliminate voluntary compliance for the firms it would affect. Second, if VAT is to be refunded in real-time as well, which would necessitate real-time audits, what is the scope of the business information that would have to be shared in real time with the tax authorities to enable an efficient audit function built-in within the split-payment system?

On the one hand, given VAT's increasing importance as a source of revenue and the steadfast move of the economy towards digitisation, a major VAT re-design seems inevitable. On the other hand, a technical solution to VAT fraud would likely entail a greater intrusion into (confidential) business data, as well as the imposition of costly compliance procedures on mostly compliant traders, although one may argue that the current enforcement measures are equally costly. In a sense, the trade-off between maximising tax revenue through efficient use of technology and privacy concerns mirrors the broader debate on data protection in an economy with quickly growing electronic payments.

The paper is structured as follows: Section 2 briefly documents the marked shift towards

indirect taxation and away from direct taxation, especially during the financial crisis of 2008-2010. Pros and cons of blocked accounts and RTvat, and the required steps toward an efficient split-payment system are studied in Section 3, while Section 4 concludes.

2 The shift from direct to indirect taxation

There is a gradual shift from direct to indirect taxation in the European Union economies, which became particularly evident in the nature of the fiscal packages implemented during the 2008-2010 economic downturn. It is worth noting that a major decline in the corporate tax rates is observed long before the start of the recession. In the Green paper on the future of VAT, European Commission (2010) observes that consumption is "... a broader and more stable [tax] base than income and profits," and that "the financing of the welfare state may have to rely less on labor taxes and tax revenues from capital income (savings), thereby further arguing in favour of a shift to indirect taxation." Similarly, a meeting of the OECD Ministers in 2009 singled out the shift of revenue from corporate and personal income taxation, or social security contributions onto consumption and property taxes as an important growth-oriented tax reform (OECD, 2009).

In general, receipts from VAT can be used to reduce other more distortionary taxes, such as PIT, and especially CIT. Given that, besides other distortions, CIT favours debt over equity financing, consumption over saving, labor over capital, while PIT may discourage saving and work effort, lower reliance on direct taxation would be economically advantageous (Department of the Treasury, 1984).[2] It is precisely this type of policy that was pursued by the majority of EU countries during the financial crisis.

Table 1 shows the tax rates and VAT revenue as a percent of GDP and total taxation in 2000 and 2009. The Member States exhibit a varying degree of reliance on VAT. In 2009, for example, proceeds ranged from 4.1% of GDP in Spain to more than 10% in Denmark. VAT revenue accounted for 13.2% of total taxation in Italy and reached 31.2% in Bulgaria.

From 2000 to 2008 inclusive, seven countries raised the standard VAT rate. Cuts occurred in the Czech Republic, Slovakia, and Hungary, although usually accompanied by increases in the reduced rates. Latvia, Romania, and Bulgaria, which initially had a single VAT rate, introduced reduced ones. Overall, this period was not characterized by a clear-cut VAT dynamics, apart from sporadic country-specific reforms.

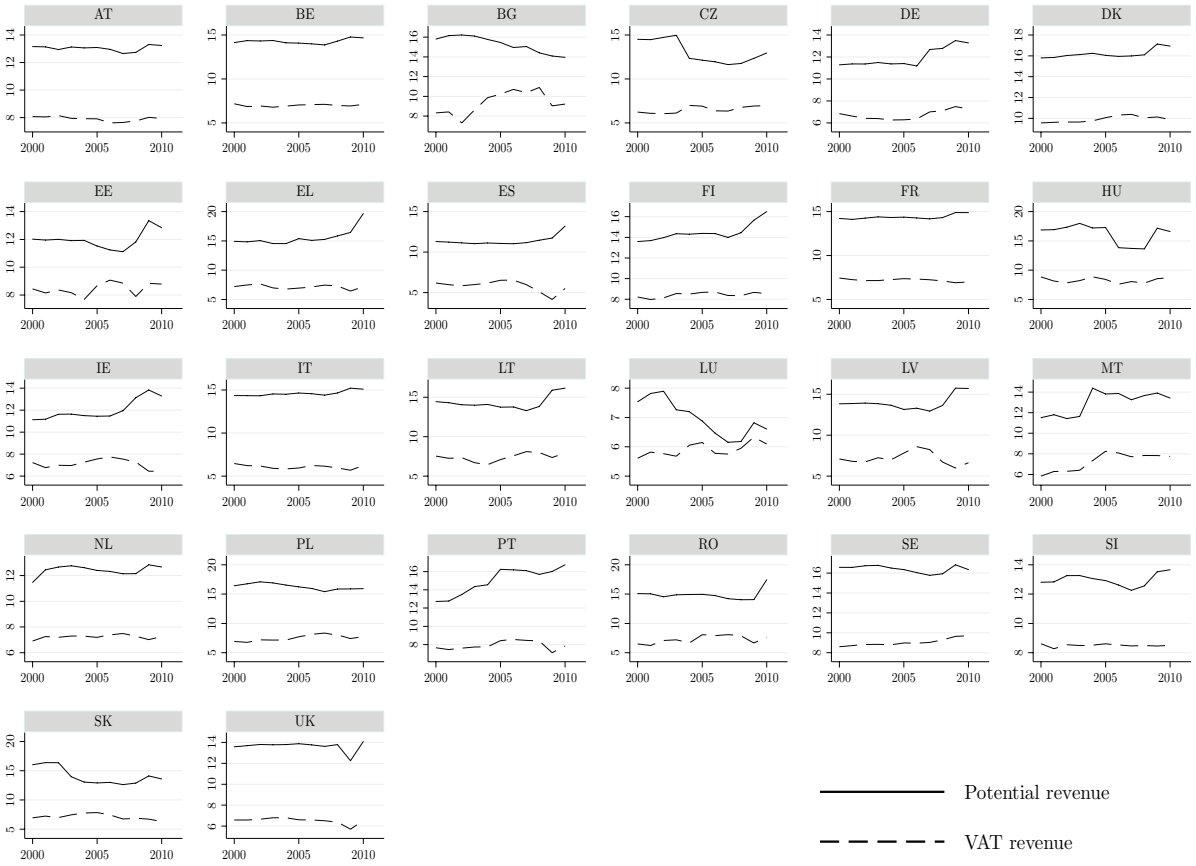
After 2008, however, VAT has consistently been utilized as a flexible fiscal policy tool, primarily with the goal of financing cuts in direct taxes and ensuring the stability of public finances during the crisis. In particular, the standard rate was raised by 2.12 pp on average in fourteen Member States in the space of four years, whereas the average growth in reduced rates was 2.2 pp in seven countries.[3] At the same time, a large number of base narrowing measures were

[2]Some proposals even suggest replacing the income tax altogether. In the late 1990s, Professor Michael J. Graetz suggested a progressive broad-based VAT for all U.S. households. People earning more than a stipulated threshold would be subject to an income tax on the income exceeding the threshold in addition to paying VAT (Schenk and Oldman, 2007).

[3]The upward trend in VAT was not uninterrupted for all countries. For example, the UK lowered its standard

introduced, mostly for equity reasons, but the positive budgetary impact of the rate increases far outweighed the effects of the base narrowing (Ferrario, 2011). Compared to their 2009 level, standard rates in the UK, Romania, and Greece are 5 pp higher in 2012, which is not a painless jump in consumer prices. Hungary has the highest VAT in the EU as of 2012, 27%, which is 2 pp greater than the rates in traditionally high-tax Denmark and Sweden. The policy of rising VAT rates in conjunction with base narrowing contradicts OECD's general recommendation on enhancing the efficiency of VAT through base expansion at a single rate, and minimal exemptions and reduced rates as prerequisites for economic growth and revenue maximisation (OECD, 2010).

Figure 1: POTENTIAL VS. ACTUAL COLLECTED VAT REVENUE, % GDP



Note: Potential revenue equals (Final consumption - VAT revenue)*Standard VAT rate.

Figure 1 compares actual VAT receipts to revenue from a potential tax base with full compliance, a single VAT rate, no exemptions, and no zero rating. The country, whose actual tax base is closest to its potential one is Luxembourg. The jumps in the standard VAT rates after 2007 are clearly reflected in the upward trend of potential revenue collections for almost all countries.

rate to 15% in 2009, and increased it to 20% in 2011. A reduction (0.5 pp) followed by an increase (2pp) happened also in Ireland.

Table 1: VAT: TRENDS IN RATES AND REVENUE

		Value added tax rates			% GDP		% Total taxation	
		2000	2009	2012	2000	2009	2000	2009
Sweden	Standard	25	25	25	8.6	9.7	16.7	20.7
	Reduced	6/12	6/12	6/12				
Denmark	Standard	25	25	25	9.6	10.1	19.4	21
	Reduced							
Finland	Standard	22	22	23	8.2	8.8	17.4	20.3
	Reduced	8/17	8/17	9/13				
United Kingdom	Standard	17.5	15	20	6.6	5.8	17.9	16.6
	Reduced	5	5	5				
Netherlands	Standard	17.5	19	19	6.9	7	17.3	18.4
	Reduced	6	6	6				
Luxembourg	Standard	15	15	15	5.6	6.2	14.3	16.7
	Reduced	6/12	6/12	6/12				
Estonia	Standard	18	20	20	8.4	9.1	27.2	25.2
	Reduced	5	9	9				
France	Standard	19.6	19.6	19.6	7.3	6.8	16.6	16.3
	Reduced	5.5	5.5	5.5/7				
Portugal	Standard	17	20	23	7.7	7.1	24.6	23
	Reduced	5/12	5/12	6/13				
Belgium	Standard	21	21	21	7.2	7	15.9	16
	Reduced	6/12	6/12	6/12				
Ireland	Standard	21	21.5	23	7.3	6.4	23.1	22.7
	Reduced	12.5	13.5	9/13.5				
Slovenia	Standard	19	20	20	8.7	8.4	23.1	22.4
	Reduced	8	8.5	8.5				
Austria	Standard	20	20	20	8.1	8.1	18.8	18.9
	Reduced	10	10	10				
Spain	Standard	16	16	18	6.1	4.1	18	13.5
	Reduced	7	7	8				
Latvia	Standard	18	21	22	7	6	23.9	22.5
	Reduced		10	12				
Cyprus	Standard	10	15	15	5.8	9.1	19.3	26
	Reduced	5	5/8	5/8				
Germany	Standard	16	19	19	6.8	7.4	16.2	18.7
	Reduced	7	7	7				
Malta	Standard	15	18	18	6	7.8	21.4	22.9
	Reduced	5	5	5/7				
Lithuania	Standard	18	19	21	7.6	7.4	25.2	25.2
	Reduced	5	5/9	5/9				
Italy	Standard	20	20	21	6.5	5.7	15.6	13.2
	Reduced	10	10	10				
Slovakia	Standard	23	19	20	7	6.7	20.4	23.3
	Reduced	10	10	10				
Poland	Standard	22	22	23	6.9	7.4	21.3	23.4
	Reduced	7	7	5/8				
Hungary	Standard	25	25	27	8.7	8.4	22.3	21.3
	Reduced	12	5/18	5/18				
Czech Republic	Standard	22	19	20	6.5	7.1	19.1	20.7
	Reduced	5	9	14				
Greece	Standard	18	19	23	7.2	6.4	20.8	21.1
	Reduced	8	9	6.5/13				
Romania	Standard	19	19	24	6.5	6.7	21.4	24.8
	Reduced		5/9	5/9				
Bulgaria	Standard	20	20	20	8.3	9	26.4	31.2
	Reduced		7	9				

Source: European Commission (2011c); Taxation and Customs Union (2012). Super-reduced rates, i.e. rates below 5%, are not reported.

Table 2: PIT & CIT: TRENDS IN RATES AND REVENUE

	Top personal tax rates			Revenue %GDP		Corporate tax rates			Revenue %GDP	
	2000	2009	2011	2000	2009	2000	2009	2011	2000	2009
Sweden	51.5	56.4	56.4	18.1	16.4	28	26.3	26.3	3.8	3
Denmark	59.7	59	51.5	25.6	26.5	32	25	25	3.3	2.5
Finland	54	49.1	49.2	14.5	13.4	29	26	26	5.9	2
United Kingdom	40	40	50	10.8	10.4	30	28	27	3.5	2.8
Netherlands	60	52	52	6	8.6	35	25.5	25	4.3	2.1
Luxembourg	47.2	39	42.1	7.2	7.7	37.5	28.6	28.8	7	5.5
Estonia	26	21	21	6.8	5.7	26	21	21	0.9	1.8
France	59	45.8	46.7	8.4	7.5	37.8	34.4	34.4	2.8	1.3
Portugal	40	42	46.5	5.3	5.7	35.2	26.5	29	3.7	2.9
Belgium	60.6	53.7	53.7	13.3	12.2	40.2	34	34	3.2	2.5
Ireland	44	41	41	9.2	7.9	24	12.5	12.5	3.8	2.5
Slovenia	50	41	41	5.6	5.9	25	21	20	1.2	1.8
Austria	50	50	50	10.1	10	34	25	25	2.2	1.9
Spain	48	43	45	6.6	7	35	30	30	3.1	2.3
Latvia	25	23	25	5.6	5.4	25	15	15	1.6	1.6
Cyprus	40	30	30	3.6	3.9	29	10	10	6.2	6.5
Germany	53.8	47.5	47.5	10.2	9.7	51.6	29.8	29.8	1.7	0.7
Malta	35	35	35	5.6	6.3	35	35	35	2.9	6.7
Lithuania	33	15	15	7.7	4.1	24	20	15	0.7	1.8
Italy	45.9	44.9	45.6	11.5	11.7	41.3	31.4	31.4	2.4	2.4
Slovakia	42	19	19	3.4	2.4	29	19	19	2.6	2.5
Poland	40	32	32	4.4	4.6	30	19	19	2.4	2.3
Hungary	44	40	23	7.2	7.3	19.6	21.3	20.6	2.2	2.1
Czech Republic	32	15	15	4.6	3.6	31	20	19	3.5	3.6
Greece	45	40	45	5	5.1	40	25	20	4.1	2.4
Romania	40	16	16	3.5	3.5	25	16	16	3	2.6
Bulgaria	40	10	10	4	2.9	32.5	10	10	2.7	2.5

Source: European Commission (2011c). Currently Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Romania, and Slovakia have a flat tax PIT.

In Greece, Spain, Ireland, Latvia and Portugal rising potential receipts are accompanied by collapsing actual revenues.

In contrast to VAT, the importance of the corporate income tax decreased markedly judging by its share in GDP in 2009 (Table 2). With the exception of Malta and Hungary, CIT rates have fallen substantially in the remaining EU countries, and so has revenue in the older Member States. The countries, which joined the EU in and after 2004, however, display a distinctly different pattern of CIT revenue, namely falling rates yield either stable, or rising CIT proceeds. With the exception of Portugal and Luxembourg, some Member States continued lowering the CIT throughout the 2009-2011 period. Narrowing changes in the tax base and new deductions were also implemented (Ferrario, 2011). Already six Member States collect CIT revenue below 2% of GDP, and in Germany, proceeds were 0.7% in 2009. These figures raise questions about the future of corporate taxation in the EU.

PIT reforms included mainly revisions in the tax scale, widening of the tax brackets, and an increase in new and current allowances, especially for lower-income households, who were most vulnerable to the effects of the crisis. Top rate hikes occurred in several countries with the aim of increasing the progressivity of the tax as shown in Table 2. The table also demonstrates that PIT remained a stable source of revenue until 2009, with some sharp declines mainly in Central and Eastern European (CEE) countries that implemented a flat PIT and enacted major PIT rate cuts. Currently eight CEE and Baltic countries use a flat tax system, five of which have set the flat PIT rate equal to the CIT rate. The effect of the PIT reforms on revenue after 2009 remains to be seen.

Overall, increased VAT revenue during the crisis enhanced governments' fiscal manoeuvrability with respect to direct taxes. Reforms in direct taxation were in turn used to stimulate labor and business. Rises in VAT rates, however, which continue in 2012, may contribute to a further spread of fraudulent schemes, if more effective measures are not taken to combat VAT fraud that already is a major drain on the public purse. The trend of increasing rates makes the tax more conspicuous, and therefore evasion more valuable to traders and the public alike (Tait, 1988). VAT is likely to remain one of the most important sources of revenue in future, both in a stable and a turbulent economy. It is, therefore, imperative to limit VAT's exposure to organized fraud and fraud/evasion on a small scale, whose cumulative effect on receipts can be substantial.

3 Changing the way VAT is collected: Real-time solutions

Several features of VAT's design, labelled the ABCs of VAT fraud by Richard Baldwin, make the tax susceptible to abuse by fraudsters, namely: a) Companies collect VAT on behalf of tax authorities, hence VAT passes through private hands; b) VAT is remitted through periodic returns, which means that there is a delay between the collection and the payment of the tax to the government; c) due to the destination principle, importers collect the full-value added of the imported goods.[4]

VAT fraud is predominantly technology-intensive, especially with regard to digital products such as CO_2 permits, VoIP services and all of the rapid funds transfers among fraudsters (Ainsworth, 2011a). Fraud in fictitious goods are a perfect fit with laptop technology. Compared to technology's speed of development and its use in the commitment of fraud, the EU VAT system has been slow to react and resistant to change, a fact acknowledged by the European Commission (2010) and especially emphasized by Williams (2009). There is a growing awareness that in order to fight VAT fraud effectively, technologically, tax administrations should be on a par with fraudsters. Given the technological means of perpetrating fraud, it would be difficult for initial policies addressing VAT's weak links to ignore the utilisation of technology or lag behind its advances. As an important side-effect, modernising VAT would reinforce its flexibility to two increasingly visible trends: the general shift towards indirect taxation and the move away

[4]Richard Baldwin, EU VAT fraud. Available at http://www.voxeu.org/index.php?q=node/256.

from cash in favour of electronic payments.

Reforming VAT towards greater reliance on technology in general, and cashless payments in particular, is also in line with the objectives of SEPA as outlined in the Fourth Progress Report. Specifically, SEPA aims toward standardized common payment instruments, infrastructure, procedures and standards, which do not distinguish between national and cross-border payments within the Euro zone (European Central Bank, 2006). Such development would likely promote substantial economies of scale and is a logical next step in strengthening the Single Market. The introduction of the Euro in 2002 produced a single Euro payment area in cash. SEPA's goal is to extend this process to electronic payments.

Many of the schemes, systems, and products evolving under SEPA could facilitate, support and assist the transition of the VAT system, resulting in enhanced fraud prevention in both B2B and B2C transactions. Likewise, the timing of VAT reform within the roll out of SEPA is propitious and synergetic, as it may encourage public administrations to migrate faster towards the SEPA instruments. The ECB has repeatedly stressed the importance of public administrations' involvement for the success of SEPA (European Central Bank, 2006, 2010).

Not surprisingly, a growing number of proposals for combatting VAT fraud are based mainly on the role of financial intermediaries and technology, and generally target the very source of the incentive for VAT fraud – the method of collection. The rest of the paper focuses on the PWC's proposed blocked VAT accounts and RTvat.[5] At the heart of these proposals lies the principle of split-payment also known as VAT withholding, which splits each (electronic) payment into a taxable amount that goes to the seller, and a VAT amount, transferred into blocked VAT accounts (PWC) or directly to the Treasury (RTvat). Since blocked VAT accounts can be seen as a subset of the RTvat proposal, they are analysed first.

3.1 Blocked VAT accounts

A blocked VAT account can be used for no other purpose but incoming and outgoing VAT payments as well as settlement of net VAT liabilities at the end of the reporting period. If the balance in the account is not enough to cover an outgoing payment, the payment should be processed through the firm's regular bank account. The mechanism is described in Figure 3.1. The blocked VAT account targets points a) and b) outlined above. First, VAT, at least on electronic transactions, is no longer remitted by firms, i.e. the tax never ends up in private bank accounts. Instead, the role of a VAT collector is delegated to the banking system/card companies, with their services being purely intermediary. There will of course be a fee for these intermediary services and it is not specified in any proposals which party will bear the cost of intermediation. Second, the tax is collected in real-time, although a delay in refunds remains under the PWC's proposal. Note that split-payment preserves the system of fractionated payments, but shifts the

[5]Other technology-based proposals such as VAT locator number, digital VAT, and Mittler Model, reviewed in Ainsworth, (2011a,b) are outside the scope of the paper. In addition to VAT accounts at various bank or automated clearing house levels, PWC envisage the creation of central VAT monitoring database, the certification of service providers, software or taxable persons as well as provide a cost-benefit analysis of the proposed alternatives.

collection of the tax from the seller to the buyer, who effectively transfers the tax through a financial institution.

Any B2B bank/card transaction is already highly visible and easily subjected to scrutiny by the tax administration, which raises the question about the usefulness of VAT accounts. The fact that VAT is in a private bank account facilitates the establishment of an audit trail if fraud is suspected, but does not preclude missing trader and other types of frauds from happening. By taking away firms' access to VAT, a blocked account would prevent such fraud, simultaneously reducing the number of audits. VAT accounts will only be effective if they bring into the system companies that wish to remain outside the system. Thus, if VAT accounts are optional, they are likely to be inconsequential.[6] Yet, provided that blocked accounts have a mandatory character, issues emerge on what firms should be covered: only exporters, firms in risky sectors, or all VAT-registered traders.

An additional consequence of a blocked VAT account is that a record of each transaction will be available by a third party, in this case a bank. The higher the number of transactions executed through the financial intermediaries, the lower the reporting requirements of a firm, who will basically receive a pre-filled VAT return, amend it if necessary, and return it to the tax authorities.[7,8]

The importance of third-party reporting was studied by Kleven et al. (2011) for individual taxation in Denmark, where the Danish tax authorities receive most information reports regarding but not limited to personal income from third parties, and not from the taxpayer himself. In fact, almost 100% of salary and wage payments are accomplished via credit transfers. The taxpayer, however, has the option to adjust the pre-populated return. This type of return-free tax system is called tax agency reconciliation system (Denmark, Sweden) as opposed to an exact withholding system (UK). The low levels of tax evasion in Denmark are explained accordingly with the efficient checks of third-party reporting. In other words, even if taxpayers are willing to cheat, they are unable to do so (Kleven et al., 2011). Besides the Scandinavian countries, currently Belgium, Estonia, France, Netherlands, Portugal and Slovenia have partially or fully adopted pre-filled PIT returns.

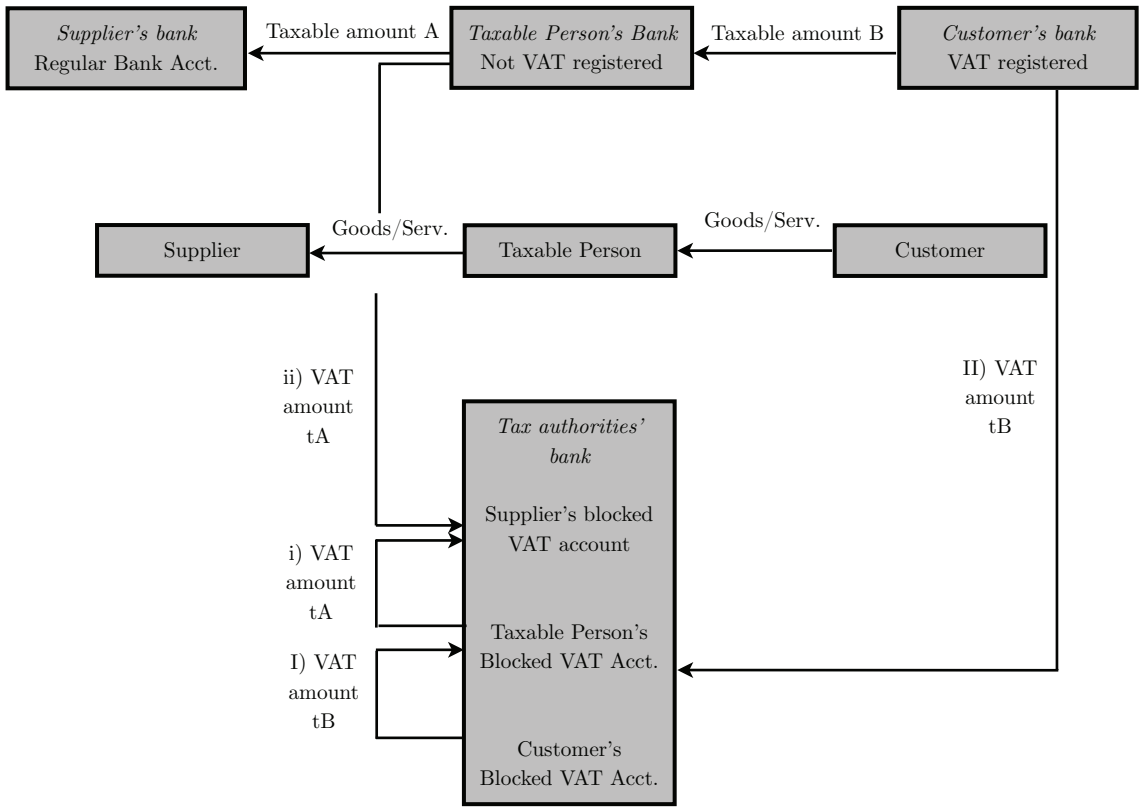
The involvement of financial intermediaries is an attempt to move VAT closer to a return-free system through the increased use of electronic payment instruments and in fact, the elimination of voluntary compliance by firms subject to VAT withholding. Borselli (2011) notes that the

[6]VAT accounts will be most effective against MT fraud, but do not address evasion through underreporting, non-registration, fictitious invoices, etc. VAT accounts are also not the only way to induce, and even force, traders to pass transactions through banks. Harrison and Krelove (2005) point out that many countries, including France, Hungary, Turkey, and Denmark, require that transactions above a stipulated amount should go through the banking system. In more extreme cases, Azerbaijan refuses VAT credit if purchases were done in cash.

[7]This is an oversimplification of the procedure, as the tax point, or equivalently the time of supply, can vary between the date the invoice is issued, the day of payment, or the day of the physical supply of goods. Gradual incorporation of B2C transactions into the split-payment system could make such pre-filled returns more likely.

[8]From January 2011, Section 6050W to Title 26 of the US Code requires that banks, third-party settlement organizations, and other organizations with contractual obligations in the settlement of payment cards send annual reports to the IRS regarding data on payments made to merchants via debit/credit cards and other electronic means. IRS can match this information with the sales reported on merchants' tax returns. A similar policy was enacted in Turkey in 2008 – VAT registered traders can check their monthly credit card sales online when preparing their VAT returns.

Figure 2: PRICEWATERHOUSECOOPERS PROPOSED SPLIT-PAYMENT MECHANISM WITH BLOCKED VAT ACCOUNTS



Supplier (S) sells goods/services to Taxable person (TP). TP's bank transfers the taxable amount A to S's regular bank account. The VAT amount, tA, is paid from TP's blocked VAT account into S's blocked VAT account (Scenario i) if enough funds are available, or from TP's regular bank account if there are insuffiicient funds in TP's blocked VAT account (Scenario ii). TP sells goods/ services to Customer (C). C's bank transfers the taxable amount B to TP's regular bank account. The VAT amount, tB, is paid from C's blocked VAT account into TP's blocked VAT account (Scenario I) if enough funds are available, or from C's regular bank account if there are insuffiicient funds in C's blocked VAT account (Scenario II). t is the VAT rate. For simplicity, steps involving the automated clearinghouse are omitted. Source: PriceWaterhouseCoopers (2010).

Italian tax administration already has information transmitted by banks and financial intermediaries on a regular basis concerning the transactions of taxpayers who are under tax assessment.

Ainsworth (2011b) points to the Latin American countries as the pioneers in VAT withholding. Currently Argentina, Brazil, Ecuador, Chile, Peru, Uruguay and Mexico have implemented VAT withholding regimes, under which, if the buyer (business or final customer) chooses to pay via a bank or by card, the payment is automatically split into the taxable amount and the VAT component. The rate of VAT withholding is not always 100% and in Ecuador it varies between 30% to 100%, mainly to tackle cash flow issues.

In Europe, Bulgaria introduced obligatory VAT accounts in 2003 for VAT-registered traders. The motivation was the country's high estimated VAT gap ranging from 22% according to the World Bank (2003) to 45% of VAT revenue in a report of the 39th National Assembly referenced in Pashev (2007). Any VAT amount greater than €500 had to be paid to a supplier's VAT account. Before the introduction of the accounts, VAT credit had to be carried forward for the next three reporting periods and any refund was subject to an audit. Once the accounts were launched, however, a firm that paid at least 80% of the VAT on its transactions through the VAT accounts could obtain a refund within 45 days, irrespective of whether or not it was undergoing an audit (Pashev, 2007). Bulgaria abandoned the scheme in 2007. Given the revival of the discussion on VAT accounts in PriceWaterhouseCoopers (2010) and the EC's intention to further investigate the split-payment mechanism, it is important to understand why VAT accounts can under-perform as an anti-fraud device. Several points are worth elaborating on:

- As long as there are cash buyers at the end of a VAT chain, a blocked VAT account mitigates, but cannot eradicate the missing trader fraud.
- Businesses are unable to use the funds in the blocked accounts as working capital. Severe cash flow problems can arise for firms with thin profit margins, in times of economic crisis, etc.
- Compliance costs can be disproportionately greater for small and medium enterprises, and especially for micro enterprises.

The analysis that follows is equally valid for any general split-payment mechanism.

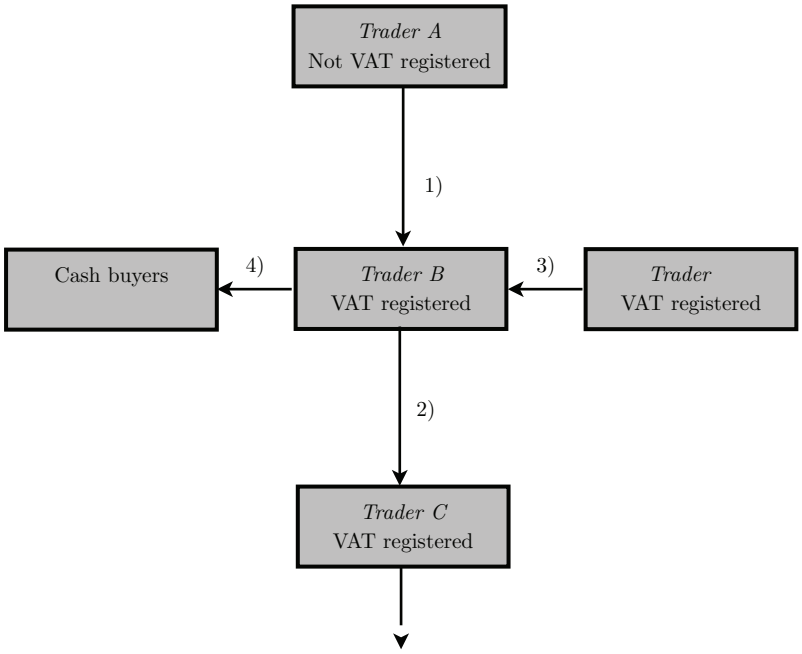
3.2 The problem with cash

Figure 3.2 shows a simple example borrowed from Pashev (2007) on how the VAT account system was manipulated in Bulgaria to syphon off VAT. Trader B will go missing, but before he does, he needs to acquire credit into his VAT account. First, he purchases goods from a non-VAT registered trader, in order to prevent outflow of VAT from his regular bank account. He adds value, and resells the goods to Trader C who transfers VAT into B's account. Using this credit, B can now purchase goods from D, which B will then sell to cash buyers, and disappear with the tax, having zero credit into his blocked VAT account. As Pashev (2007) points out, if Traders C and D are compliant, the evasion will be limited to the value added of B. Nevertheless, different

variations are possible, with multiple colluding traders, which can result in significant losses to the treasury.

It is apparent, therefore, that as long as cash markets are easily accessible, VAT fraud cannot be precluded even if VAT accounts are introduced. According to Pashev (2007), numerous compliant taxpayers filed legal cases against the tax administration for refund denial despite the taxpayers' diligent use of the VAT accounts. The speeding up of refunds and the weakening of the audit requirement, which were the intended benefits of VAT accounts to honest traders, backfired by accelerating the gains from fraud. The Bulgarian experience shows that audit and monitoring remain of prime importance even if firms' access to VAT is removed. Thus, unless a sophisticated fraud-analysing function is implemented, the efficacy of a split-payment arrangement would be undermined. A concerted effort to discourage the use of cash in the economy is also called for.

Figure 3: EXAMPLE OF CHEATING WITH BLOCKED VAT ACCOUNTS



1) Trader B purchases goods X worth €10,000 from non-registered trader A. Trader B adds value of €1,000.

2) Trader B sells goods X to VAT-registered trader C for €11,000, charging additionally €2,200 in VAT, assuming a VAT rate of 20%. Trader C deposits €2,200 into trader B's VAT account. Trader C can subsequently sell goods X, collecting €2,200 in VAT, which he keeps as he is entitled to an equivalent refund.

3) Trader B purchases goods Y worth €11,000 from trader C. Trader B deposits €2,200 of VAT into trader C's VAT account.

4) Trader B sells goods Y for €12,000 to cash buyers, collects €2,400 in VAT, and disappears.

Source: Pashev (2007)

3.3 The problem with cash flow

In the current system VAT payment is based on invoices issued instead of actual cash received for businesses reporting on an accrual basis. This means that if a customer does not pay a supplier before the day the VAT return is due, the supplier is stranded with a VAT bill, although he has not been paid yet (if at all) for the transaction in question. In other words, the business is experiencing negative float. To alleviate this problem, the UK, for example, offers a Cash

Accounting Scheme, under which eligible companies pay VAT only on cash received and vice versa – VAT can be claimed only if the firm has paid its suppliers. Despite the availability of alternative payment methods, Blackburn et al. (2005) report that in the UK 82.9% of businesses adhere to the conventional quarterly invoice-based VAT payment. This figure is sourced from a business survey of more than 750 enterprises performed by HM Revenue & Customs (HMRC) in 2005. The UK VAT rate in 2005 was 17.5% and for 17.8% of the surveyed companies the timing of VAT payment presented a "critical" or "major" cash flow issue, primarily due to unpredicted fluctuations in sales, late payment by customers, and the general performance of the business (Blackburn et al., 2005).

The growing reliance on indirect taxation, which generally translates into higher VAT rates, will likely exacerbate cash flow problems. A survey of 295 SMEs by the British bank Aldermore found that the 2.5 pp increase in the UK VAT rate in 2011 put a heavy strain on the cash flow of 35% of the surveyed firms.[9] When faced with cash flow difficulties, the majority of firms (59.1%) resort to bank overdraft, while 39.2% can delay payment to suppliers as documented by Blackburn et al. (2005). Bank funding during a recession, however, is hard to procure, and a long hold up of payments can worsen an already unstable cash flow.

The mechanism of split-payment, with or without a VAT account, introduces an additional problem to the ones described above. In particular, 100% VAT withholding will effectively freeze VAT on sales in suppliers' VAT accounts, which can be problematic for firms realising a cash benefit. The credit can still be used for paying VAT on purchases, but cannot be used as a working capital. Ainsworth (2011b), for instance, notes that VAT withholding generated critical cash flow problems in Cameroon, which resulted in the abolishment of the regime in 2010. PriceWaterhouseCoopers (2010) do point out that a company with long days' sales outstanding (DSO), who collect VAT on sales *after* they have passed it to the tax authorities, would be indifferent between the current VAT system and VAT accounts. While this is true for industries like construction, media and manufacturing, with an average DSO of about 70 days, for retail, logistics, and real estate with a DSO of 15 days on average, the loss of working capital can be palpable (Rebel and Kester, 2011). A non-trivial 38% of SMEs in the EU are concentrated within the distributive trades, real estate and transportation and storage, employing about 30 million people (Eurostat, 2011).

3.4 Compliance costs

A VAT account, or any other split-payment mechanism, unavoidably yields additional transaction costs in the form of payment orders, account-keeping fees, transaction fees, etc. Compliance costs could be of small significance to big companies, who already conduct business through electronic banking and have sophisticated computerized accounting systems. Provided that refunds are sped up through a VAT account, big companies are unlikely to oppose such an arrangement. Administrative costs can be disproportionately burdensome for SMEs, however, imposing major

[9]Summary of the findings of the survey is available at http://www.aldermore.co.uk/about/news-press-releases/2011/01/vat-rise/.

re-adjustments in their payment practices. Harrison and Krelove (2005) single out the cost on SMEs as one of VAT accounts' main disadvantages. The overwhelming majority of enterprises in the EU are SMEs (99.8%) responsible for two out of every three jobs, and 58.6% of value-added in the non-financial sector (Eurostat, 2011). A split-payment system therefore, runs the risk of collecting more revenue at the expense of small business.

If transactions generating VAT amounts below a stipulated threshold are excluded from the VAT account scheme, an incentive arises to break up transactions into smaller ones in order to avoid both administrative costs and the blocking of capital in the account. Conversely, presuming that costs cannot easily be passed down to the consumer, they can be minimized by the consolidation of transactions. Such consolidation could lead to distortions in competition as big purchases would be more convenient from a single supplier, instead of several (Conrad, 2006).

3.5 Steps towards an optimal split-payment system

In the context of the obstacles to changing VAT's collection method, several policy recommendations emerge. First, for the viability of a split-payment system to be maintained, the general trend towards cashless transactions should be promoted. By design, cash transactions remain beyond the reach of any split-payment mechanism. Humphrey et. al. (2004) observe that with legal demand for cash falling, government provision of cash will increasingly be utilized for the payment of illegal activities such as tax evasion, money laundering, and drugs. Simultaneously, the use of cashless payment systems is growing, clearly demonstrated by the quick pace with which debit cards replace cash in the majority of Member States, and especially in the Scandinavian countries. Nevertheless, according to Amromin and Chakravorti (2007), the aggregate demand for cash has not decreased substantially, in spite of the growing adoption of non-cash payment instruments. In addition to being a store of value and medium of payment, cash has one prominent advantage: it is anonymous.

Figure 4 depicts the growth rates of the value of transactions of all cards issued in the EU countries, the value of ATM cash withdrawals as well as the Over-the-counter (OTC) withdrawals, all scaled by GDP.[10] Both cards and ATM cash grew significantly, albeit at a decreasing rate. From 2005 onwards, the growth rate of cash was modest and turned negative in 2010. Even though ATM distributions of cash were increasing, throughout the same period, OTC withdrawals declined steadily, highlighting the fact that as debit/credit cards became widespread payment instruments, bank branches were replaced by ATMs as the primary source of cash to the public, with the overall demand for cash remaining stable.

In Figure 5, the EU countries are plotted in order of increasing estimated VAT gaps for 2009. The graph also shows the value of card transactions as a percent of GDP for the same year. In general, the higher the penetration of electronic payments, the smaller the VAT gap. A notable exception is the UK with a large estimated VAT gap regardless of substantial card popularity.

[10]Data for OTC withdrawals is available for limited set of EU countries, namely the Czech Republic, Germany, Spain, Finland, UK, Hungary, Italy, Latvia, Netherlands, Romania, and Slovakia, and for some of these countries, only for a single year.

Yet, any conclusion about a correlation between the VAT gap and the prevalent types of payment would be premature, as many country-specific factors should first be accounted for, herein tax morale and the efficiency of the tax administration. Furthermore, the estimates of the VAT gap, which is defined as the difference between theoretical and actual VAT receipts, divided by theoretical revenue, should be viewed with extreme caution, given Reckon LLP's methodology and the imposed assumptions.

Complementing the rise in electronic transactions is the launch of SEPA's credit transfer and direct debit in January 2008 and November 2009, respectively. Common European card schemes compliant with SEPA are also underway, principally targeting retail payments. Development of online or internet payment (e-payment) and mobile payment (m-payment) services are on SEPA's agenda as well (European Central Bank, 2010).

Mobile payment platforms such as Barclays' Pingit and Singapore's Swiff already offer payments between individuals, merchants and banks through mobile devices such as smart phones and tablets. In fact, m-payments are one of the fastest growing markets. Juniper Research forecasts that m-payments for digital and physical goods, mobile money transfers and Near Field Communication transactions will jump from $240 billion in 2011 to $670 billion in 2015, while the number of mobile money users will double by 2013.[11]

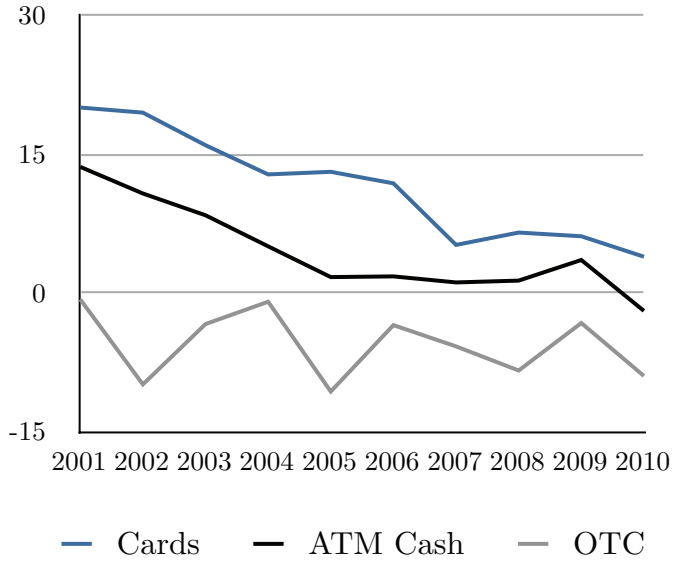
Another major development is the adoption of ISO 20022 by a growing number of institutions. ISO 20022 is a message standard, whose primary syntax is XML, used by the financial industry in the exchange of data. According to SWIFT (2010), ISO 20022 serves as an "unification tool" across the various standards currently used in the industry. Not only do part of the financial community migrate to ISO 20022, but those for whom migration costs are prohibitive, can have their message standard mapped into ISO 20022 by middleware. This enables the seamless interoperability of various standards, which is essential for cross-border transactions, among many others (SWIFT, 2010).

Second, a system whose goal is to collect VAT at real-time should strive to refund VAT in real-time as well in order to avoid the cash flow issues mentioned above. With an automated VAT collection, speedy refunds are likely, but hinge entirely on the efficiency of a central auditing function that can flag suspicious transactions, trigger audits, and most importantly, prevent fraudulent refunds. Such function is envisaged under RTvat and is discussed below. As an intermediate step, it is worthwhile considering Pakistan's categorisation of taxpayers as "gold" for refund claimants with minimal revenue risk, "silver" for claimants with moderate risk, and "others," described and recommended as a sound practice by Harrison and Krelove (2005). Gold claimants receive refunds within 3-5 days, silver–within 15 days, while regular claimants are subject to the statutory deadlines. Since split-payment can impose a considerable burden on compliant traders, expediting refunds, or equivalently minimising the interference of the VAT system on cash flow, will make the mechanism more appealing.

Third, transaction costs on electronic payments constitute a significant concern for SMEs, and especially micro-enterprises, and need to be addressed. With the launch of SEPA, domestic

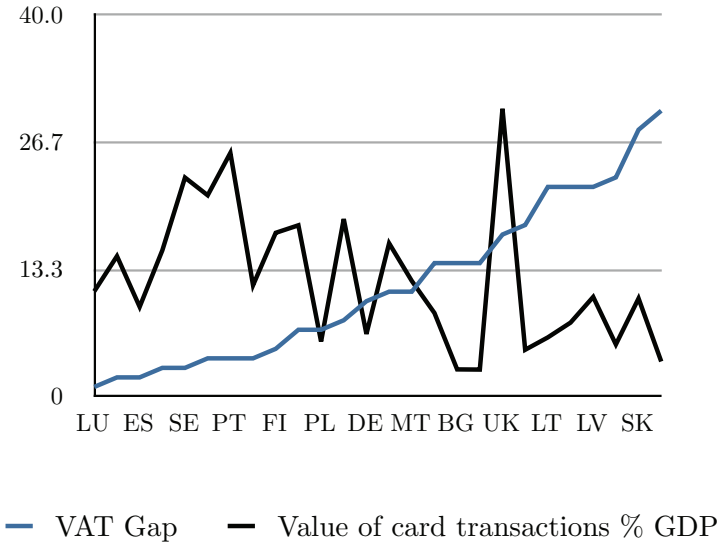
[11] http://juniperresearch.com/viewpressrelease.php?pr=250

Figure 4: GROWTH RATES OF VALUE OF CARD TRANSACTIONS, ATM AND OTC WITHDRAWALS AS A % OF GDP



Source: ECB Statistical Data Warehouse

Figure 5: VAT GAP AND VALUE OF CARD TRANSACTIONS AS % GDP, 2009



Source: ECB and Reckon LLP (2009)

payment infrastructures will eventually be replaced by a single pan-European system. It is argued that the integration can culminate in significant economies of scale and scope, leading to pronounced reductions in payment costs. Bolt and Chakravorti (2010) give TARGET-2 as an example of an interbank single shared platform, which, by consolidating 15 national gross real-time settlement systems, generated a considerable fall in the average fee per transaction. Estimating scale economies for point of sale and bill payments in Norway, Belgium and the Netherlands, Bolt and Humphrey (2007) find that the elasticity of operating costs with respect to payment volume ranges between 0.25-0.30. This means that a 1% increase in volume increases costs by 0.25-0.30%.

The authors observe that with time, expansions in debit card volume will naturally lower the average cost of debit card use to that of cash. Alternatively and preferably, consolidation of card processing centres in the EU can achieve even larger scale benefits of about 33% lower processing costs based on the authors estimates of the cost elasticity (Bolt and Humphrey, 2007).

In the Green Paper on an integrated European market for card, internet and mobile payments, however, European Commission (2012) notes that despite the rising volume of card payments and the generated large scale effects, no considerable fall in consumer costs, interbank, or merchant fees has occurred over the last decade. The Commission criticizes multilateral inter-change fees for hampering competition, leading to market fragmentation, and lacking transparency. The opaqueness of the cost of payment services results in consumer choices of payment instruments based solely on consumer fees, which may or may not be the optimal payment method for merchants, given the merchant service charges (MSC). Since merchants typically pass their transaction costs on to consumers, the lack of information on MSC means that consumers make suboptimal choices (European Commission, 2012).

Transaction fees play a central role in determining the pace with which cashless payments are adopted. Given the compliance costs they would impose on business if VAT is collected through split-payment, the amount of charges and their potential to decline with volume would be crucial when assessing the pros and cons of VAT withholding.[12]

3.6 RTvat

The proposal for VAT reform most consistent with the objectives outlined above is real-time VAT, or RTvat, put forward by Chris Williams, a chairman of the RTvat Executive Committee. In the literature, RTvat has been discussed by (Ainsworth, 2011a,b). RTvat is envisioned as a

[12]Learning from countries with extensive experience in the use of debit cards can also be beneficial. Denmark's Dankort, introduced in 1983 in a joint venture by the Danish banks, is widely used in Denmark and is one of the cheapest cards in the EU. Card holders pay no fees for face-to-face transactions, and neither did businesses until 2005 (Konkurrencestyrelsen, 2010). After 2005, firms paid a subscription fee to the issuer, covering 25% of the card maintenance costs. After 2009, the subscription fees, based on number of transactions, amounted to 50% of the costs. Despite a 61% increase in businesses' Dankort costs between 2009 and 2010, the card still remains cheap relative to most debit cards in Europe. There are 4.2 million cards in Denmark for 3.9 million Danes over the age of 18. 41% of all transactions in the bricks and mortar trade were done with Dankort (Konkurrencestyrelsen, 2010). Dankort transactions amounted to 14.3% of GDP, or close to 30% of private consumption in 2007. According to Amromin and Chakravorti (2007), the critical step leading to an explosive growth in debit cards use is the adoption of card terminals by merchants. The Danish case shows that charging no fees for merchants for years on end, embedded the card in the market.

real-time system based on already existing card payment platforms. It will operate through a network of interconnected server farms in all 27 Member States, whose role would be to pass payments through an automated clearing house, charge an interchange fee, split the payment into taxable amount and VAT due on the transaction, and subsequently distribute the funds to the relevant financial institutions and tax authorities (Williams, 2009). Williams further recommends the introduction of a B2B debit card connected to both the firm's VAT identity and business bank account.

Under RTvat, blocked VAT accounts are unnecessary as the VAT amount will be transferred directly to the tax authorities. All the information required to make a real-time decision regarding the validity of a refund claim should be available to the tax administrators, enabling quicker refunds, and for traders with solid compliance history, refund automation.

RTvat would be fully operational under both the origin and destination principles for cross-border transactions. Under the origin principle, a seller in country A applies country A's VAT rate for a sale to a customer in country B. Once the customer's bank authorizes the payment, the RTvat servers split the payment into the value of the supply, sent to the seller's bank account, and the VAT amount, x, sent to country A's tax authorities. Country A's tax authorities are then informed of a VAT return due in the amount of x, which is remitted to the server network. At this point a fraud function becomes activated, and if no red flags are raised, x is returned to the buyer's bank account by Country B's tax authorities (Ainsworth, 2011b). Under the destination principle, the redundant step of moving the VAT amount across two countries is removed. VAT is charged at country B's rate and the refund process takes place only in country B.

In a Communication addressing the outcome of the public debate on VAT, the EC stated that "...the Commission has come to the conclusion that there are no longer any valid reasons for this objective [the origin system], and will propose that it should be abandoned" (European Commission, 2011a). This statement strongly suggests that intra-EU transactions will continue to be conducted under the destination principle.

3.7 IT-audits and privacy implications

A central feature of RTvat is the Tax Authority Settlement System (TASS), that would settle VAT liabilities, and would also provide state-of-the-art real-time fraud analysis. According to Williams (2011), in a two-tier process, the fraud tool would compare the financial performance of the parties involved in a transaction, as well as compare the companies to a similar pool of firms based on size, type of business, location and other characteristics. TASS would be built on technology used by credit card companies.[13]

[13]Fraud analysis systems are already being put in place in countries with serious VAT compliance issues. An example is China, which launched a Golden Tax Project at the time it adopted the VAT system. The objective of the Project is to "...construct a centralized invoice clearing system that will permit the ... tax authorities to detect and reject fake invoices in real time, and to quickly and accurately identify the culprits issuing them" (Winn and Zhang, 2010). The Chinese system is not based on real-time collection, but e-invoicing and massive cross-checking. Whenever an electronic invoice is issued, a numerical cipher is generated, based on the information in the invoice, issue date, etc. When traders submit their invoices for the periodic VAT return, the information in the cipher

TASS was criticized by Ainsworth (2011a) on the grounds of the security of the firm-level confidential data it contains, specifically how this information would be protected against hacking attacks, but also how its authenticity would be verified once it is submitted to the system. This is valid criticism. In fact, if the EU decides to adopt a split-payment mechanism as a part of a real-time VAT collection, such a move would require massive interdisciplinary collaborative effort, shifting the debate towards the security and stability of the VAT server network, its fault-tolerance and non-availability fall back.

There are also the questions of the acceptable degree of invasiveness of the tax administration's access to business information, the optimal amount of interchange fees, and crucially, the financing of the system. In particular, it is unclear what type of information would be required for TASS to perform effectively. Likewise, under PWC's blocked VAT accounts, "enriched" data regarding the VAT treatment of the transaction is needed for payment requests. RTvat's method of accessing company information, which would be used for real-time auditing, is not specified.

On the whole, it would be difficult, if not impossible to separate audit-relevant data from sensitive personal information like personnel data or private correspondence. In this respect, TASS may be inconsistent with Article 8 of the European Convention on Human Rights as well as Article 6 of Directive 95/46/EC on the protection of individuals with regard to the processing of personal data. Such was the case, for example, with the Danish Ministry of Taxation's (DMT) proposal for the amendment of the Danish Tax Control Act in 2010 regarding the tax administration's access to firm data for purposes of tax control. A further discussion of the Danish bill is worthwhile, given its parallels with TASS.

As part of a move towards the digitisation of communication between the public and the private sector, DMT proposed that the Danish tax authorities should have the possibility to undertake data mirroring of firms' electronic devices in order to retrieve audit-relevant data without a court order (Skatteministeriet J. 2010-711-0044, 2010).[14] By electronic devices it is understood not only hard disks, CD-ROM, and USB keys, but also electronic programs and programme systems. According to the proposal, data mirroring can alleviate administrative burdens in terms of printing costs of the required accounting documentation as well as limit the duration of inspections on the premises of audited companies, and is therefore, a "logical" and "natural" response of the tax authorities to the developments in companies' use of information technology. The trade-off between infringement of privacy and efficient tax collection is clearly demonstrated in the DMT's assessment that "...restricting the scope of Article 6 of the Data Protection Directive would be necessary and proportionate relative to the potential loss of tax revenue and the crucial significance of accounting data for an effective tax control (authors'

is decrypted, and matched to the unencrypted data. To claim credit, general VAT traders must go through this certification process for every VAT special invoice they have paid (Winn and Zhang, 2010). VAT special invoices show the purchase price and the VAT amount separately, and can be used to claim VAT. In contrast, General VAT invoices, listing the full amount, price plus VAT, cannot be used for refund purposes. Although the authors describe the procedure as "draconian", the number of phoney invoices has decreased. However, Harrison and Krelove (2005) observe that neither the cost of administering this large-scale cross-checking of invoices, nor the compliance burden on taxpayers is known.

[14]Data mirroring is the creation of identical electronic copies of digital content in real-time.

translation)" (Skatteministeriet J. 2010-711-0044, 2010).[15] The extent to which tax administrations have the discretionary power to determine whether a piece of information is audit-relevant or not is also uncertain.

The controversial issue of the acceptable degree of data provision aside, it is uncertain how confidential firm information would be safeguarded, whether in storage or while being transmitted across networks. Enterprises typically have a data security policy in place as well as data loss prevention solutions for confidential information such as customers, transactions, partners, etc. If such type of data is collected by the TASS, then the level of protection provided by the tax authorities should be at least commensurate with that of the enterprise-specific security policies, which can be a tough requirement to fulfil.

Another problem is how RTvat is going to handle electronic payments, which are not executed through a card or a bank. According to a survey on the future of money conducted by Pew Internet and Elon University, 65 out of the 100 technology experts participating in the survey agreed with the statement that "By 2020, most people would have embraced and fully adopted the use of smart-device swiping for purchases they make, nearly eliminating the need for cash or credit cards" (Smith et al., 2012). Yet, according to European Commission (2012), mobile phone manufacturers, payment service providers, and mobile network operators have still not developed interoperable payment solutions. Will RTvat be able to cover the whole spectrum of payment methods or be adaptable to emerging innovations? If not, VAT fraud can easily migrate to systems, which do not split payments.

Generally, all challenges arising out of the economy's progression towards cashless payment systems apply equally to RTvat, namely issues of data privacy and protection, as well as anonymity. These are topics of very serious concern to the majority of EU citizens as demonstrated by a large Eurobarometer survey in 2012 of the attitudes on data protection and electronic identity (European Commission, 2011b). Table 3 presents a selection of the questions covered by the survey. On average, 70% of the interviewees considered financial information such as salary, bank details and credit record to be personal. 54% were concerned that their payment card behaviour was recorded, while for mobile phones this percentage is slightly lower – 49%. Every third respondent out of ten resorts to transactions in cash as a strategy not to disclose his or her identity. 44% of all interviewed in Poland, 40% in Austria, and 39% in Hungary prefer the anonymity of cash to reported transactions, whereas in the Netherlands, Finland, and Denmark this method of identity protection is used only by 15%, 17% and 18%, respectively.

While cash would likely remain the preferred method of payment for illegal transactions, the survey unambiguously shows that cash is also used by some consumers as an alternative to a system they consider unsafe, either due to privacy concerns, or as a way to overcome risks inherent in cashless payments such as susceptibility to fraud.

Even though the RTvat's proposal for VAT is a logical outcome of the digitalisation of payments as well as the level of VAT fraud in the EU, it is unlikely that it is going to be

[15] "Det er dog Skatteministeriets vurdering, at en begrænsning af rækkevidden i persondatadirektivets artikel 6 vil være nødvendig og forholdsmæssig i betragtning af det potentielle tab af skatteindtægter og regnskabsoplysningernes afgørende betydning for en effectiv skattekontrol."

Table 3: EUROBAROMETER SURVEY OF ATTITUDES ON DATA PROTECTION AND ELECTRONIC IDENTITY 2012, %

	Financial Information[a]	Concerned about payment card behaviour recorded[b]	Concerned about mobile phone behaviour recorded[c]	Use cash instead of recorded transactions[d]	Victim of fraud[e,f]
Sweden	82	37	28	21	42
Denmark	91	36	40	18	37
Finland	88	35	31	17	39
United Kingdom	87	54	48	29	49
Netherlands	90	43	44	15	26
Luxembourg	90	51	56	29	33
Estonia	79	35	36	29	45
France	81	64	55	18	47
Portugal	64	51	47	28	56
Belgium	81	56	51	23	28
Ireland	89	63	56	34	36
Slovenia	88	51	42	34	44
Austria	73	49	44	40	30
Spain	75	53	50	32	52
Latvia	79	49	41	38	48
Cyprus	70	45	49	35	38
Germany	87	62	55	37	41
Malta	83	35	39	27	33
Lithuania	70	34	37	33	45
Italy	70	58	53	26	26
Slovakia	82	54	46	34	29
Poland	44	42	45	44	53
Hungary	65	51	47	39	32
Czech Republic	82	64	63	34	40
Greece	64	67	65	34	42
Romania	46	30	31	28	25
Bulgaria	55	32	38	33	39
EU-27	75	54	49	30	41

Source: European Commission (2011b). The base of Eurobarometer 359 survey is 26,574 EU citizens.
[a] Which of the following types of information and data that are related to you do you consider as personal?
[b] Nowadays, cameras, cards, and websites record your behaviour, for a range of reasons. Are you very concerned, fairly concerned, not very concerned, or not at all concerned about your behaviour being recorded? Via payment cards (location and spending)
[c] Nowadays, cameras, cards, and websites record your behaviour, for a range of reasons. Are you very concerned, fairly concerned, not very concerned, or not at all concerned about your behaviour being recorded? Via mobile phone/ mobile Internet (call content, geo-location)
[d] In your daily life what do you do to protect your identity?
[e] I will read out a risk of potential risks. According to you, what are the most important risks connected with disclosure?
[f] The base is 40% of the whole sample

compatible with EU privacy laws, especially in light of the 2012 proposal for reform of the EU's legal framework for the protection of personal data. Yet, the alternative is a patchwork of enforcement measures, mainly on a national level, leading to divergence instead of harmonisation of the VAT systems within the EU.

One of the risks of an uncoordinated anti-fraud strategy, especially in regard to external EU trade, is that dishonest importers will "shop" for the countries with least efficient tax administrations and anti-fraud policies. A case in point is Italy, whose imports of clothes from China decreased when the country's Customs Agency was empowered to adjust suspiciously low import value on the basis of market prices, transportation costs, and other general information (Borselli, 2011). As a result, Borselli (2011) reports, the average import prices for goods from China more than doubled from 2005 to 2010. In contrast, China's clothing imports with the rest of the EU doubled, while prices grew at a much slower pace than that in Italy. This example illustrates that unless a common approach is adopted at EU level, there are means to circumvent any anti-under-invoicing policy by simply redirecting trade, thus sabotaging genuine effort to combat fraud.

4 Conclusion

Over the last decade, major developments in technology have enabled VAT fraud on an unprecedented scale. Technology-oriented reforms of the VAT system are not only appealing due to their efficiency and revenue-maximising potential, but also because of the natural progression of the economy towards cashless transactions. Generally, there are two broad ways to approach the reform: Keeping voluntary compliance as a corner stone of the tax system with stringent and modern enforcement measures in place, or eliminating voluntary compliance in a return-free system, in which traders do not have a choice but to comply. As discussed above, the latter option would likely require a legally controversial disclosure of information and raises serious privacy concerns.

While it is distinctly possible that removing traders access to VAT would prevent the large majority of attempted frauds, VAT returns, and overall the main issues related to VAT, would be a matter of unilateral decision-making and processing by a single authority: tax administrations. This would render VAT less transparent for firms and would entail a great deal of trust in the tax authorities. The extent to which VAT fraud can be contained without excessive enforcement costs on compliant firms under the current method of VAT collection may be the deciding factor for the direction and scope of VAT reform.

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Appendix 3.1: VAT features in brief

VAT, as currently levied in the EU, is a general indirect tax on consumption. It is a non-cumulative multi-stage tax, with the value added calculated using the tax credit method. Under this method, liability is obtained by subtracting VAT on a firm's purchases from VAT due on its sales.[16]

Since firms can deduct VAT on investments in capital assets, even though they are the final consumers of the capital, the tax base of VAT is aggregate consumption (Department of the Treasury, 1984). If capital goods' VAT were not deductible (gross product VAT), or only the depreciation on the capital goods were deductible (income type VAT), then the tax would discriminate in favour of labor-intensive firms to the detriment of capital-intensive businesses. A consumption-type VAT, however, is neutral with respect to the factors of production. Furthermore, unlike a cascading tax, defined as a tax imposed at every stage inclusive of previously paid tax, VAT is neutral to management control. In other words, the incentive to reduce the tax incidence through horizontal or vertical integration, which in effect shorten the tax chain, is eliminated under VAT.[17]

Some of VAT's most praised features are its "self-administering" and "self-policing" qualities (Directorate General for Research, 1995). The statutory incidence of the tax lies with firms, as they are the collectors and payers of VAT to the tax authorities. Moreover, at least in theory, the tax credit method ensures that firms act as efficient collecting agents. This is so, because a firm has an incentive to report its purchases in full, its purchases are other firms' sales, and hence the self-checking aspect of VAT.[18] The economic incidence falls on final consumers, i.e. the tax is shifted to consumers through higher prices. The fractionated system of payment secures a portion of the tax due by the final consumer in stages.

VAT is an excellent source of revenue given its general character. Ideally, it would not distinguish between goods and services when these are intended for personal consumption. This is all the more necessary, since some services are close substitutes for goods. Taxation at one uniform rate, therefore, would leave the relative prices of goods and services unchanged, thus not distorting consumers' choices.

[16] Tait (1988), Terra and Kajus (2011) (Chapters 7 and 8) and Department of the Treasury (1984) (Chapters 2 and 3) among others offer a comprehensive analysis of the legal and economic aspects of VAT.

[17] Possibly the strongest impetus behind the adoption of VAT in Europe was the impossibility to guarantee the legal neutrality of a cascading tax. To ensure legal neutrality, the amount of tax payable under a turnover tax should be certain (i.e. expressed as a percent of the retail price) and equal for identical products, a condition which a cascading tax could not meet (Terra and Kajus, 2011).

[18] In practice, the self-checking mechanism is described as "illusory"' or plainly not working. See Keen and Smith (2006) and Tait (1988), page 304.

In reality, there are numerous reduced and super-reduced VAT rates in the EU, applying especially to education, medical products, housing, certain services provided by public authorities, social services, and others (Taxation and Customs Union, 2012).[19] Compared to Australia, Canada, New Zealand, Korea and Singapore that have a low single standard VAT rate levied on a broad base, the EU's VAT base is narrow with numerous zero and reduced rates (Owens et. al, 2011). Rate differentiation not only increases the administrative complexity of VAT and the scope for fraud, but also generates non-neutrality in its design. Nevertheless, reduced rates remain common in the EU, serving mainly as instruments of alleviating VAT's regressivity, as well as inducing certain consumption patterns.[20]

In the current VAT system, intra-EU and domestic transactions are not treated under the same VAT rules. In particular, exports are zero-rated in the country of origin, with the exporter receiving a refund of the VAT paid on his inputs. In this way the goods enter the country of destination free of tax, subsequently being taxed at the local rates. This "de-tax-and-re-tax" system is called a destination principle, and its purpose is to ensure that an imported good bears the same tax burden when sold to consumers in a given country as any other domestically produced good.

[19] According to the EU VAT Directive, Member States can have a standard rate not lower than 15%, and two reduced rates of at least 5%. Denmark is the only EU country that currently does not have a reduced VAT rate.

[20] VAT is a regressive tax, because the higher the personal income becomes, the lower the proportion of consumption. Reduced rates are aimed mainly at handling regressivity, although sometimes their purpose is to produce a desired consumption effect or to correct externalities by taxing environmentally friendly goods at lower rates. For example, smoking cessation products in the UK are subject to a reduced rate, and Portugal has a parking rate for solar and alternative energy equipment.