

## Chapter 3

# Measuring performance of VAT

*This chapter describes how the VAT Revenue Ratio (VRR) provides an indicator of the effect of exemptions, reduced rates and non-compliance on government revenues. It presents the updated VRR estimates for OECD countries and explains how the VRR is calculated and how it should be interpreted. It is complemented with technical notes on the measurement of final consumption expenditure, on the VAT treatment of public sector activities and on the VAT exemption for financial services.*

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

### 3.1. Introduction

The measurement of VAT performance is challenging. It has traditionally been measured by the “efficiency ratio”, defined as the ratio of VAT revenues to GDP divided by the standard rate (expressed as a percentage). Although the efficiency ratio is widely used as a diagnostic tool in evaluating VATs, its limitations are significant. In particular, the measure suffers from a fundamental weakness: a “perfect” efficiency ratio of 100% could be achieved by a product-type VAT levied at a uniform rate. However, this is misleading since the norm is a consumption-type VAT. This difficulty is addressed by taking final consumption as a reference for the potential tax base rather than production (Ebrill et al., 2001). If measured by the ratio of revenue from the tax to the product of the standard VAT rate and aggregate consumption, a benchmark VAT levied at a uniform rate on all consumption would have “C-Efficiency” of 100% provided that all the tax due is collected by the tax administration.

Building on the concept for measuring the “C-efficiency ratio” of VAT regimes as used by the International Monetary Fund (IMF), this chapter presents the estimates for OECD countries of the VAT Revenue Ratio (VRR). It provides an indicator that combines the effect of loss of revenues as a consequence of exemptions and reduced rates, fraud, evasion and tax planning. Although the VRR has to be interpreted with care and erosion of the tax base may be caused by a variety of factors, it may support policymakers in assessing the revenue raising performance of their VAT system and in identifying opportunities to raise additional revenues by improving the performance of VAT systems.

This chapter first explains what the VRR is intended to measure and how it is calculated (Section 3.2). It then presents the estimates for OECD countries of the VRR in 2014 and a high-level analysis of these estimates (Section 3.3). This is followed by some guidance for the interpretation of the VRR and explains that the use of this measure is subject to a range of caveats (Section 3.4). This is complemented by three technical notes that provide further detailed insight into two specific aspects of VAT policy design that may often have a significant impact on a country’s VRR and that may therefore assist readers in interpreting the VRR estimates (Section 3.5). The first technical note deals with the differences between the measurement of final consumption expenditure that is used to calculate the VRR and the potential tax base of a “pure” VAT regime; the second technical note discusses the VAT exemption for financial services and the third note looks at the VAT treatment of public bodies.

### 3.2. What does the VRR measure and how is it calculated?

#### ***What does the VRR measure?***

The aim of the VRR is to provide a comparative measure of a country’s ability to secure effectively the potential tax base for VAT. The VRR measures the difference between the VAT revenue actually collected and what would theoretically be raised if VAT was applied

at the standard rate to the entire potential tax base in a “pure” VAT regime and all revenue was collected:

$$\text{VRR} = \frac{\text{VR}}{\text{B} \cdot \text{r}}$$

Where: VR = actual VAT revenues; B = potential tax base and r = standard VAT rate

The “standard” rate refers to the default rate applicable to the tax base, unless otherwise advised by legislation. Legislation can (and many countries do) provide that lower (or higher) rates are applicable to a defined list of products. Reduced VAT rates are still widely used in OECD countries, mainly for equity or social objectives (basic essentials, health, education, etc.). No OECD countries apply higher VAT rates (see Chapter 2).

### **Assessing the tax base**

The main methodological difficulty in the calculation of the VRR lies in the assessment of the potential tax base, since no standard assessment of the potential VAT base for all OECD countries is available. The potential VAT base includes all supplies of goods, services and intangibles made for consideration (or deemed to be made for consideration) by businesses or any other entity acting as a business (e.g. individuals, government entities providing supplies for direct consideration, etc.) to final consumers. In principle, the tax base ultimately corresponds to the expenditure made by final consumers to obtain goods, services and intangibles. In practice, however, many VAT systems impose VAT burden not only on final household consumption, but also on various entities that are involved in non-business activities or in VAT exempt activities (see Chapter 1 and 2). In such situations, VAT can be viewed alternatively as treating such entities as if they were end consumers, or as “input taxing” the supplies made by such entities on the presumption that the burden of the VAT imposed will be passed on in the prices of the outputs of those non-business activities. The tax ultimately collected by the government in these situations is the tax on these inputs.

In the absence of a standard assessment of the potential VAT base for all OECD countries, the closest statistic for that base is final consumption expenditure as measured in the national accounts, since VAT is, ultimately, a tax on final consumption. Final consumption expenditure is calculated according to a standard international norm, the System of National Accounts (SNA 2008) under Item P3 (except for Turkey, Chile and Japan that still use SNA 1993).

The final consumption expenditure (domestic demand) consists of the following components:

- P31-S14: Private final consumption expenditure of households.
- P31-S15: Final consumption expenditure of non-profit organisations serving households (NPSH).
- P3-S13: Final consumption expenditure of general government, including:
  - ❖ P31-S13: Individual consumption expenditure of general government.
  - ❖ P32-S13: Collective consumption expenditure of general government.

The differences between the final consumption expenditure as measured in the national accounts and the potential VAT base for OECD countries, and how these differences may influence the VRR estimate for a given country, are discussed in more detail in Section 3.5. This explanation may be helpful in interpreting the VRR estimates and

in acquiring a deeper understanding of the various factors that may influence the result for a given country.

### **The formula used to estimate the VRR of OECD countries**

In the VRR calculation formula as presented above, the potential tax base (B) is measured by the final consumption expenditure under Item P3 in the national accounts. However, since the SNA measures consumption expenditures at market prices, i.e. including VAT, revenues from VAT should be deducted from the amount under P3. Indeed, the theoretical basis for taxation should not include the tax itself.

As a result, the VRR estimates presented in Table 3.A3.1 have been calculated as follows:

$$\text{VRR} = \frac{\text{VR}}{(\text{FCE} - \text{VR}).r}$$

Where: VR = actual VAT revenues; FCE = Final Consumption Expenditure (Item P3 in National Accounts); and r = standard VAT rate.

### **3.3. The VRR estimates for OECD countries**

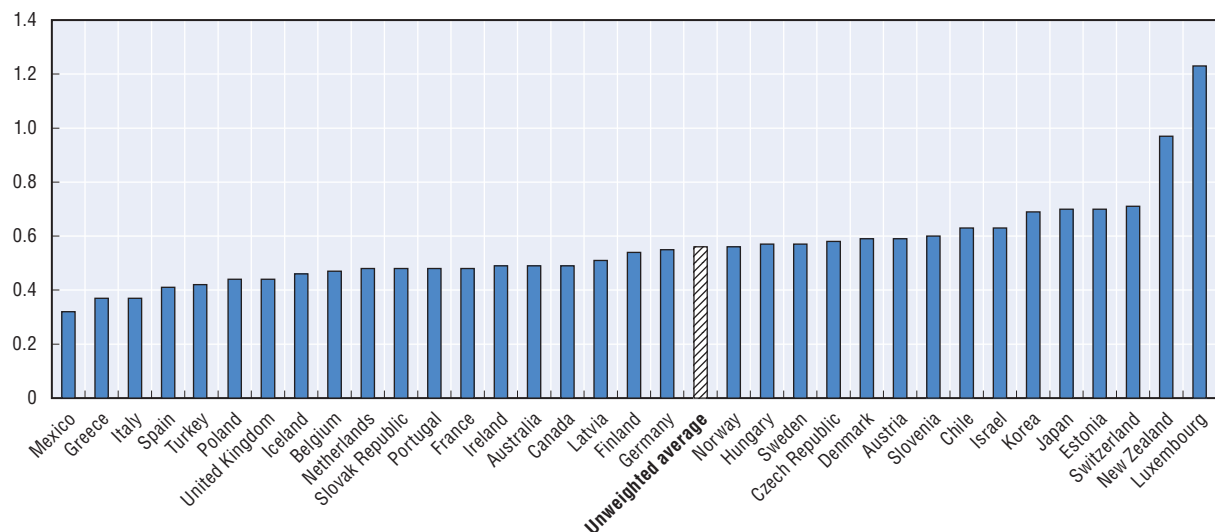
Across the OECD, the unweighted average VRR has remained relatively stable at 0.56, compared to 0.55 in 2012, meaning that 44% of the potential VAT revenue is not collected. Behind this average, Table 3.A3.1 shows the considerable variation in the VRR estimates across OECD countries.\* In 2014 the estimates varied from 0.32 (Mexico) to 1.23 (Luxembourg). Two countries have a VRR far above the others: Luxembourg (1.23) and New Zealand (0.97) while two countries have a VRR estimate considerably below the OECD average, Mexico (0.31) and Greece (0.37). The majority of countries (28 of 34) have a VRR below 0.65 and almost half (16 of 34) have a ratio below 0.50. This suggests that a considerable part of the potential VAT revenue remains uncollected in many OECD countries.

This VRR notably reflects the fact that preferential treatments, such as reduced rates and exemptions, are still widely used in OECD countries (see Tables 2.A2.2 and 2.A2.4). This is confirmed by available data on tax expenditures, reflecting the cost of tax concessions (OECD 2010).


It appears that there is no direct correlation between the level of the standard VAT rate and the VRR. Countries with very different VAT rates may have comparable VRRs. Australia and Ireland, for example, both have a VRR of 0.49 while their standard VAT rates are respectively 10% and 23%. Although about two thirds of countries (21 of 34) have a VRR between 0.45 and 0.65, they have standard VAT rates which vary widely, from 5% (Canada) to 25% (Denmark, Norway, Sweden). Denmark, Norway and Sweden combine a high standard VAT rate (25%) with a VRR above the OECD average (respectively 0.59, 0.56 and 0.56) while Mexico and Turkey combine lower standard VAT rates (respectively 16% and 18%) with a VRR estimate considerably below the OECD average (respectively 0.32 and 0.42). Japan combines a low VAT rate (5%) and absence of a domestic zero rate with a high VRR (0.70).

\* For a number of countries, VRR figures presented in this edition may be slightly different from those presented in previous editions (including for figures before 2009) due to the update of the SNA methodology ([www.oecd.org/std/na/sna-2008-main-changes.htm](http://www.oecd.org/std/na/sna-2008-main-changes.htm)).

Figure 3.1. VAT Revenue Ratio in OECD countries 2014



Source: Author's own calculations based on Revenue Statistics 2016 and National Accounts. The VAT revenue ratio (VRR) is defined as the ratio between the actual value-added tax (VAT) revenue collected and the revenue that would theoretically be raised if VAT was applied at the standard rate to all final consumption (see Table 3.A3.1).

StatLink  <http://dx.doi.org/10.1787/888933419971>

The respective weight of the different factors that affect the VRR may vary widely across countries depending on the circumstances. The two countries with the highest VRR, Luxembourg and New Zealand, are both far above the OECD average (with respectively 1.23 and 0.97 compared to an average of 0.56) and even significantly above the country that follows immediately (Switzerland with a VRR of 0.71). However, the reasons behind such high ratios are very different.

The VRR for Luxembourg has constantly increased since the late 1990s, from 0.56 in 1996 to 1.23 in 2014. This increase is correlated with deep changes in the EU marketplace, in particular the liberalisation of financial services and the boom of e-commerce. It is reasonable to assume that these market factors and their specific VAT treatment have had a strong upward effect on Luxembourg's VRR. It may be assumed that Luxembourg's position as an international financial centre has resulted in additional VAT revenue for the country. According to EU VAT rules, the supply of financial services is generally exempt from VAT in Luxembourg without right to deduct the input tax, including when supplied to customers in other EU Member States. This means that the VAT incurred by the providers of the financial service providers in Luxembourg increase Luxembourg's VAT revenues while a large share of the corresponding final consumption occurs in other EU Member States as a result of the increasing cross-border trade in financial services. Luxembourg has over time also become an international centre for e-commerce, notably as a consequence of the VAT treatment of this activity under EU VAT legislation. According to this legislation, e-commerce supplies to final consumers in other EU Member States were taxed (until the 1 January 2015) in the Member State where the supplier is established. The low standard VAT rate in Luxembourg, the lowest of the EU (15% in 2014), has acted as an incentive to e-suppliers to establish in Luxembourg. This has generated additional revenue for the country, which has continued to increase over time as a result of the strong growth of the internet economy. The change in the place of taxation rule on 1 January 2015, where suppliers have now to charge VAT to EU consumers on the basis of the rate applicable in

their Member State of residence, is likely to trigger a decline in the VRR for Luxembourg from 2015 onwards.

New Zealand has a constant very high VRR since the implementation of the VAT (GST) in the country and this is due to different factors. First, unlike Luxembourg, New Zealand has a very broad base with limited exemptions (see Table 2.A2.4) and a limited use of a zero rate (see Table 2.A2.2). Second, New Zealand taxes public services under VAT (see Chapter 2). Although this doesn't generate actual additional revenue (the VAT charged by public bodies to the government is covered by budgetary transfers and the VAT collected on local government activities is included in local taxes), this increases the share of revenues from VAT in total tax revenues, which has an upward effect on the VRR. On the other hand, the potential VAT base as measured by the national accounts (see section above) does not include the value added by the government. The combination of these factors may explain why the VRR for New Zealand is so high and even sometimes above 1.

At the opposite end, Mexico has the lowest VRR (0.32) amongst OECD countries. This is likely to be due to a combination of factors such as the scope of VAT exemptions, the extensive application of a domestic zero rate and a low compliance rate (Mexico's VAT gap for 2010 has been estimated at 21.7%; see CIAT, 2012). A VAT reform was implemented in 2014 to eliminate the reduced VAT rate of 11% in border areas so that the standard VAT rate of 16% now applies throughout the country. The reform also removed the zero rate on hotel and related services to foreigners, now taxed at the standard rate, and adjusted the regime of inward processing arrangements (*maquiladores*) to reduce the risk of fraud. The VRR for Mexico increased from 0.31 in 2012 and 0.28 in 2013 to 0.32 in 2014.

Although the unweighted average of the VRR has remained relatively stable over time, the impact of the economic crises is visible in a many countries, particularly among those that have been hardest hit by the impact of the global financial and economic crisis. Between 2007 and 2012, the VRR decreased in 28 OECD countries and increased in only 7 countries. The fell was particularly strong (more than 0.1) in 4 countries (Estonia, Greece, Iceland, Ireland, Latvia, Poland, Slovak Republic, Slovenia and Spain). The reductions in VRR may be explained by a combination of factors including non-compliance and changes in consumption patterns resulting from the economic crisis. Indeed, if the share of total households' expenditure for basic items (subject to reduced rates or exemptions – food, health, housing, etc.) increases compared to the share of expenditure for other items (new houses, cars, leisure), the VRR decreases.

### 3.4. How to interpret the VRR estimates?

#### **Factors that may influence the VRR**

In theory, the closer the VAT system of a country is to a "pure" VAT regime, the closer its VRR is to 1. A lower value reflects such factors as the effects of reduced rates, exemptions or a failure to collect all tax due. A VRR above 1 is possible in theory where almost all the tax base is covered by the standard rate and a number of exemptions without right to deduction apply so that the cascading effect of the exemption provides additional revenue for the government that exceeds the cost of the exemption. A VRR close to 1 is taken as an indicator of a VAT bearing uniformly on a broad base with effective tax

collection. In practice, the VRR rarely equals 1 and a number of complex factors, alone or in combination, may influence the results positively or negatively. These include:

- The application of lower VAT rates to a number of goods and services and the level of such lower rates that reduce the tax revenue and have a negative impact on the VRR.
- The level of the registration and/or collection threshold under which small businesses do not account for VAT. These thresholds reduce the amount of VAT collected, although it could be argued that the adverse revenue consequences of such thresholds are likely to be limited since the businesses under the thresholds will generally not be able to deduct any input VAT and their value added can be expected to be modest.
- The scope of the exemptions. Exemptions may reduce the tax revenue (when exemption applies to goods and services directly supplied to final consumer e.g. healthcare) or may increase that revenue when exemption occurs early in the supply chain (e.g. financial services made to businesses) and the revenue arising from the cascading effect exceeds the potential tax arising from taxation at standard rates with deduction of input tax. Depending on the features of the exemptions and market structures, exemptions may influence the VRR upwards or downwards. The application of a VAT exemption for financial services may often have a considerable impact on the VRR, given the importance of the financial services output in many countries (for more detail, see the technical note on financial services in Section 3.5).
- The VAT treatment of public sector activities. Final consumption by government is the second largest final use in national accounts after household consumption. From a VAT perspective, governments' activities are exempt or outside the scope of VAT in most countries, New Zealand being the notable exception treating all governments activities as taxable. As a consequence, public bodies cannot deduct the input VAT paid on their taxable expenditure, again with the exception of New Zealand that provides a full right to deduct input tax for government activities. A number of countries have created mechanisms for balancing the adverse effects of the exemption, such as targeted VAT refunds, full or partial right to deduct input VAT, budgetary compensations or extended taxation of government activities. The different options chosen by governments may have varied impacts on the VRR. Compensations outside of the VAT system (e.g. a simple budgetary compensation) have no direct effect on the VRR since the government activities are still fully input taxed, generating the corresponding VAT revenue. On the other hand, extended right to deduction may reduce the VAT collection by the government and hence influence the VRR downwards. From the opposite perspective, extended taxation of government activities like is the case in New Zealand will increase the amount of VAT collected since its outputs will be taxed rather than its inputs (for more detail, see the technical note on public sector in Section 3.5).
- Place of taxation rules for international trade may diverge from the destination principle and may not always allow the full taxation of the potential tax base in the destination country (e.g. services taxed in the country where the supplier is established while customers are located abroad). Depending on the position of the country –net exporter or net importer– the VRR can be influenced upwards or downwards. Inconsistent place of taxation rules may also lead to double taxation of cross-border trade.
- The capacity of the tax administration to manage the VAT system efficiently and the degree of compliance by taxpayers influences the VRR as low compliance has a negative



impact on actual VAT revenue. Taxpayers' insolvencies and bankruptcies can also influence the VRR downwards.

- The failure of the tax administration to pay VAT refunds to businesses when they are in a tax credit situation (e.g. exporters can claim a tax credit on their inputs while exports are made tax-free), which is contrary to the fundamental principle of VAT-neutrality, may influence the VRR upwards.
- The evolution of the consumption patterns may also affect the tax revenue. The VRR can for instance be reduced, all other things equal, when the share of consumption of necessities that are taxed at the lower rate increases, e.g. as a result of an economic crisis.
- Finally, also the possible impact of the differences between the measurement of final consumption expenditure in the national accounts and countries' potential VAT base should be taken into account when interpreting the VRR (see Section 3.5).

### **Assessing the relative impact of the various factors that may impact the VRR**

The level of the VRR rarely depends on one factor in isolation but rather on the interaction between them. For example, a high standard rate may create an incentive for evasion while multiple lower rates may lead to revenue loss due to misclassifications. Exemption of certain sectors of activity may create distortions and incentives for avoidance, which require additional administrative capacities that cannot be used for the efficient collection of VAT. Inefficient tax administration, burdensome administrative requirements and complex VAT mechanisms may reduce the degree of compliance of taxpayers.

These potentially influencing factors can be divided in two main categories:

- those resulting from policy decisions, mainly affecting the tax base or the coverage of the standard rate (i.e. reduced VAT rates and exemptions), and
- those related to the efficiency of the tax collection and compliance levels.

Measuring only the impact of policy decisions on a country's VAT revenue, sometimes called the "Policy Efficiency Ratio", can be achieved by comparing the theoretical VAT revenue under the actual tax base and rates (assuming perfect compliance) with that under a uniform tax on all consumption:

Policy Efficiency Ratio = (VAT theoretical revenue from actual tax law)/(final consumption x Standard VAT rate).

On the other hand, a measure of compliance, sometimes called the "Compliance Efficiency Ratio" or the "VAT Gap" in the EU would compare actual revenue with the theoretical VAT revenue under the legislated tax base and rates:

Compliance Efficiency Ratio = (VAT revenue)/(theoretical VAT revenue from actual tax law)

The VRR is a combination of the "Policy Efficiency Ratio" and the "Compliance Efficiency Ratio". Methods may be developed to produce breakdowns of the composition of the VRR. One method may consist in using the tax expenditure (i.e. the revenue cost of departure from the application of the standard rate to the "entire" tax base) for calculating the policy efficiency ratio. The remaining difference between 1 and the actual VRR would provide the compliance efficiency ratio by deduction. However, given the number of other factors that may influence the VRR the figures should be used with caution.



Another method would be to calculate the “tax gap” i.e. the difference between tax collected and the tax that should be collected if all consumers and businesses fully complied with the law. This method is employed for the VAT in the EU (CASE 2016), where the VAT Gap is defined as the difference between the amount of VAT actually collected and the theoretical tax liability according to tax law (VAT Total Tax Liability VTTL). The VAT Gap is estimated using a “top-down” approach that applies respective VAT rates to the relevant components of consumption (including final consumption of households; final consumption of government and non-profit institutions, intermediate consumption for partially exempt businesses; expenditure on housing, country-specific, adjustments, etc.). Australia uses a similar method (ATO, 2015). The EU survey (CASE, 2016) also provides an estimate of the policy gap and its decomposition in “rate gap” and “exemption gap” where it appears that if many Member States have some scope for broadening the VAT base at standard rate, better enforcement remains a key component of any strategy to improve the VAT system.

### 3.5. Technical notes

#### ***Differences between final consumption expenditure and the VAT base that may influence the VRR***

The main measure of consumption in national accounts is final consumption expenditure. This includes the consumption by households, non-profit organisations and general government. It includes a number of items that are not considered part of the tax base in any OECD country, such as the imputed rents on owner-occupied housing (part of consumption of households) and the services provided free of charge by the public administration (part of government consumption). On the other hand, it does not include items that are subject to VAT in some OECD countries, most notably housing construction.

Given the differences between final consumption expenditure and the VAT base, one can take the view that VAT is a general tax on consumption and that this implies that its revenues should be compared with those that would be raised if it were applied to the national accounts definition of consumption – its natural base. Alternatively, an adjustment of the national accounts measure of consumption to bring it closer to a typical VAT base would allow for a better interpretation of a country’s VRR as it would better reflect the revenue impact of deviations from a generally accepted VAT base.

Whichever approach is taken, a number of more detailed issues will need to be addressed. This is most obvious for the second approach, where detailed decisions would have to be made as to what constitutes a “standard VAT base”. This problem is similar to the problem of defining a benchmark tax system against which tax expenditures are judged, and it might well be as difficult to solve. The sections below look at the main differences between final consumption expenditure in national accounts and the typical VAT base and some additional factors that may influence the VRR.

#### ***Private final consumption expenditure of households***

Households’ final consumption expenditure includes purchases of the goods and services used by households to meet their everyday needs (clothing, household durables, rent, transport, personal services and so on), which represent by far the largest part of their consumption expenditure. The way final consumption expenditure is accounted for in SNA matches the potential VAT base. Also, by convention, all goods and services are considered to have been entirely consumed once they have been acquired by household and are

therefore regarded as “final consumption”, which is consistent with the way VAT works (see Chapter 1).

The treatment of private dwellings is the main area where final consumption expenditure in SNA deviates from the potential VAT base. Indeed, purchases of dwellings are not recorded as final consumption expenditure under item P3, but rather in gross fixed capital formation (under item P5). This doesn't exactly match the potential VAT base as it should normally include the sale of new dwellings by businesses to final consumers. National accountants also regard the owners of dwellings as producing housing services either for themselves or for tenants. The purchase of repair materials or services of plumbers and electricians needed to keep the dwelling in good condition are not considered as final consumption but as intermediate consumption. From a VAT perspective, when dwellings are made available for rent by their owners, rentals should be recorded as final consumption expenditure by tenants since they normally belong to the potential VAT base. On the other hand, final consumption in the national accounts includes the imputed value of the housing services for owner-occupiers (imputed rents) but, since they don't result from any transaction, they can't be subject to VAT and do not belong to the potential tax base.

Adjusting the denominator of the VRR for taking these differences into account may be challenging for a number of reasons: the value of imputed rents is not available in national accounts of a number of member countries. Second, adjustments may be complex. For example, expenditures incurred by the owner for maintenance and repair of its own occupied dwelling should be considered to be final consumption while the same expenditures aimed at maintaining rented dwellings should not; sale of private dwellings should be included, but only the sale of dwellings by businesses (e.g. builders) and not the ownership transfer between households. In addition, if expenditures on fixed assets in the form of dwellings were completely included in the potential tax base, there would be some double counting in respect of rentals of dwellings. As a result, in respect of private dwellings, no adjustment is made of the potential VAT base as measured by final consumption expenditure.

#### ***Final consumption expenditure by the non-profit organisations servicing households (NPSH)***

NPSH are units formed by groups of households in order to supply services to themselves or to other households on a non-commercial basis. NPSH include political parties, trade unions, religious organisations, sports clubs, cultural associations, charities and associations with philanthropic aims (Red Cross, etc.) and certain charitable foundations. In some countries, a number of universities are also classified in this sector. On the other hand, non-profit institutions which are not directly financed by households but, for example, by enterprises (Chambers of Commerce, professional associations, etc.) are classified in the enterprise sector. Those controlled or financed by general government are classified in the general government sector. NPSH constitute only a small sector in the national accounts.

Like general government, the NPSH provide “non-market” services. For this reason, their treatment in the national accounts is similar to that of general government (see below). The output of services by NPSHs is valued at cost, and by convention the NPSH “consume” the services they produce. Final consumption expenditure of the NPSH is therefore equal to their operating costs. There is no need to divide between individual

expenditure and collective expenditure here since these organisations are at the service of households and all their expenditure is therefore considered as individual. Such treatment under SNA corresponds to the VAT treatment, where in most countries NPSH are VAT exempt without the right to deduction of input tax and VAT is ultimately collected on their inputs.

### ***Final consumption expenditure of general government***

Final consumption by government is the second largest final use in national accounts after household consumption. Expenditures by general government are considered by convention as forming part of final consumption by government itself. For example, current expenditure on police and education is regarded as consumption by general government. This convention reflects the fact that, although these expenditures benefit households and enterprises, it is not possible to attribute them precisely to the beneficiaries, since they do not buy them, even though they pay the taxes that finance them. It has therefore been convention not to attempt to allocate these expenditures to their beneficiaries but to attribute all these expenditures to general government itself. Among other advantages, this makes it possible to remain closer to the actual monetary flows.

General government consumption expenditure includes collective consumption expenditure (expenditure related to the activities of general government that are not attributable uniquely to households but that also benefit enterprises such as National Assemblies, Parliaments, ministries of foreign affairs, safety and order, defence, home affairs, economic affairs, etc.) and individual consumption expenditure where individual beneficiaries could in principle be identified (expenditure that is clearly carried out for the benefit of households such as public education and public healthcare; spending on aid for social housing; operating expenses of museums and other government services to households). In accounting terms, final consumption expenditure by government is equal to its cost, defined by the following sum: compensation of employees of the government; *plus* purchases by government of materials and other intermediate consumption items; *plus* consumption of government fixed capital; *plus* the purchases of goods and services by the government for the benefit of households (for example, reimbursement of healthcare services, housing allowances, etc.); *minus* partial payments by households or firms for services provided by government (entry to museums, purchases of government publications, etc.).

From a VAT perspective, governments' activities are exempt or outside the scope of VAT in most countries, New Zealand being the notable exception treating all governments activities as taxable. As a consequence, public bodies cannot deduct the input VAT paid on their taxable expenditure and this non-deductible VAT is therefore part of the cost of government consumption, again with the exception of New Zealand that provides a full right to deduct input tax for government activities. Final consumption expenditures by NPSH and general government is regarded as final consumption for VAT purposes since these organisations are at the last step in the VAT supply chain. They pay VAT on their inputs but cannot, in principle, deduct this input VAT since their output is generally exempt or outside the scope of VAT. This approach broadly fits with the definition of the tax base provided above, which covers expenditure to attain consumption (rather than actual consumption itself). The cost (or size) of the government may have an impact on the VRR. For example, if the salary cost of producing the same service to the population (e.g. justice) is 100 units in Country A and 120 units in Country B, the potential VAT base as

measured by Item P3 (P32-S13) will be higher in Country B, which will mathematically show a lower VRR than Country A, all other things equal.

A number of countries have created mechanisms for balancing the adverse effects of exemption, such as targeted VAT refunds, full or partial right to deduct input VAT, budgetary compensations or extended taxation of government activities. As indicated above, New Zealand, treats all government activities as taxable and provides for the corresponding full right to deduct input tax. The different options chosen by governments may have varied impacts on the VRR. Compensations outside of the VAT system (e.g. a simple budgetary compensation) have no direct effect on the VRR since the government activities are still fully input taxed, generating the corresponding VAT revenue. On the other hand, extended right to deduction may reduce the VAT collection by the government and hence influence the VRR downwards. From the opposite perspective, extended taxation of government activities will increase the amount of VAT collected since its outputs will be taxed rather than its inputs. The extreme example is the New-Zealand system, which generates significant additional VAT revenue due to the full taxation of government outputs, even though it ultimately does not generate actual revenue since the VAT is paid by the government itself (central government) or is included in other taxes (i.e. in local government taxes). In the latter case, the VRR is clearly influenced upwards.

#### ***Other differences that may influence the VRR***

Other elements may potentially influence the VRR. These include the distortion that may arise from the inclusion in the calculation of the potential VAT base of imputed transactions (other than imputed rents) that are considered as part of final consumption expenditure by national accounts. Some of those transactions (e.g. goods that households produce for themselves such as agricultural products and do-it-yourself services) are not part of the potential tax base while others (e.g. exchange of goods and services undeclared to the authorities) could arguably be considered within the scope of VAT. However, the global impact on the potential tax base is very difficult to measure from the national accounts. Another element is the inclusion of business-to-consumer supplies of second-hand goods, such as motor vehicles, in final consumption expenditure. The consumption figures of households include the full price paid by the household for the good. Since VAT applies only to the margin of the reseller in most cases, this may distort. Finally, cross-border shopping may also marginally influence the VRR since final consumption expenditure arises in one country while the tax accrues to another.

#### ***The VAT treatment of public sector activities***

In most countries, government entities and public sector bodies are VAT-exempt, i.e. they don't account for VAT on their outputs and cannot deduct the input tax. This means that, from a tax revenue perspective, they are treated as final consumers and VAT collected on their taxable purchases only (i.e. the supplies provided to them by taxable persons) and the value-added by the public sector itself is not taxed.

The reasons for such an exclusion from the VAT are both substantial and practical. Indeed, in most modern VAT systems, the intended tax base is final private consumption expenditure, which excludes collective consumption expenditure (i.e. services that are provided simultaneously to all citizens and that are automatically consumed without any specific action of their part). Collective consumption expenditure notably includes security (police, army); collective health (prevention policies); education and culture (state's

schools, free libraries and monuments); and town planning (maintenance and development of public space). From a legal point of view, most VAT systems provide that supplies are only taxable where there is a direct connection between an identifiable supply and a specific consideration, which is generally not the case for collective consumption items. Finally public entities, when acting as such, are not engaged in an economic activity and therefore do not qualify as taxpayers.

On the other hand, public sector activities are generally taxable in situations where the exemption would create substantial distortions of competition with the taxable private sector providing similar services or when public entities are engaged in a commercial activity. Services provided by public entities against a specific fee considered as a consideration directly connected with the service can also be treated as taxable supplies. In those cases, public entities are considered to be taxable persons as a result of this activity, whatever their legal status.

Despite the conceptual and practical rationale for exemptions of public sector activities, difficulties may arise in situations where it is not easy to draw the line between taxable and exempt activities as exemptions are determined by a combination of elements such as the nature of the activity, the legal status of the supplier or the market circumstances. The exemption can also create distortions with the private sector, prevent the emergence of competitive businesses and create a bias against outsourcing of support or back-office functions. Indeed, since they are tax exempt i.e. “input taxed”, public entities will bear the burden of the VAT on supplies of outsourced functions by taxable businesses while this will not be the case for internally produced services. Exemption can also create tax cascading effects and distortions in the cross-border trade in services and intangibles, as exemptions in the financial sector do (see section above).

There are two main options for addressing the adverse effects of the exemption: refunding (part of) the input tax incurred by public bodies and extending the concept of taxable activity to public services. A refund system would allow bodies who perform exempt activities to reduce or eliminate the VAT burden on their inputs to minimise the bias towards self-supply. Within the EU, eight Member States (Austria, Denmark, Finland, France, Netherlands, Portugal, Sweden and the United Kingdom) have introduced systems designed to compensate public bodies for the inability to deduct input VAT. These compensation systems appear in different forms, for the most part being outside the national VAT regime (for detailed description see Copenhagen Economics 2013). Depending on the countries, the input VAT refund may be allocated to public bodies, irrespective of their activities (e.g. Denmark, Finland) or to a wider span of bodies, but covering certain sectors only such as health and social security (Austria) or army, political parties, churches, social solidarity bodies and fire departments (Portugal). The allocation of refunds can also be limited to municipalities, provincial authorities and regional governments (Netherlands). In addition to refunds for input VAT, the system can also compensate public bodies for the VAT embedded in the price of services provided to them by private exempt suppliers e.g. in the health area (Finland, Sweden). The refund can also take the form of a fixed percentage of expenses (e.g. in France where legal entities governed by public authorities receive such compensation for the VAT that they pay on their investment expenses). Some countries also place a *de minimis* limit where certain bodies can be refunded input VAT if the proportion of this input VAT incurred is insignificant in relation to input VAT attributable to taxable non-exempt transactions (United Kingdom). In Canada, public service bodies such as non-profit organisations, municipal authorities,

public education bodies or hospital authorities may be eligible to claim a full or partial GST/HST rebate for the tax paid on their inputs (Gendron, 2013). In addition, systems can be put in place to address specificities of the federal VAT system. In Canada for instance the Constitution prevents federal and provincial governments from taxing each other, so sales from taxable businesses to Provinces are zero-rated (for provinces that do not participate to the Harmonised Sales Tax – HST) while the governments of the five participating HST provinces have agreed to pay the GST/HST on their taxable inputs.

However, while partially remedying the bias against outsourcing, the VAT refunds to public bodies may increase the distortion of competition with the private sector by adding a compensation for non-deductible input VAT to an exemption of the output. It also adds a compliance burden on public bodies in order to track the amount of non-deductible input VAT for compensation purposes.

As an alternative to a rebate system, New Zealand applies a “full taxation system” where all supplies by public bodies are considered taxable with deduction of input tax (that system is described in detail in Millar, 2013). Under that approach, many (but not all) flows of government money are treated as consideration for taxable supplies. In that system, the concepts of “taxable person”, “supply” and “taxable activity” are adjusted to include the central government; local authorities and the grants and subsidies they provide. In that system, the public authorities of the central government are considered taxable persons carrying out taxable activities. Public bodies are deemed to be supplying taxable services (security, justice, education, health, etc...) to the government, which gives them a budget (considered as a consideration for VAT purposes) for delivering such services. As a concrete example, a public body receives a budget of NZD 1 million for reforming the government procurement performance. The public body in charge of the reform will invoice NZD 1 million plus NZD 150 000 GST. If the body in charge of the project needs inputs from other public bodies or from private businesses to deliver the supply, the GST charged on those inputs will give rise to an input tax credit claimed by the public body. The central government outputs for collective or individual consumption by citizens are not invoiced to them directly (there is no GST on income taxes) but to the government, unless the public body charges a specific fee to individual citizens as consideration for a specific individual supply. As a result of this system, supplies between public authorities are taxable but are ultimately paid from the government’s budget itself and no net revenue is generated.

The full taxation system applied to local government works more like regular businesses. Local governments charge local taxes (essentially a property tax) to owners of land to fund both collective and individual consumption. Those property owners may be resident/non-resident, GST registered businesses, unregistered businesses and end consumers. The amount of tax charged to a particular taxpayer may not reflect the value of his individual consumption of local government services. According to the GST law, these local taxes are treated as consideration for taxable supply of services to owners of land. Unlike for central government bodies, the GST is charged directly to those owners, who pay GST on the local tax. GST registered businesses are entitled to an input credit for the GST on those taxes (unless they are input taxed) while end consumers are not and the system generates, in this instance, net revenue for the government. Most other supplies made by the local government (e.g. fees and charges for the supplies of permits and licences, specific grants and subsidies, etc.) to individual consumers are also taxable. Of course the local government is entitled to a full input tax credit for the GST incurred on its inputs.

### **The VAT exemption of financial services**

Financial (banking and insurance) services are generally exempt from VAT mainly because of the difficulty to assess the tax base on a transaction-by-transaction basis for the complex intermediation services that constitute the bulk of financial activity. Ideally, the VAT would be levied only on the intermediation charge, which reflects the actual value added by the financial institution and not on the interest rate, premium or return that has to be paid by the financial institution's customers. However, in practice, this distinction is not easily made. Although taxing financial services under VAT would improve the efficiency of the system, it is often argued that, in the absence of a simple and robust approach to assessing the tax base, such taxation might lead to high tax compliance, administration and enforcement costs.

The exemption of financial services from VAT creates a number of distortions with respect to both consumer and business decisions. Exemptions cause a break in the VAT chain, meaning that financial institutions incur significant amounts of irrecoverable VAT paid on their inputs as they cannot charge VAT on their onward supplies. This creates cascading tax effects since the irrecoverable VAT embedded in the charges that banks make to their business customers cannot be recovered and will be carried through to final prices for domestic consumption. The incidence of the non-recoverable VAT can also affect profits in the financial sector and/or lead to higher prices for consumers depending on the degree of competition in the market. The exemption also provides financial institutions with a tax-induced incentive to self-supply to avoid incurring irrecoverable VAT, which would be the case if they obtained these supplies from other businesses. Thus, the tax system provides an incentive for vertical integration.

This break in the VAT chain also creates distortions of competition between domestic services (exempt with no right of deduction/input taxed) and services imported from a VAT country (where export of such services are free of VAT) or from a non-VAT country (e.g. USA). Exemption also creates incentives for "channelling" some supplies through foreign jurisdictions or for artificially changing the nature of a supply with a view to increasing the deductible proportion. Such difficulties are reinforced by the absence of coherence for the VAT treatment of financial services between countries e.g. on their definition, the scope of the exemption, the calculation of deductible proportion, etc.

Since financial institutions provide many kinds of services, some being taxed while others are exempted without right of deduction, they need to assess which of their inputs (or which share of certain inputs) are used for providing onwards taxable supplies and thus give right to deduction and which do not. In a highly complex environment, such allocation of inputs to taxable outputs or the computation of a deductible proportion involve high administrative and compliance costs as well as uncertainty for businesses and tax administrations. In addition, it is increasingly difficult to draw a bright line between taxable and exempt services as new products and services emerge.

One way of correcting the cascading effect of the exemption would be to apply a zero rate to B2B financial transactions either directly as in New Zealand or indirectly as in Australia and Singapore. On the other hand, taxing all explicit fees to final consumers would allow for taxation of at least part of the final consumption of financial services. However, such a solution would still involve an under-taxation of non-fee based B2C financial services and would harm the self-policing feature of VAT.



Although it appears that the best technical solution would be to fully tax financial services under VAT with full deduction of input tax the fundamental question remains designing a practical mechanism for effecting such an outcome. Actually, the main difficulty for achieving a proper taxation of financial services under VAT does not lie in the VAT per se but in the application of the invoice-credit system to services priced on the basis of margin spreads rather than explicit fees (Zee, 2013). This difficulty, combined with political and historical factors has led most countries to exempt such services from the VAT.

Considerable work has been done over the years on the development of an appropriate method, mainly the subtraction method; the truncated cash flow method (TCA); and the modified reverse charge mechanism (MRC). However, none has found universal favour. The case for the actual feasibility of the reform has still not been fully made i.e. in terms of administrative burdens or compliance. In addition, comprehensive evaluation of the merits of the reform i.e. the removal of the distortions and its potential costs, in particular in terms of revenue for governments seems still missing. Further, political sensitivities around taxation of banks also need to be considered. However, given new technologies and accounting standards it should be possible to devise a methodology which taxes margin-based financial services in a fair, reliable and cost effective manner. This could be done in a manner which strikes a balance between simplicity and excessive attention to detail (Kerrigan, 2010).

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ANNEX 3.A3

*VAT Revenue Ratio*

Table 3.A3.1. VAT Revenue Ratio (VRR)

	Standard VAT rate 2014	1976	1980	1984	1988	1992	1996	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Difference 2007-12	Difference 2012-14	
Australia	10.0								0.56	0.54	0.54	0.49	0.51	0.50	0.48	0.47	0.50	0.49	-0.07	0.02	
Austria	20.0	0.66	0.65	0.64	0.62	0.61	0.60	0.61	0.59	0.57	0.58	0.59	0.58	0.58	0.58	0.59	0.59	0.59	0.01	0.00	
Belgium	21.0	0.56	0.60	0.49	0.5	0.49	0.46	0.50	0.50	0.50	0.51	0.48	0.46	0.48	0.48	0.48	0.47	0.47	-0.03	0.00	
Canada	5.0					0.43	0.47	0.49	0.49	0.46	0.50	0.49	0.49	0.50	0.47	0.47	0.48	0.49	-0.03	0.02	
Chile	19.0					0.63	0.68	0.64	0.67	0.64	0.67	0.64	0.67	0.70	0.59	0.62	0.63	0.64	0.63	-0.03	-0.01
Czech Republic	21.0						0.43	0.42	0.56	0.53	0.54	0.57	0.55	0.53	0.55	0.57	0.57	0.58	0.03	0.02	
Denmark	25.0	0.63	0.60	0.60	0.60	0.56	0.57	0.59	0.62	0.64	0.65	0.61	0.58	0.58	0.59	0.59	0.58	0.59	-0.06	0.00	
Estonia	20.0						0.73	0.72	0.70	0.81	0.80	0.67	0.73	0.67	0.67	0.69	0.66	0.70	-0.11	0.01	
Finland	24.0						0.54	0.61	0.60	0.61	0.60	0.58	0.56	0.55	0.56	0.56	0.55	0.54	-0.04	-0.02	
France	20.0	0.65	0.69	0.62	0.62	0.53	0.52	0.50	0.52	0.51	0.51	0.50	0.47	0.47	0.48	0.48	0.48	0.48	-0.03	0.00	
Germany	19.0	0.55	0.56	0.51	0.49	0.61	0.60	0.60	0.54	0.56	0.54	0.55	0.55	0.54	0.55	0.55	0.54	0.55	0.01	0.00	
Greece	23.0				0.46	0.47	0.43	0.49	0.47	0.46	0.48	0.46	0.39	0.44	0.37	0.37	0.36	0.37	-0.11	0.00	
Hungary	27.0					0.30	0.43	0.52	0.48	0.55	0.59	0.57	0.62	0.53	0.52	0.53	0.53	0.57	-0.06	0.04	
Iceland	25.5					0.56	0.54	0.59	0.61	0.64	0.59	0.53	0.45	0.43	0.44	0.45	0.45	0.46	-0.14	0.01	
Ireland	23.0	0.30	0.21	0.44	0.42	0.45	0.52	0.61	0.66	0.67	0.63	0.55	0.46	0.48	0.46	0.44	0.45	0.49	-0.18	0.04	
Israel	18.0						0.66	0.62	0.61	0.62	0.65	0.64	0.65	0.65	0.65	0.64	0.65	0.63	-0.01	-0.01	
Italy	22.0	0.44	0.4	0.38	0.4	0.37	0.39	0.43	0.39	0.41	0.41	0.39	0.36	0.40	0.40	0.38	0.37	0.37	-0.03	-0.01	
Japan	5.0					0.68	0.70	0.68	0.71	0.70	0.68	0.68	0.67	0.69	0.69	0.69	0.71	0.70	0.01	0.01	
Korea	10.0					0.64	0.58	0.59	0.64	0.63	0.63	0.63	0.65	0.67	0.67	0.69	0.67	0.69	0.06	0.00	
Latvia	21.0						0.51	0.57	0.60	0.61	0.49	0.38	0.42	0.42	0.46	0.49	0.51	-0.15	0.05		
Luxembourg	15.0	0.59	0.61	0.64	0.66	0.46	0.56	0.70	0.87	0.84	0.96	0.97	0.97	1.00	1.07	1.12	1.18	1.23	0.16	0.11	
Mexico	16.0		0.33	0.27	0.25	0.31	0.24	0.28	0.30	0.33	0.33	0.34	0.30	0.32	0.31	0.31	0.28	0.32	-0.02	0.01	
Netherlands	21.0	0.47	0.51	0.49	0.54	0.57	0.55	0.57	0.56	0.58	0.59	0.57	0.52	0.55	0.53	0.53	0.48	0.48	-0.07	-0.05	
New Zealand	15.0				0.89	0.96	0.99	0.99	1.03	1.03	0.96	0.96	0.97	1.10	0.93	0.94	0.95	0.97	-0.02	0.04	
Norway	25.0	0.66	0.66	0.63	0.69	0.58	0.60	0.67	0.57	0.61	0.63	0.57	0.54	0.56	0.56	0.57	0.57	0.56	-0.06	0.00	
Poland	23.0						0.42	0.42	0.48	0.51	0.53	0.50	0.45	0.47	0.47	0.43	0.42	0.44	-0.10	0.01	
Portugal	23.0				0.45	0.49	0.55	0.60	0.56	0.51	0.51	0.49	0.43	0.48	0.45	0.47	0.46	0.48	-0.04	0.01	
Slovak Republic	20.0						0.48	0.44	0.61	0.57	0.53	0.53	0.47	0.46	0.48	0.43	0.46	0.48	-0.10	0.05	
Slovenia	22.0						0.67	0.66	0.68	0.69	0.68	0.59	0.59	0.59	0.58	0.64	0.60	-0.11	0.02		
Spain	21.0				0.6	0.60	0.43	0.52	0.57	0.57	0.53	0.43	0.32	0.45	0.39	0.41	0.39	0.41	-0.12	0.00	
Sweden	25.0	0.44	0.36	0.38	0.42	0.41	0.50	0.53	0.55	0.56	0.57	0.58	0.57	0.59	0.58	0.56	0.56	0.57	-0.01	0.01	
Switzerland	8.0						0.68	0.74	0.72	0.74	0.73	0.74	0.70	0.72	0.71	0.71	0.71	0.71	-0.02	0.00	
Turkey	18.0				0.45	0.44	0.43	0.45	0.38	0.39	0.36	0.35	0.34	0.39	0.43	0.40	0.45	0.42	0.04	0.01	
United Kingdom	20.0	0.42	0.41	0.44	0.48	0.43	0.44	0.44	0.44	0.44	0.44	0.42	0.43	0.43	0.43	0.43	0.43	0.44	-0.01	0.01	
Unweighted average	19.1	0.53	0.51	0.50	0.53	0.52	0.55	0.57	0.58	0.59	0.59	0.57	0.54	0.55	0.55	0.55	0.55	0.56	-0.04	0.01	

**Calculation formula:** VRR = VAT Revenue/[(Consumption – VAT revenue) x standard VAT rate]. Consumption = Final Consumption Expenditure (Heading P3) in national accounts. VAT rates used are standard rates applicable as at 1 January of each year.

**Time series:** Since data beyond 2014 is not available for all countries at the time of publication, VRR is not calculated after this date.

**Canada:** VRR Calculation includes federal VAT only..


**Canada and Japan:** Annual final consumption expenditure in national accounts was adjusted to ensure matching between the fiscal year (Q2 Y to Q1 Y+1) for the tax revenue and the civil year for final consumption figures.

**Israel:** The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law. Although VAT was implemented in Israel in 1976, the VRR is only calculated from 1996 onwards since tax revenue figures are not available before that year.

**Japan:** given the substantial VAT rate hike on 1 April 2014, an average VAT rate was used to calculate the VRR for 2014 i.e. (5X3+8X9)/12=7.25%.

**New Zealand** had a high VRR of 1.10 in 2010 because of the increase in GST rate from 12.5% to 15% in October 2010.

Source: OECD.

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