Institute for Fiscal Studies

Redistribution, efficiency and the design of VAT: a review of the theory and literature

IFS Briefing Note BN212

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Copy-edited by Sophia Ollard

Published by

The Institute for Fiscal Studies

ISBN 978-1-911102-57-1

July 2017

Executive Summary

The simplest form of value added tax (VAT) – and the form often advocated by international organisations – is one with a broad base and a single ('uniform') rate. In practise, most countries exempt and/or apply lower VAT rates on certain categories of goods and services. In this note we summarise the pros and cons of such 'VAT rate differentiation' that are highlighted in the economics and taxation literatures, paying particular attention to the applicability and relevance of each factor for low- and middle-income countries.

Considering first the case for applying different rates – including zero rates – to different goods and services, we highlight theoretical arguments based on economic efficiency and a more practical redistributive argument.

Considering the case for exempting particular goods and services from the VAT system entirely, we discuss a number of 'special cases' (such as small firms, public services and financial services) before focusing on the administrative and efficiency issues posed by exemptions more generally.

Conclusions

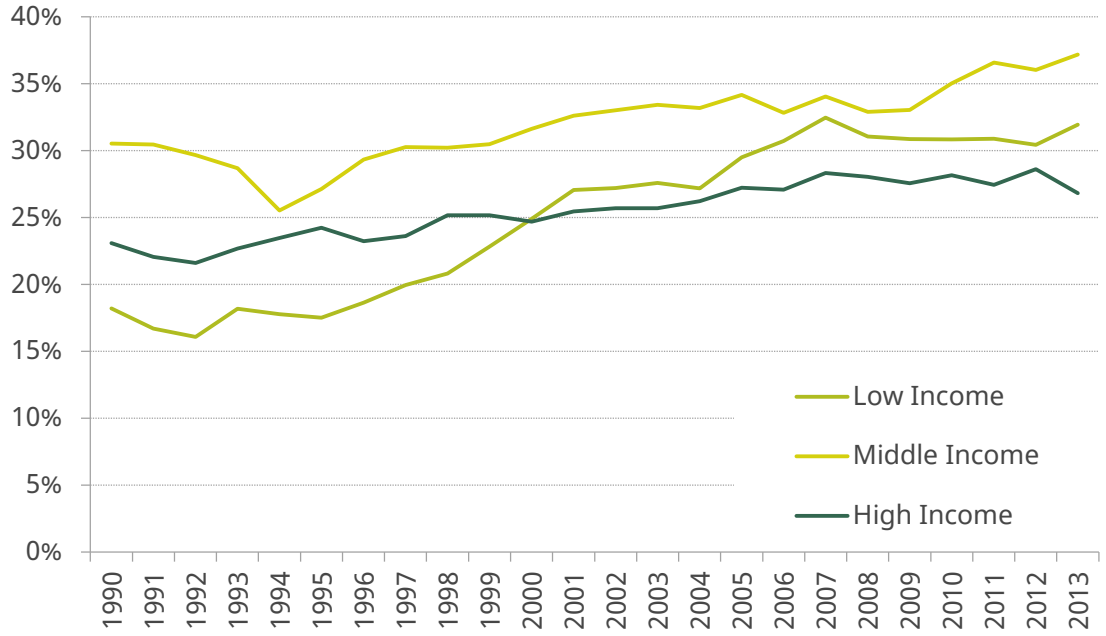
Our analysis of the pros and cons of differentiated rates has found that whether such differentiation is a good idea is to a significant extent an empirical question. How well targeted are reduced rates at helping poorer households and how does this compare to other instruments available to the country in question? How much do evasion and other behavioural responses to VAT differ across different goods and services? How costly and difficult is it to monitor the boundaries between different tax rates?

This briefing note is the first output from a broader project by researchers at IFS's Centre for Tax Analysis in Developing Countries (TAXDEV). In future work, we will complement this note's review of the theory and literature with an in-depth empirical analysis of the distributional impact of VAT exemptions and reduced rates in a range of low- and middle-income countries – including Ghana, Ethiopia, Tanzania and Mexico. This will include a comparison of these impacts with what could be achieved by scaling up existing cash transfer schemes or introducing new programmes that may allow better targeting of resources at poorer households. It will contribute important new cross-country evidence on the distributional case for applying different VAT rates to different goods and services.

1. Introduction

Since the 1980s, increasing numbers of low- and middle-income countries have introduced value added tax (VAT), often as a replacement for pre-existing sales or turnover taxes. Consistent cross-country data on VAT revenues is sadly lacking, but general sales taxes (including VAT) now contribute around 32% of revenue in low-income countries and 37% of tax revenue in middle-income countries, a considerable increase from 1990 (Figure 1).

Figure 1. General sales tax revenues as a percentage of tax revenue



Source: International Centre for Tax and Development Government Revenue Database. Figures above are unweighted averages for those countries in this database; middle-income contains both lower- and upper-middle-income countries. All cases of missing data are excluded from analysis.

The textbook version of VAT, applied at a common rate across all goods and services, has several advantages. Application of a single rate can reduce compliance and administration burdens, and reduce opportunities for tax avoidance at boundaries between product categories. In addition, the way in which it is collected incrementally at each stage of a production chain – with VAT-registered businesses charging VAT on their sales and reclaiming the cost of VAT levied on their purchases – can reduce the incentive for tax evasion and generate paper trails that can be useful for audit purposes.[1]

But few countries apply VATs that closely resemble the textbook version. A range of goods and services are either exempted from VAT – meaning that no VAT is charged on sales but neither can VAT paid on purchases be reclaimed – or are subjected to rates of VAT that differ from the usual or 'standard' rate. For instance, largely with equity in mind, many low-, middle- and high-income countries have exemptions or reduced or zero rates of VAT on goods like basic foods, to which the poor allocate a relatively large fraction of their expenditure. In this way, the relative burden of VAT on poorer households is reduced by

[1] M. Keen, *Taxation and Development – Again*, IMF Working Paper 12/220, 2012.

more than for richer households. However, given the fact that richer households tend to spend more on food and other 'necessities' in absolute terms, such redistribution is not particularly well targeted. The question is thus: are there better ways available to channel resources to poorer households than poorly targeted tax expenditures?

In high-income countries, the answer is almost certainly 'Yes'. Well-developed social protection systems with targeted cash transfer schemes for poor households mean one can redistribute much more effectively than via VAT.[2] Low- and middle-income countries have traditionally lacked such targeted transfer systems, however. This has led a number of influential public finance and development economists to argue that reduced rates and exemptions have an important role to play in developing country VAT policy.[3] In contrast, other authors emphasise the role a broad single-rate VAT can have in increasing the administrative and economic efficiency of tax collection, and in raising the revenues that allow the development of social protection programmes that can better redistribute.[4] [5] [6] Indeed, with an increasing number of countries introducing cash and near-cash transfers to poorer households, there may already be an opportunity to raise more revenues and more effectively transfer resources to poor households by levying a broader-based VAT and expanding the scale and scope of these existing transfers.

Redistribution is not the only reason that policymakers may favour different rates of VAT on different goods and services, however. If consumers respond more to tax on some goods and services, either by working less or producing more at home to avoid market purchases, and/or by shifting to informal traders who do not comply with their tax obligations, then one may want lower rates of tax on these items.[7] [8] [9] On the other hand, inappropriate differentiation in VAT rates across goods simply distorts consumption (and potentially production) decisions, and adds to administrative and enforcement burdens.

In this briefing note we briefly review the arguments for and against the use of VAT exemptions and reduced rates for reasons of administrative and economic efficiency, and for redistribution, from the perspective of low- and middle-income countries. We *do not* try to provide a comprehensive overview of all issues related to the operation of VAT in such countries.

The briefing note is the first stage in a project that will generate new empirical evidence on the redistributive properties of VAT exemptions and reduced rates vis-à-vis more

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2 J. Mirrlees, S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Myles and J. Poterba, *Tax by Design: The Mirrlees Review*. Oxford University Press for Institute for Fiscal Studies, 2011.

3 R. M. Bird and P. P. Gendron, *The VAT in Developing and Transitional Countries.* Cambridge University Press, Cambridge, 2007.

4 E. Ahmad and M. Best, *Financing Social Policy in the Presence of Informality,* LSE Asia Research Centre Working Paper, No. 54, 2012.

5 A. S. Anton, F. Hernandez and S. Levy, *The End of Informality in Mexico? Fiscal Reform for Universal Social Insurance,* Inter-American Development Bank, 2013.

6 L. Ebrill, M. Keen and V. Perry, *The Modern VAT*, Washington D.C.: IMF, 2001.

7 A. Atkinson and J. Stiglitz, *The Design of Tax Structure: Direct versus Indirect Taxation*, Journal of Public Economics, 6, 55–75, 1976.

8 H. Kleven, W. Richter and P. Sørensen, *Optimal taxation with household production*, Oxford Economic Papers, 62, 584–594, 2000.

9 H. Cremer and F. Gahvari, *Tax evasion and optimal commodity taxation,* Journal of Public Economics, 50, 261–275, 1993.

targeted mechanisms like cash transfers in a range of low- and middle-income countries, utilising microsimulation models (the results of which will be published by early 2018). The rest of the note proceeds as follows: In Section 2 we discuss the basic structure of the textbook VAT and deviations from this structure that are largely made for administrative efficiency – exemptions for small traders, financial intermediation, and the public sector. In Section 3 we discuss other pros and cons of exemptions and the application of different VAT rates to different goods and services, highlighting issues of particular relevance to developing countries. Section 4 offers some concluding thoughts and next steps.

2. The basics of VAT

In both principle and practise – if well implemented in terms of both design and administration – VAT has many attractive features compared to the taxes it has typically replaced (such as taxes on turnover/revenues or taxes on final sales only). These relate to the way the tax is designed to be collected.

VAT taxes all sales, whether wholesale or retail, but allows registered traders to deduct any VAT paid on the goods and services purchased for business purposes (whether for resale or as an input into production). It is therefore a tax on the value added at each stage of the process of producing goods for sale to final consumers. Table 1 shows this for a simple three-stage production process.

Table 1. A simple production chain with 20% VAT

	VAT charged on sales	VAT reclaimable (I) or reclaimed on input purchases (II)	Net VAT liability on transaction (I) or of firm (II)
(I) Analysis of transactions			
Sale from firm A to firm B for $100	20	20	0
Sale from firm B to firm C for $300	60	60	0
Sale from firm C to final consumer for $500	100	0	100
(II) Analysis of firms			
Firm A	20	0	20
Firm B	60	20	40
Firm C	100	60	40

Source: Mirrlees et al, 2011, p.169.

The top panel analyses VAT from the perspectives of transactions. It shows that the business-to-business sales (from firm A to B, and then firm B to C) are in effect untaxed under VAT because the VAT charged and remitted by the seller (e.g. firm A) can be reclaimed by the purchaser. This satisfies a key principle of optimal taxation: intermediate inputs (those that are themselves the result of a production process) purchased by businesses should generally be untaxed. Doing this avoids distorting traders' production decisions (e.g. whether to purchase an input or produce it themselves), allowing them to choose what is most efficient.[10] The final row of the top panel though shows that the final business-to-consumer sale is subject to an effective tax rate equal to the pre-tax sale price ($500) multiplied by the tax rate (20%). In this respect, VAT is effectively a tax on final sales to consumers.

[10] P. Diamond and J. Mirrlees, 'Optimal Taxation and Public Production: Production Efficiency', *American Economic Review*, 1971, 61, 8–27. Externalities (such as pollution) associated with the use of certain inputs can provide a rationale for the taxation of these inputs, although as discussed in Section 3, VAT is unlikely to be a well-targeted instrument for addressing externalities.

However, it differs from a final sales tax in an important respect, as can be seen from the bottom panel of Table 1, which analyses VAT from the perspective of the taxes remitted by each firm. This shows that rather than being collected in one go at the point of final sale, the VAT system leads to VAT being collected in small chunks at each stage of the production process, based on the value added at each stage. For instance, firm B remits $40 of VAT based on the $200 of value added at its stage of production (given input costs of $100 and pre-tax sales of $300).

The pros and cons of VAT

Such a process has several advantages.[11] First, incentives to evade VAT for any individual firm are lower relative to a final sales tax: the amount of tax due from the firm is based only on its own value added rather than the full sale price, meaning the tax that can be evaded is reduced. Second, unlike for a sales tax, there is no need for a seller to distinguish between whether a customer is a final consumer or a business: VAT is charged on the sale regardless (though a registered business can then reclaim or offset that VAT against its own liability). In the case of a retail sales tax sellers have little incentive to draw such a distinction accurately, meaning errors or deliberate misclassification (either on the part of the buyer or collusively) may affect both tax revenues and incidence. In contrast, under VAT, evasion of the tax requires omission or under-valuation of the sale in firm accounting records.

Related to this, VAT is commonly implemented via self-assessment, and using an invoice-credit approach. To claim a deduction for input VAT, firms require an output VAT invoice from their supplier. This gives an incentive for purchasers to encourage compliance by their suppliers and the symmetric invoices provide a useful audit trail for tax authorities, allowing them to check that deductions have a corresponding payment. Indeed, some revenue authorities require firms to submit details of their transactions with different suppliers and customers (sometimes above a certain sales threshold) in order to collect such data automatically.[12]

Three recent papers examine the implications of such a VAT system for low- and middle-income countries. Ahmad and Best (2012)[13] argue that in areas where tax evasion is high and administration weak, the information generated by the VAT chain can be used to improve tax administration and increase the revenues obtained from other taxes such as corporate income tax. This is supported by Keen (2012)[14] who argues that by catalysing changes in ways of doing business, VAT could pave the way for the elusive strengthening of income taxation.

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[11] Ebrill, Keen and Perry, 2001, op.cit.

[12] Such an approach has been adopted in West Bengal (L. Gadenne, T.Nandi and R. Rathelot, 'Tax policy and firms: evidence from India', mimeo, 2017), Brazil (A. De Paula and Scheinkman, 'Value-Added Taxes, Chain Effects and Informality', *American Economic Journal: Macroeconomics,*2010, 2, 195–221) and Uganda (M. Almunia, F. Gerard, J. Hjort, K. Knebelmann, D. Nakyambadde, C. Raisaro and L. Tian, 'An analysis of discrepancies in tax declarations submitted under value-added tax in Uganda', IGC Final Report 2017 (reference: S-43312-UGA-1)), for instance.

[13] Ahmad and Best, 2012, op. cit.

[14] Keen, 2012, op. cit.

De Paula and Scheinkman (2010)[15] examine how the invoice-credit approach to VAT – whereby firms charge VAT on their sales and reclaim VAT on their inputs – affects the incentives of different firms to trade with each other and to comply with the tax system. They find (theoretically and empirically) that firms that comply with VAT are more likely to purchase from and supply to other VAT-compliant firms, whilst non-compliant firms are more likely to transact with other non-compliant firms. In sectors not subject to such an invoice-credit regime, such patterns are not found. There are two main implications of this. Firstly, higher tolerance for non-compliance at one production stage increases non-compliance in upstream and downstream sectors, hampering enforcement efforts. This suggests that tax authorities should pay attention to tax compliance across production stages (and not just the final or initial stage). Secondly, the VAT credit system can help spread compliance once enough firms are already complying. However, it can also spread non-compliance when compliance is particularly weak to start with.

This suggests that the benefits of VAT require a modicum of administrative capability. The efficient use of the paper trails generated requires effective systems of audit and data-linkage and processing, which can be costly to set up and operate (especially if one wishes to capture and utilise data on transactions between firms automatically). A system for refunding VAT to firms who make losses on their VATable transactions or whose outputs are subject to lower rates of VAT than their inputs must also be put in place. Harrison and Krelove (2005)[16] identify refunds as the 'Achilles Heel' of VAT systems in developing countries, with problems of fraud, corruption and denial of refunds by governments. Such denials happen in part because of concerns about fraud but are also sometimes related to treasury management.

The keeping of purchase records – including records of which purchases were subject to VAT – as well as sales records may also increase compliance costs for businesses. Moreover, since the VAT system involves all sales as opposed to just those to final consumers, more firms and more transactions will be subject to a VAT system than a sales tax system.

VAT exemptions for small businesses

The costs of complying with and administering VAT are likely to be larger relative to profits and tax liabilities for smaller firms. To avoid posing significant administration and compliance burdens for relatively small amounts of revenue, it is therefore sensible to allow firms with turnovers below a given threshold (often termed the registration threshold) to be exempt from VAT. Such exempted firms need not charge VAT on their sales but cannot reclaim any VAT on their input purchases. This means such firms (and/or their customers) do in effect bear some VAT.

Keen and Mintz (2004)[17] show how three key factors affect the appropriate level of the VAT registration threshold: the revenue that is foregone from excluding firms below a given threshold from the scope of VAT; the administration and compliance costs saved from such exclusion; and the distortions to production, competition and firm growth resulting

[15] de Paula and Scheinkman, 2010, op. cit.

[16] G. Harrison and R. Krelove, 'VAT Refunds: A Review of Country Experience', IMF Working Paper, 05/218, 2005.

[17] M. Keen and J. Mintz, 'The Optimal Threshold for a Value-Added Tax', Journal of Public Economics, 88, 559–576, 2004.

from such exclusion. The 'optimal' VAT threshold is one that balances the benefits of lowering the threshold (including the revenues) with the costs (such as the additional administration and compliance burdens). In the context of low- and middle-income countries, factors such as the difficulty of enforcing VAT (which may raise administration costs) would tend to point towards relatively high VAT thresholds, while the difficulty of enforcing other taxes (such as income tax) would tend to point towards relatively low thresholds. The sensitivity of the optimal rates implied by Keen and Mintz's[18] formulae to such factors, and the difficulty in quantifying such factors, means that in practise policymakers lack precise guidance for setting the VAT threshold.

Firms not registered for VAT are sometimes required to register to pay other taxes based on their turnover. This is particularly common in low- and middle-income countries. For instance, in Ethiopia, firms with a turnover below the VAT threshold of 500,000 birr (or around $21,660) that do not register voluntarily for VAT are required to register and pay a 2% turnover tax on local sales of goods (and some services) and 10% turnover tax on local sales of most services. Similarly, in West Bengal in India, firms with a turnover of between 500,000 and 5,000,000 million Rs (around $7,700 and $77,000) that do not voluntarily register for VAT are required to pay a turnover tax of 0.5%.

As with VAT itself, the extra revenue obtained from such a turnover tax on small firms needs to be traded off against the administration, compliance and broader efficiency costs of taxing them. To the extent that the administration and compliance costs associated with a turnover tax are lower than for VAT, it may be justifiable to collect a turnover tax on firms below the VAT threshold, but only if the rate is relatively low: high turnover taxes can cause significant economic distortions (discussed in Section 3).

But it is also important to bear in mind that the introduction of simplified turnover taxes alongside VAT can sometimes end up increasing administration and compliance burdens. First, where such schemes are optional, they naturally encourage firms to estimate (at least roughly) their liability under both the simplified regime and VAT to see which is lower – indeed, tax advisors may explicitly advocate such an approach to avoid being found negligent if their client finds out they have chosen the 'wrong' option. Second, because the rates of 'value added' tend to vary by sector, in order to avoid a turnover tax imposing very different effective tax rates on value added across sectors (which could distort entrepreneurs' sectoral choices), many countries (such as Ethiopia, mentioned above) apply different turnover tax rates to different sectors. But such differentiation means tax authorities need to police the boundaries between sectors, and can distort firms' choices close to those boundaries.

Governments of low- and middle-income countries should therefore be cautious in applying 'simplified' VAT regimes below the VAT threshold, and if they do so, should aim to make such schemes as genuinely simple as possible, perhaps making them compulsory rather than voluntary.

[18] Keen and Mintz, op. cit.

Exemptions for financial and public services

In addition to small businesses, it is also common – in both high income and low- and middle-income countries – to exempt financial services and public services from VAT.

In both instances, there is often no transparent 'price' for the service in question: public services are often free at the point of use and funded by general taxation; and financial services companies earn much of their income by charging higher interest rates on the credit they provide than they pay on deposits, as opposed to explicit charges for services. Bringing such services under the scope of VAT would therefore require different measures of 'sales' and 'purchases' than are generally used.

These need not be particularly complex: Mirrlees et al (2011),[19] for instance, argue that taxing most cash inflows into banks (including deposits) and allowing deductions for most cash outflows from banks (including withdrawals) would be a relatively simple way of extending VAT to financial services. However, the effort expended in designing and implementing the extended VAT might not be reflected in higher revenues. VAT levied within the public sector simply represents transfers between spending departments and the central treasury. If VAT was extended to their activities one would presumably want to compensate departments by increasing their budgets. Levying VAT on financial services would lead to increases in tax revenues from 'sales' to consumers, but would reduce tax revenues from 'sales' to VAT-registered businesses (because financial-service providers and their business customers will be able reclaim any VAT paid). In the context of low- and middle-income countries where businesses are likely to be a relatively large share of financial firms' sales, extension of VAT to financial services could even reduce VAT revenues.

With such issues in mind, Bird and Gendron (2007)[20] argue that low- and middle-income countries would be best served by focusing limited political and administrative capital on general improvements to VAT administration and structure, rather than extending VAT to public and financial services. But the changing nature of public services in many countries – including greater involvement of private sector firms in some services, and even competition between public and private sector providers – and the growing economic importance of financial services as both a business input and for final consumers, means this conclusion may change in future.

The zero-rating of exports

VAT is designed to be a tax on final consumption within a country. As a result, as well as applying to domestically produced goods and services, it is levied on (the full value) of imports. At the same time, to avoid double taxation of international trade, exports are zero-rated: VAT is not charged on export sales, and furthermore, exporters can reclaim any VAT paid on their purchases. Given the difficulty of operating VAT systems (particularly reclaims systems) across borders, and the benefits of such a 'destination-based' VAT more generally (named thus because the VAT rate that is charged on international trade is that of the importing – or destination – country), this approach

[19] Mirrlees et al., 2011, op. cit.

[20] Bird and Gendron, 2007, op. cit.

seems sensible. But the VAT refunds exporters require under this approach can also cause problems, including fraud.

The archetypal fraud is 'carousel fraud', which involves a chain of linked firms across borders involved in the export, import, and re-export of goods.[21] VAT is reclaimed by the exporting firms and is notionally charged by the importing firm on sales to intermediate firms (called 'buffers' who may or may not be aware of the fraud being perpetrated by the export and import firms). But the importing firm goes missing before remitting the import VAT to the tax authority.

To reduce such risks, Harrison and Krelove (2005)[22] recommend a risk-based approach to verifying refunds, including additional checks on new traders as well as traders and transactions identified as 'high-risk', combined with prompt refunds for firms with good compliance records. This should be less costly to both administrations and law-abiding firms than trying to check manually or verify all VAT refund claims.

Summary

Thus, while the textbook VAT involves a common rate applied to all firms, goods and services, there can be good practical reasons to depart from such an approach, although such departures involve costs of their own. In section 3, we consider in more detail the issues that arise with VAT exemptions, and the pros and cons of applying different rates of VAT to different goods and services.

[21] IFS, CPB Netherlands Bureau for Economic Policy Analysis, CAPP, CASE, CEPII, ETLA, IFO, IHS, 'A retrospective evaluation of the elements of the VAT system', Report for the European Commission, 2011.

[22] Harrison and Krelove, 2005, op. cit.

3. What is the rationale for VAT-rate differentiation and exemptions?

This section considers the pros and cons of applying different rates of VAT to different goods and services. For ease of exposition we organise these into three (related) themes: administrative efficiency; broader economic efficiency; and distributional or 'equity' concerns. We then examine VAT exemptions, to consider whether they should be used for purposes other than those discussed in the previous section (small firms, financial services and public services).

Our starting point for the analysis is the set of principles for a good tax system set out in the Mirrlees Review (2011).[23] An important benchmark for the review was the idea of a progressive, neutral tax system, with each of the three key words of that formula – 'progressive', 'neutral' and 'system' – having implications for good tax design. Progressivity is key because redistribution between (e.g. rich and poor) taxpayers plays a central role in the tax system (albeit one where there can be a trade-off with economic efficiency). Neutrality requires that similar activities are taxed equivalently unless there are good reasons to do otherwise, to avoid distorting taxpayer behaviour and creating opportunities for tax-avoidance. Finally, the word 'system' emphasises that the way taxes fit together is what ultimately matters – the collective effect of each tax within the system. Not every tax – such as VAT – needs to be 'green' and 'progressive': what matters is whether the system as a whole is green and progressive. Related to these points, the Mirrlees Review[24] argues that there is merit in simplicity, stability, and transparency. Simple, stable systems that are well understood by both taxpayers and tax administrators are typically easier to administer, enforce, and comply with, and will generally – although not always – cause less distortion.

With all this in mind, the Mirrlees Review[25] also argues that for a high-income country like the UK, a good VAT system would involve a broad base (including most goods currently exempted or subject to a zero rate) and a single rate. Zero rates should be restricted to exports and a few specific services like childcare (which can be important in allowing parents to re-enter or remain in employment) and housing (the consumption of which could be taxed via a property tax rather than at the point of sale).

So, what is the rationale for this position? And how applicable is it to low- and middle-income countries?[26]

Administrative issues with VAT-rate differentiation

A range of authors argue that having multiple rates of VAT is likely to increase administration and compliance burdens.[27]

[23] J. Mirrlees et al., 2011, op.cit,

[24] J. Mirrlees et al., op.cit.

[25] J. Mirrlees et al. op.cit,

[26] In what follows, we draw on the analysis in L. Abramovsky, P. Johnson and D. Phillips, 'Tax Design in Turkey and Other Middle Income Countries: Lessons from the Mirrlees Review', *Economic Research Forum Research Report Series*, Koç University,2013, which considers the application of the Mirrlees Review's principles and recommendations to middle-income countries.

Firms buying or selling goods taxed at different rates need accounting and invoicing processes that ensure they reclaim or charge VAT at the right rate on each transaction, and can properly reflect this in their (more complex) tax filings. The administrative burden on tax authorities is also likely to increase. Audits are more difficult: not only total sales and purchase values have to be verified, but also the amounts for goods and services subject to different tax rates (firms will have an incentive to misclassify sales as being subject to lower tax rates and purchases as being subject to higher tax rates). The number of VAT refunds is also typically higher – consider a firm whose sales are subject to a low rate of tax but many of whose purchases are subject to a high rate of tax – which as discussed earlier can pose significant problems for tax authorities.

Differences in tax treatment of similar goods and services may also lead to legal and political challenges. Firms and tax authorities may need to go to court if they disagree over how any given good or service should be classified.[28] The presence of reduced rates for some goods and services may also lead to the lobbying for such preferential treatment for other goods and services (especially similar ones), potentially resulting in the slow erosion of the VAT base.[29]

Given lower administrative capacity in most low- and middle-income countries and more general challenges in ensuring compliance (related to high levels of self-employment, for instance), such concerns would seem particularly pertinent. Indeed, several studies highlight administration and compliance issues as key reasons for low- and middle-income countries to adopt broad single-rate VATs.[30]

To an extent, it seems such countries have heeded this call. Charlet and Owens (2010)[31] find that of the 30 African countries that implemented a VAT between 1990 and 2010, 22 legislated for a single rate of VAT. This contrasts with the approach of the early-adopters of VAT in the EU, where relatively high standard rates of VAT are complemented by reduced and zero rates for a wide range of goods and services.

Two major caveats need to be borne in mind. First is that many countries with a single rate of VAT use exemptions rather than differentiated rates in an effort to favour particular sectors. Ghana, for instance, has widespread VAT exemptions, including most basic foodstuffs, health, education and passenger transport. Second, initially legislated VAT systems are not necessarily static. In some countries, adjustments are made relatively frequently and the process and outcomes of such changes are not always transparent. This opens the door to the sort of lobbying mentioned above.

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[27] See, for example: Ebrill, Keen and Perry, 2001, op. cit.; Mirrlees et al., 2011, op, cit.; IFS et al, 2011, op. cit.

[28] The UK has several amusing examples of such court cases, including those to decide: whether Pringles should be classified as potato crisps (subject to the standard rate of VAT) or savoury snacks (subject to a zero rate); whether Jaffa Cakes are chocolate-covered biscuits (subject to the standard rate) or chocolate cakes (subject to a zero rate); and whether ferrets should be classified as pets (in which case their food should be subject to the standard rate of VAT) or working animals (zero rate).

[29] Again, the UK provides examples of this, including campaigns for a reduced rate for food served in bars and restaurants (campaigners for which note the zero rate on cold take-away food), and for a zero rate for female sanitary products (campaigners for which note that condoms, for instance, are already subject to a zero rate).

[30] See, for example: Ebrill, Keen and Perry, 2001, op. cit.; Ahmad and Best, 2012, op. cit.; Anton, Hernandez and Levy, 2013, op. cit.

[31] A. Charlet, and J. Owens (2010), *An International Perspective on VAT,* Tax Notes International, 59, 943–954.

Economic efficiency and VAT rate differentiation

Can economic efficiency and redistribution provide a stronger rationale for VAT rate differentiation?

The principle of neutrality would suggest taxing different goods and services at the same rate to avoid distorting consumer choices over what to buy and taxing otherwise similar people with different preferences to different degrees. Atkinson and Stiglitz (2000)[32] and subsequent studies show that a broad, single rate of VAT (or similarly, sales tax) is optimal in terms of economic efficiency and redistribution under certain conditions. However, these studies also highlight that, in principle, there may be both efficiency and equity reasons to depart from neutrality and levy different tax rates on different goods and services. From an efficiency perspective, if (a) consumers respond more to tax on some goods and services by working less or producing more at home to avoid market purchases, and/or (b) consumers or firms are more able to shift to informal traders who do not comply with their tax obligations, then one may want lower rates of tax on these items.[33]

Complementarities between particular goods and services with market work

Taxes where the amount you pay depends on how much you earn and work – which include most taxes levied such as income tax, social security contributions, and when those earnings are spent, VAT – act as a disincentive for working and earning more. Atkinson and Stiglitz (1976)[34] show that if the purchase of certain goods and services is associated with working or working more, imposing lower rates of tax (or even subsidies) on them could help offset the disincentives to work generated by the tax system as a whole. Taxing goods and services linked to leisure at a *higher* rate would have a similar effect.

Kleven, Richter and Sørenson (2000)[35] extend the analysis to a model where individuals can spend their time not only working in the market, or at leisure, but also engaging in production of goods and services at home for their own use. Unlike market-based work, such home-based, own-use production is not subject to taxation. Taxation therefore disincentivises market-based production and incentivises home-based production. Taxing goods and services where there is more scope for home production at a lower rate (or even subsidising them), and vice versa, can therefore help offset the distortion of choices between market- and home-based production that taxation itself generates.

It is these sorts of arguments that the Mirrlees Review (2011)[36] cites when advocating application of a zero-rate of VAT on child care, for instance. Similar reasoning provides (part of) the justification for EU rules allowing lower VAT rates to be applied to certain labour-intensive services, such as domestic care, repair of private dwellings, window-

[32] A. Atkinson and J. Stiglitz, *The Design of Tax Structure: Direct versus Indirect Taxation*, Journal of Public Economics, 6, 55–75, 1976.

[33] See, for example: Atkinson and Stiglitz, op. cit.; Kleven, Richter and Sørenson, 2000, op. cit.; Cremer and Gahvari, 1993, op. cit.

[34] Atkinson and Stiglitz, 1976, op. cit.

[35] Kleven, Richter and Sørenson, op. cit.

[36] Mirrlees et al. 2011, op. cit

cleaning and hairdressing.[37] Such reasoning could also apply in low- and middle-income countries, although the lower overall levels of taxation may mean there is less disincentive to engage in market work that needs offsetting.

It is also worth bearing in mind that the theories make clear that it is not only the direct relationship between a given good or service and market-work participation that matters: indirect effects operating via complementarities or substitutabilities between different goods and services may matter. Consider a service 'A' (e.g. meals away from home), consumption of which is weakly linked to working more. That may suggest applying a lower rate of VAT to that service. But suppose also that consumption of service 'A' is strongly-linked to consumption of good 'B' (alcohol), consumption of which is strongly-linked to working *less*.[38] In this context, application of a lower rate of VAT on service 'A' may end up increasing (rather than offsetting) disincentives to work. Such an example may sound somewhat contrived but serves to demonstrate that optimally varying VAT rates is a very complex business, and one that could potentially backfire.

Differential propensities for tax evasion

The presence of a large informal sector and relatively high levels of tax evasion is one feature of low- and middle-income countries that would tend to push up the gains from VAT-rate differentiation. Cremer and Gahvari (1993)[39] show that if the extent to which consumers and firms can evade VAT (e.g. by changing who they buy from, or not recording all their sales, for instance) varies between different goods and services, revenue could be raised more efficiently by applying higher tax rates on those less subject to changes in the degree of tax evasion, and vice versa.

This is a second rationale for the EU's policy of allowing reduced rates for a series of labour-intensive services: such services often involve self-employed individuals engaged in activities with low transaction values that are difficult and costly for tax authorities to monitor. In such a context, the amount of tax evasion may be more sensitive to the tax rate imposed than for less labour-intensive services.

In the context of developing countries, this reasoning may provide some justification for high tax rates – whether via VAT or special duties or taxes – on things such as telecommunications (which are provided by large formal-sector firms) or imported goods (for which records are more likely to exist) and low tax rates on things such as food or locally supplied services, for which there may be more opportunities to hide purchases or activities from the taxman.

However, as far as we are aware there is no empirical evidence on the extent to which the elasticity of taxable expenditure – which measures how responsive expenditure is to the tax rate imposed – varies across goods and services, nor of the potential gains in terms of lower economic distortions and easier enforcement from applying varied tax rates. Thus, at the moment, we cannot say strongly one way or the other whether such gains are large enough to risk the more general administration and compliance issues that VAT-rate differentiation entails.

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[37] IFS et al., 2011, op. cit.

[38] Note that this is a hypothetical example only.

[39] Cremer and Gahvari, 1993, op. cit.

Dealing with externalities

A third rationale used to justify VAT rate differentiation is to encourage or discourage consumers from buying and using particular goods and services. Goods and services that have positive externalities – gains to wider society – could be, in effect, subsidised by applying lower rates of VAT to them to encourage their purchase. Those that have negative externalities – losses to wider society, such as pollution – could be subjected to higher rates of VAT to discourage their purchase.

IFS et al (2011)[40] argue that even when the rationale for encouraging or discouraging the production and use of particular goods and services is sound, application of lower or higher rates of VAT is likely to be a poorly targeted mechanism for achieving such goals. Firstly, a reduced (or higher) rate of VAT provides a bigger subsidy (tax) on higher priced versions of the good or service to which it is being applied. However, in many cases the social benefit (or cost) of using a high-priced version may be no greater (and may even be smaller) than that of a low-priced version. For instance, many countries have reduced rates (or exemptions) for public transport, justifying this in part on environmental grounds. But a reduced rate of VAT (or exemption) provides a bigger subsidy to travelling in luxury as opposed to standard public transport, whilst the environmental benefit of using luxury transport is unlikely to be larger (and indeed may be smaller if part of the luxury is additional space, for instance). A second issue is linked to what is usually considered a benefit of VAT: registered firms can reclaim VAT, so their behaviour is unaffected by the imposition of higher or lower VAT rates. Many externalities (such as pollution) are just as relevant when particular goods and services are used by registered firms as by consumers.

Given these issues, use of alternative instruments that better target the externality in question – such as direct subsidies or more specific taxes – is likely to be preferable to complicating the VAT system. Alternative instruments are also likely to be subject to greater scrutiny and oversight than variation in VAT rates.

Redistribution, equity and VAT rate differentiation

Perhaps the most common justification used for reduced rates of VAT, especially on goods such as basic foods, is a desire to redistribute. Applying reduced rates of VAT to goods, such as food, that are a larger fraction of total spending for poorer households than richer ones acts to make VAT more progressive than it would be if charged at a uniform rate on all goods and services.

However, this does not provide sufficient justification for reduced rates on distributional grounds. What ultimately matters is not whether the VAT system operates in a way that redistributes from rich to poor, but the extent to which the tax and benefit system as a whole redistributes from rich to poor. If the government can adjust the rates and structures of the direct-tax, transfer and public-spending systems (which do not distort spending patterns in the same way that VAT-rate differentiation does) to redistribute between the rich and the poor, such measures would in principle be able to deliver more targeted and thus cost-effective redistribution.[41] This is because, although poorer

[40] IFS et al., 2011, op. cit.

[41] See, for example: Ebrill, Keen and Perry, 2001, op. cit.; Mirrlees et al., 2011, op. cit.

households typically spend more as a proportion of their overall budget on items like food, richer households tend to spend more in absolute terms. Thus, richer households benefit more in cash terms from the effective subsidy unless the set of goods to which reduced rates apply is narrowly defined.[42] Such narrow application of reduced rates can create its own problems though: the distortion of consumption and production decisions, and the creation of boundaries that are trickier to enforce. While narrow definitions of products subject to reduced rates may improve the *targeting* of redistribution, they may also be less effective in reducing the overall tax burden facing poorer households.

However, the less well-developed direct tax and transfer systems in most low- and middle-income countries means that the case for using VAT rate differentiation to redistribute does appear somewhat stronger: reducing the price of goods which poor households disproportionately consume may be the only way to help such households. This leads some experts to recommend zero or reduced rates (or exemptions) for items that form a large share of poorer households' expenditure.[43]

Nonetheless, in the context of expanding welfare programmes, and the growth of conditional cash transfers for families with children and (in middle-income countries, at least) support for older people outside the contributory pension schemes, the capacity of low- and middle-income countries to implement redistribution via more targeted methods is clearly improving.

Ghana, for instance, operates a programme called Livelihood Empowerment Against Poverty (LEAP), which provides cash transfers to extremely poor households with at least one member who satisfies at least one of the following criteria: aged 65 or over and without any other financial support; severely disabled without productive capacity; being an orphaned or vulnerable child; and/or being pregnant or having an infant. While still small, this has grown considerably over the last four years, and now covers around 3% of households in Ghana, and considerably more in the poorer northern regions.[44] Ethiopia's Productive Safety Net Program (PSNP) is a longer-standing and much larger scheme (costing around 1% of GDP in 2010–11, for instance), which provides cash and food assistance to households identified as being chronically food-insecure, and whose able-bodied members participate in activities that increase food security (such as land improvement) or develop community infrastructure (such as helping to build schools). Analysis of the distributional impacts of both schemes shows them to be highly progressive: the PSNP is estimated to have increased the incomes of the poorest 10% of households in Ethiopia by the equivalent of 16% of their pre-tax-and-transfer income, compared to less than 1% for the richest 40% of households.[45] The analysis shows, too, that while Ghana's LEAP scheme is also highly progressive, the amount of redistribution that is achieved is limited by relatively low coverage and low payment amounts, and that expansions of the scheme could result in relatively large reductions in poverty at a

[42] For instance, there may be some products on which the poor spend more in cash as well as in proportionate terms than richer households. In low-income countries, such products (labelled 'inferior goods' by economists) may include basic food stuffs (such as flour, or cassava) that need significant further processing (often at home) before their use.

[43] Bird and Gendron, 2007, op. cit.

[44] For statistics on LEAP see: http://leap.gov.gh/dashboard/.

[45] World Bank, World Bank Poverty Assessment, 2014, The World Bank Group.

relatively low cost.[46] Similar studies across a range of low- and middle-income countries show that these findings – that such countries can design and implement well-targeted cash transfer schemes, but that overall distributional impacts are often limited by the small-scale nature of many schemes – are far from unique.[47]

Such analysis suggests that a way forward may be to broaden VAT bases to raise revenue and thus expand the coverage and scale of such cash-transfer schemes. Two recent studies[48,49] argue for just such an approach, emphasising not only the benefits of better-targeted redistribution, but also: easier administration and enforcement; reduced rent-seeking by sectors wanting preferential VAT rates; and, when combined with a shift in the tax burden away from labour taxes, reductions in economic informality and tax evasion and higher productivity.

However, there is no comprehensive study that has examined how the redistribution achieved via existing and potential cash-transfer schemes compares to that achieved via exemptions and reduced rates of VAT. As we discuss in the final section of this briefing note, that is the empirical knowledge gap the next stage of our study will attempt to fill.

VAT exemptions or reduced rates?

So far in this section of the briefing note, we have not really distinguished between reduced rates of VAT and VAT exemptions. However, they are different in one important regard: application of zero or reduced rates does not break the chain of VAT being levied on sales and reclaimed on purchases by registered businesses, whereas exemptions do.

The Mirrlees Review (2011)[50] describes VAT exemptions as being 'anathema to the logic of VAT' and Maurice Lauré, nicknamed 'father of the VAT' for developing the first fully-fledged system (introduced in France in 1954) went as far as to describe them as 'the cancer of the VAT system'. This is because the breaking of VAT chains can create both significant administration and compliance costs, and impact broader economic efficiency.

Looking first at administration and compliance, it is important to note that firms may purchase and sell both exempt and non-exempt goods. This means they will need to distinguish between the two categories of purchase (there is no VAT to be reclaimed if the purchase was exempt) and apportion the use of both types of purchases between exempt and non-exempt sales (VAT can be reclaimed only on the latter). This will add to their compliance burden and make tax administrators' jobs harder (not least because firms may try to reduce their tax liabilities through misreporting how their purchases were used in the production of their various sales). Such issues are likely to be especially pertinent for low- and middle-income countries, given the challenges they face in monitoring firms and administering the VAT system.[51]

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[46] S. Younger, E. Osei-Assibey and F. Oppong, 'Fiscal Incidence in Ghana', CEQ Working Paper Series, Working Paper 35, 2015.

[47] See the studies available at http://www.commitmentoequity.org/, for instance.

[48] E. Ahmad and M. Best, 2012, op. cit.

[49] A. S. Anton, F. Hernandez and S. Levy, 2013, op. cit.

[50] Mirrlees et al., 2011, op.cit.

[51] Bird and Gendron, 2007, op. cit.

More fundamentally, because exemptions mean firms cannot reclaim any VAT paid on their input purchases, firms' production decisions are likely to be distorted in a way that violates what is seen as one of the fundamental tenets of optimal tax theory.[52] In particular, there is an incentive to 'self-supply' or 'vertically integrate': by doing as many tasks and intermediate steps of production in-house, firms producing VAT-exempt goods or services can avoid paying the VAT they would have to pay if they outsourced the tasks and production stages to other firms. So, for example, firms whose outputs are VAT-exempt have a strong incentive to supply their own security services, technical support, cleaning services, etc, rather than contract them out and face irrecoverable VAT bills.[53]

It is also important to note that VAT exemptions need not reduce the cost of goods and services to final consumers: it depends upon where in the production chain the VAT exemption applies. Consider a VAT exemption for unprocessed foods. The vendor of those foods will not have to charge VAT when they sell said food, but neither will they be able to reclaim any VAT paid on inputs to production (such as fuel, transport, storage, packaging, etc). This unrecoverable input VAT is likely to raise the price the seller will have to charge for the food.

If the unprocessed food is purchased directly by final consumers, this price will be lower than it would have been if the product was subject to VAT, provided the vendor is selling at a profit: there will be no additional VAT on the profit (or value added) of the vendor. However, if the unprocessed food is purchased by a manufacturer of processed foods on which VAT is levied, the price of that processed food is likely to be *higher* as a result of the exemption for unprocessed food. This is because the manufacturer will not be able to reclaim any of the unrecoverable input VAT built into the price of the unprocessed food *and* will have to charge the full rate of VAT on the sale price of the processed food.

Exemptions – rather than reduced rates – for unprocessed foods may therefore not be as progressive as they may seem. The amount of tax (and price) of the unprocessed foods themselves will be reduced, but the amount of tax (and price) of processed foods will be increased. If:

- processed foods make up a significant proportion of poorer households' overall food purchases;
- unprocessed ingredients are, in turn, a significant proportion of the cost of those processed foods; and
- there is significant unrecoverable input VAT built into the cost of the unprocessed ingredients;

this may undo a large part of any direct gains to poorer households from the lower cost of unprocessed foods (although the reduction in revenues associated with such an exemption would also be lower under such circumstances). The practical impact of such

[52] P. Diamond and J. Mirrlees, 1971, op. cit.

[53] Exemptions also create distortions in competition between exempt firms and non-exempt firms – favouring exempt over non-exempt firms when selling to consumers of firms selling exempt products (who cannot reclaim VAT), and favouring non-exempt over exempt firms when selling to other firms producing non-exempt products (who can reclaim any VAT levied). This issue was discussed in the context of the factors affecting the optimal level of the VAT threshold in Section 2 of this Note.

unrecoverable input VAT on the prices of exempt products in low- and middle-income countries is little researched to date.

Before concluding, it is worth noting that the use of exemptions rather than reduced or zero rates avoids one administrative difficulty for many low- and middle-income countries: VAT refunds, which, by definition, producers of exempt products cannot claim. Whether this can justify tolerating the other issues with exemptions (including the uncertainty about their redistributive impact) is unclear, but it does suggest that any country considering a shift from exemptions to zero or reduced rates should ensure that the processes for dealing with refunds are as robust as possible.

Summary

This section has dealt with the administrative, efficiency and distributional rationales for VAT-rate differentiation and exemptions. Broadly-speaking four conclusions emerge:

1) From an administrative perspective, varied rates and exemptions impose additional costs on tax authorities and taxpayers, and increase the risk of tax avoidance and evasion.

2) From the perspective of economic efficiency, there are several good theoretical reasons to apply different rates of VAT (or sales tax) on different goods and services. Apart from a few obvious examples like childcare, where the case for a lower (or zero) rate seems clear-cut, the practical relevance of these theories is not obvious. Few estimates exist for how rates should vary across goods and services, nor of the gains in efficiency that would result, certainly in the context of low- and middle-income countries. Without such estimates, it is difficult to ascertain whether potential gains are worthwhile, given the administration and compliance issues associated with multiple rates of VAT.

3) Turning to redistribution, the growth of targeted cash transfers in low- and middle-income countries suggests that the case for reduced rates and exemptions for redistributive purposes is weaker than it was. However, further empirical analysis of the redistributive capabilities of such transfers relative to VAT needs to be undertaken.

4) Relative to reduced and zero rates, exemptions raise additional administrative and compliance issues, risk distorting firms' production decisions, and can even increase the cost of some goods and services to consumers. They reduce the likelihood of VAT refunds – and the problems associated with refunds – but given that refunds are a more general feature of VAT (for loss-making firms and exporters), low- and middle-income countries should be investing in ensuring such systems are as robust as possible, regardless of their policies on exemptions.

4. Conclusions and Next Steps

This briefing note has set out the theoretical and practical reasons that can be used to justify application of different rates of VAT (or sales taxes) to different goods and services, or exempt them from the scope of VAT entirely.

From an administrative perspective, varied rates and selective exemptions impose additional costs on tax authorities and taxpayers, and increase the risk of tax avoidance and evasion. Apart from a few special cases – such as exemptions for small firms, and things like financial and public services which lack an explicit 'price' – it seems difficult to justify such policies on the grounds of easier administration.

Exemptions are problematic from the perspective of economic efficiency because they distort firms' production decisions. Furthermore, they may not deliver the desired distributional effects because they increase the price of other (taxable) goods and services that use the exempted product as an input to production. This may be particularly pertinent given that many low- and middle-income countries, such as Ghana, apply exemptions to unprocessed foods that are used in the production of processed foods as well as consumed directly by households.

There are clear theoretical justifications for varied rates on the basis of economic efficiency: such variation may offset some of the disincentive to participate in the market economy that taxation causes more generally, and may contribute to reduced evasion of VAT (or sales tax). If countries cannot implement more targeted instruments for redistribution, such as targeted transfer schemes, there may also be an equity rationale for VAT (or sales tax) rate differentiation.

Unfortunately, empirical evidence on the relevance of these arguments is somewhat lacking. The papers setting out the efficiency arguments for rate differentiation are theoretical without empirical applications. Several related papers do look at the empirical relevance for such ideas but in developed countries (for instance Fredriksen et al (1995)[54] examine the impact of VAT rate increases on tax evasion in Denmark; Piggott and Whalley (2001)[55] analyse VAT broadening and tax evasion in Canada; and Bastani, Blomquist and Pirtillä (2015)[56] consider the gains from VAT rate differentiation in the UK). Analysis in the context of low- and middle-income countries is a clear gap – but one that is difficult to bridge given that data on things such as time use and tax evasion (or informality) is required before and after a relevant reform to VAT facing particular goods and services.

There is more evidence for low- and middle-income countries of relevance to the equity issue. Studies by the World Bank and the Commitment to Equity (CEQ) Project find that a wide range of low- and middle-income countries are able to implement cash transfer schemes that are well targeted at poorer households.[57] A number of studies examine the

[54] Fredriksen, N., P. Hansen, H. Jacobsen, and P. Sørensen, 'Subsidising Consumer Services: Effects on Employment, Welfare and the Informal Economy', *Fiscal Studies*, 1995, 16, 2, 71–93.

[55] J. Piggott, and J. Whalley, 'VAT Base Broadening, Self Supply and the Informal Sector', *American Economic Review*, 2001, 91, 1084–1094.

[56] S. Bastani, S. Blomquist and J. Pirtillä, 'How should commodities be taxed? A counter-argument to the recommendation in the Mirrlees Review, *Oxford Economic Papers*, 2015, 67, 455–478.

[57] See analysis at: http://www.commitmentoequity.org/.

distributional effects of using (part of) the proceeds of reductions to energy subsidies to boost or create cash transfer schemes (for instance World Bank (2014);[58] Younger (2016);[59] and Cooke et al (2016)).[60] A few look at utilising the revenues obtained from broadening VAT to boost cash transfer programmes (including Abramovsky, Johnson and Phillips (2013)[61]) or public service spending (such as Muñoz and Cho (2003)).[62]

However, to our knowledge there has been no systematic comparison of the distributive properties and revenue effects of differentiated rates of VAT (or exemptions) in low- and middle-income countries with the properties and effects of cash transfer schemes. The next stage of our project is therefore to undertake such a comparative analysis, utilising tax microsimulation models for a range of low- and middle-income countries (such as Ghana, Ethiopia, Tanzania, Mexico and more), in conjunction with other researchers. The aim of this is to help inform policy debates, both about how VAT should be structured and about how expansions of nascent cash transfer schemes could be funded.

[58] World Bank, World Bank Poverty Assessment, 2014, *The World Bank Group.*

[59] S. Younger, 'The Impact of reforming energy subsidies, cash transfers, and taxes on inequality and poverty in Ghana and Tanzania', CEQ Working Paper Series, 2016, 55.

[60] E. Cooke, S. Hague, L. Tiberti, J. Cockburn and A. El Lahga, *Estimating the impact on poverty of Ghana's fuel subsidy reform and a mitigating response,* Journal of Development Effectiveness, 2016, 8, 105–128.

[61] L. Abramovsky, P. Johnson and D. Phillips, 2013, op. cit.

[62] S. Muñoz and S. Cho, 'Social Impact of a Tax Reform: The Case of Ethiopia', IMF Working Paper 03/232, 2003.