On the European Union VAT Proposals: The Superiority of Origin over Destination Taxation

Ben Lockwood, David de Meza and Gareth D. Myles
University of Exeter
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The completion of the single market has brought into sharp focus issues surrounding the design of the tax structure for the European Union. The abolition of border controls is incompatible with the use of the destination system of taxation which existed prior to 1993. We argue that the existing proposal of the EU for a replacement tax scheme is flawed and that it would be better to employ a system of origin taxation. Unlike the scheme which is to be implemented, such a system would leave member states within the European Union free to design commodity taxes to achieve domestic objectives whilst adhering to the principles of the single market.

I. INTRODUCTION

The completion of the European Union (EU) single market has rendered the previous system of destination taxation, in which exports were tax-exempt and then taxed at the importing country's rate, unsustainable due to the accompanying abolition of border controls. At present, an interim system is in operation but it is planned for this to be replaced at the start of 1997 with a mixed system which taxes imports by registered traders at the rate of the country of destination whereas personal imports will be taxed at the rate of the country of origin. This replacement system is seen as being definitive. Although the final details of the definitive system have not yet been clarified (see Keen (1993)), as far as transactions involving firms' trading are concerned it is expected to include the creation of a clearing house to reallocate tax revenues between countries so as to provide an outcome reasonably close to that of the original destination system.

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Even if the clearing house works smoothly, the new system will not be identical to the old since consumers, in contrast to traders, will pay tax in the country of purchase with no adjustment when crossing a frontier. If tax rates between countries are not harmonised, incentives are created to engage in cross-border shopping. Real resources will then be expended by firms and consumers to exploit international differences in tax rates. Personal imports will tend to replace carriage by traders even though transport costs are thereby increased. In some cases, tax differences may actually induce cross-hauling with producers in high-tax countries exporting to low tax destinations and consumers making special trips to re-import. In other instances, production may be relocated. High-tax jurisdictions will be under pressure to cut rates to staunch the dislocation and loss of revenue.

Neither the loss of fiscal independence or the excess real costs of organising cross-border shopping are in themselves desirable. Along with the bureaucratic costs of setting up a clearing house, it may be thought that these are the inescapable consequences of the desirable aim of abolishing border controls. This paper argues that this is not so. Our main contention is that an origin system can be specified that would lead to an outcome identical to that under the previous destination system and so would bypass the problems of the EU scheme.

The basis of our claims is an appeal to results that prove the equivalence of pure origin and destination taxation in the sense that a switch form one regime to the other will not alter resource allocation. It is well known that in a two-country, two-good world with a single factor of production, a switch between origin and destination taxation has no real effects (Grossman (1980), Whalley (1979)). The present authors have shown elsewhere (Lockwood, de Meza and Myles (1994a)) that this equivalence result can be extended to competitive economies with any number of goods and factors of production, to imperfectly competitive economies and to monetary economies. As it stands however, these findings are not directly applicable to tax design for the European Union since they rely on the adoption of a universal origin regime. To understand this term, consider a set of countries linked by trade that initially employ a system of destination taxation. If all these countries switch to origin taxation, a universal origin system results. In contrast, if only a subset of the countries switch, a restricted origin system arises. Since the EU’s trading partners will operate destination taxation even if it switches to an origin system, it is the restricted origin system that is relevant in a discussion of EU tax policy.

The findings of Shibata (1967) and Whalley (1979) suggest that equivalence does not hold between destination and restricted origin regimes except in very special
cases. However, Lockwood, de Meza and Myles (1994b) show that this conclusion is sensitive to the specification of the restricted origin regime. In fact, if the origin principle is applied to trade within the EU and to exports to countries outside the union, equivalence will apply. We believe that the equivalence results are significant because it has been suggested elsewhere (eg. Haufler (1992)) that, following the abolition of border controls, the non-equivalence of the restricted origin regime forces the EU into adopting a mixed system that has undesirable side effects. What is argued here is that the benefit of abolishing border controls can be achieved without incurring these costs.

These results provide the motivation for reconsidering the tax policy of the EU. In doing this, our perspective is the opposite to that of Keen (1993). Keen, whilst recognising the equivalence of origin and destination taxation (but not of restricted origin and destination), focuses on the differences between the outcomes that arise when the required assumptions are not met as the basis for the choice between the systems. In contrast, we emphasise the similarity of the outcomes as the basis of choice and argue that, although exact equivalence will not hold in practice, it will be sufficiently close to doing so that the differences are unimportant. Our main contention is that the EU is moving to a system with potentially significant problems but which are avoidable under an origin regime.

The remainder of the paper is organised as follows. Section II briefly describes the system of VAT in operation in the EU prior to the single market and its proposed replacement. The equivalence of origin and destination taxation is then discussed in section III as a prelude to the analysis of restricted origin regimes in section IV. Section V applies the results to assess the desirability of alternative definitive tax systems for the EU. Conclusions are given in section VI.

II. PRESENT AND PROPOSED SYSTEMS

The system of VAT that operated in the European Union prior to January 1993 was based upon the destination principle. A firm exporting a commodity from country $A$ to country $B$ paid VAT at the rate of the importing country, $B$, as the commodity crossed the border into $B$. Similarly, if a consumer from $B$ purchased the commodity in $A$, they purchased the commodity at a tax-free price but paid the VAT of $B$ as they crossed the border with their purchase. It is clear that the operation of this system required the existence of effective border controls to monitor the flow of
commodities. Without border controls, this form of destination taxation cannot be operative.

The completion of the single market had the consequence of eliminating border controls and, therefore, prevented the continuation of destination taxation. The system of taxation presently in force, on a transitional basis only, is described in detail in Keen (1993). We shall not pursue this here since it is the structure of the final system that is the focus of our analysis. The details of the definitive system have not yet been clarified but a standard interpretation of the proposals suggests that a firm located in A will pay VAT upon any value added whilst production is taking place in A. After export to B, further VAT is paid equal in value to the difference between what would be due if the good was entirely taxed in B and what has already been paid in A. A clearing house, created solely for this purpose, will then ensure that the VAT paid in A on the exported commodity is transferred to country B.

An example of the functioning of the previous destination system and the definitive system is given in Table 1 below in which it is assumed that the standard rate of VAT in country A is 17.5% and in B 20%.

Table 1

<table>
<thead>
<tr>
<th>Destination System and Proposed Definitive System</th>
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<tbody>
<tr>
<td><strong>Destination.</strong></td>
</tr>
<tr>
<td>Country A</td>
</tr>
<tr>
<td>Commodity value £20</td>
</tr>
<tr>
<td>Good for export 0% VAT</td>
</tr>
<tr>
<td>VAT paid £0</td>
</tr>
<tr>
<td>Tax revenue £0</td>
</tr>
<tr>
<td><strong>Country B</strong></td>
</tr>
<tr>
<td>Commodity value £30</td>
</tr>
<tr>
<td>VAT rate 20%</td>
</tr>
<tr>
<td>VAT paid £6</td>
</tr>
<tr>
<td>Tax revenue £6</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>New Proposal</th>
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<tbody>
<tr>
<td>Country A</td>
</tr>
<tr>
<td>Commodity value £20</td>
</tr>
<tr>
<td>VAT rate 17.5%</td>
</tr>
<tr>
<td>VAT paid £2.35</td>
</tr>
<tr>
<td>Clearing house transfers £2.35 from A to B</td>
</tr>
<tr>
<td>Tax revenue £0</td>
</tr>
<tr>
<td><strong>Country B</strong></td>
</tr>
<tr>
<td>Commodity value £30</td>
</tr>
<tr>
<td>VAT rate 20%</td>
</tr>
<tr>
<td>VAT paid £3.65 (= £6 - £2.35)</td>
</tr>
</tbody>
</table>

As can be seen from Table 1, although the proposed tax system has sometimes been termed an origin system in the literature, it will actually lead to an identical final
allocation of tax revenues as the existing destination regime. The major operational
differences are that under the new system goods bear taxes before they cross borders,
and hence it satisfies the identifying criteria of an origin regime, and the reallocation
of revenues of the clearing house. However, the payment of additional tax in the
importing country and the action of the clearing house render the two systems
economically equivalent.

Administratively the proposed tax system is much more cumbersome than the
existing system. The existence of a clearing house can only lead to a greater use of
resources solely in running the system. In addition, the proposed scheme introduces
difficulties that are not presently encountered. If exchange rates are not fixed (and the
present difficulties of the ERM suggest they may not be for some time) there is the
problem of exchange rate variation between the time of taxation and that of
reallocation of revenue by the clearing house. With the variations in exchange rate
recently observed, these changes may well prove very significant and could markedly
affect tax revenues received. A further difficulty will be the uncertainty in tax
revenue that it will introduce: after collecting VAT the revenue service of each
country will not know whether it can retain that revenue or whether it will eventually
prove payable, through the clearing house, to a second country. Furthermore, the
good may be re-exported to a third country bringing in additional complexity.

In summary, the destination system for VAT operated by the European Union
could not continue to apply once border controls were removed. As far as traders are
concerned, the proposed system is therefore based on origin taxation but a clearing
house acts to redistribute revenues in such a way that the outcome is equivalent to the
old destination system. This form of the definitive system introduces a number of
difficulties which may prove to be substantial.

III. ORIGIN AND DESTINATION TAXATION

In order to motivate an alternative to the proposed definitive system it is necessary to
introduce the theoretical results that will provide the basis for our argument. We
employ the term destination regime to denote the situation in which goods are tax-
free as they cross borders and are taxed on entry into the country in which final
consumption takes place. To support this system, border controls are necessary. The
origin regime means that goods are taxed in their country of production and can cross
borders without incurring further taxation.
If there is a switch from destination to origin regime, then in principle consumers are free to cross borders and purchase in the low-tax country (cross-border shopping). Hence it seems plausible that a switch between regimes will have large effects on consumer prices and hence real resource allocation. Many economists have reached just such a conclusion. For example, Lee, Pearson and Smith (1988) have suggested that the completion of the internal market will induce a bout of cross-border shopping. As Sinn (1989) vividly puts it: "Unless VAT rates are sufficiently harmonised, massive waves of cross-border purchases must be reckoned with ... The only way to ensure that, despite the direct purchases, net of tax prices continue to be equated across borders seems to be a harmonisation of tax rates". One reason why this might not occur is that transport and transactions costs are prohibitively high. However, empirical evidence suggests that there is significant cross-border shopping within the European Union (Fitz Gerald (1990), Institut for Graenseregionsforskning (1986)).

Our contention is that this view of the switch to the origin regime is misguided. We are not the first to draw this conclusion and there is a small literature (Grossman (1980), Berglas (1981), Whalley (1979)) which shows that a switch in regimes at given tax rates may have no real effect. The key assumption of this literature is that commodity taxes are uniform within each country. Given this, the intuition for the result is simple: following a switch from origin to destination, the relative wage adjusts to ensure that consumer prices relative to the wage in each country do not change and so the switch has no real effects.

The simplest version of this result can easily be described by assuming a competitive, non-monetary world with two countries. In the destination regime, each country levies uniform taxes on the goods consumed in that country. Although the taxes are uniform within a country, they may differ between countries. The claim we wish to demonstrate is that a switch to origin taxation with the rates of tax unchanged will not affect real resource allocation. To understand the mechanism underlying this claim, it is best to view the destination system as being essentially a consumption tax and the origin system as a production tax. With balanced trade, consumption and production are equal in value in both countries so switching from one as the tax base to the other has no effect. This is the basic equivalence result.

More explicitly, the mechanism through which the equivalence result works is the adjustment of relative wages between countries. If we consider the country that has the higher tax rate under the destination regime, its products would appear to be at a disadvantage in the world market once the move was made to an origin system.
However, a fall in its relative wage corrects for this and leaves its trading conditions as they were under the destination regime. The equivalence result can then be interpreted as demonstrating how wage adjustment counteracts the consequences of the switch between origin and destination principles. It should be noted that the adjustment of relative wages between regimes in this non-monetary model can be viewed as a change in the terms of trade for labour. Within each country the purchasing power of the wage is preserved.

The result above is demonstrated algebraically in the Appendix but the conditions assumed for this are strong: competitive markets, constant returns to scale and inelastic supply of all factors. Also - although this is less important - there was the restriction to two goods and two countries. Moreover, in analysing only a barter economy it is difficult to relate the results to economies with nominal wage and price rigidities. However Lockwood, de Meza and Myles (1994a) show that the equivalence result is considerably more general than this. Assuming only uniformity of taxes within each country, it holds: (i) in a general competitive economy with unrestricted production technology, an arbitrary (finite) numbers of goods and factors of production and arbitrary factor taxes; (ii) in an imperfectly competitive economy with any form of imperfect competition (iii) in economies in which consumers and producers face transport costs for shipping commodities and (iv) even in monetary economies where there is some price rigidity (e.g. nominal wage rigidity) as long as the exchange rate (the relative price of domestic to foreign money) is flexible. In each case the argument establishing equivalence follows that of Table A1 and it is either the adjustment of the relative wage or the exchange rate that allows the equilibrium before a change in regime to be re-established after the change. These conclusions show that the equivalence result has very broad applicability.

Despite this generality, there are situations in which neutrality does not hold. As shown in Lockwood, de Meza and Myles (1993a) it will fail to hold if (a) both the exchange rate and nominal wages are rigid; (b) domestic residents hold foreign money balances for transactions or store of value purposes; (c) domestic residents hold shares in foreign firms. We return to discuss these sources of failure further below.

IV. RESTRICTED ORIGIN TAXATION

The results described above establish that a simultaneous switch from a destination regime to an origin regime by all countries linked by trade has no effects upon the real equilibrium. Unfortunately, these results cannot be applied directly to the practical
issue of tax design for the European Union and other large customs unions since the
members of these groupings inevitably trade with non-members whose tax structures
will not be subject to change.

The choice facing the European Union or any other customs union can be
more accurately described as the choice between (i) a universal destination regime,
and (ii) a restricted origin regime, where goods produced and consumed within the
customs union are taxed on an origin basis and those exported to non-union members
are taxed on a destination basis. In the restricted origin regime goods exported by
non-members to the customs union are untaxed since the non-members treat them
under the destination regime (exports are tax exempt) and the customs union under
the origin regime (imports are tax exempt).

Many studies of restricted origin regimes, such as Grossman (1980), Berglas
(1981) and Whalley (1979), have claimed that they are not equivalent to the
destination regime. However, these claims arise because the formulation of the
restricted origin regime adopted assumed that exports from the customs union were
tax-exempt. In contrast, if exports from the customs are not tax-exempt, which would
follow from a consistent application of the origin principle, equivalence does hold.
Furthermore, this equivalence result applies in all the circumstances in which the
standard equivalence result for universal origin regimes holds.

To describe in more detail the restricted origin regime we analyse, consider a
world with three countries denoted A, B and C. We assume that A and B form a
customs union and that C is an outside trading partner. The countries in the customs
union co-ordinate their tax policies and can choose to operate either a destination or
an origin regime. There are effective border controls between the customs union and
country C, and C employs destination taxation. We now distinguish the two different
tax treatments of trade between the customs union and country C.

(1) **Reciprocal Restricted Origin (RRO)** Exports from the customs union to country C
are tax free. Once in country C they are taxed at the rate of that country. Exports
from country C to A or B are tax free and once in A or B are taxed at the rate of the
importing country.

(2) **Non-Reciprocal Restricted Origin (NRRO)** Exports from the customs union to
country C are taxed at the exporting country's rate and once in C are taxed again at the
rate of country C. Exports from country C to A or B are tax free upon export and
upon import to A or B.
In the reciprocal scheme the customs union is co-ordinating with country C by treating its exports to, and imports from, C on a destination basis. By contrast, in the non-reciprocal scheme, the customs union treats all international transactions, whether within the customs union or with the rest of the world, on a consistent origin basis. The double taxation of exports from the customs union may seem a little strange. However it is this that leads to equivalence with the destination regime.

As already noted, the relationship between the destination and RRO regime have been much studied and even with full wage and exchange rate flexibility there is no equivalence between destination and RRO except under very strong assumptions. In contrast, the destination and NRRO regimes are equivalent in all the circumstances in which the destination and universal origin regimes are equivalent. A formal demonstration of this is given in Tables A2 and A3 in the Appendix but the reasoning behind the result is exactly that described in section III. If wages are flexible, wage adjustment (or more practically, exchange rate adjustment) can nullify any effects caused by alterations in the structure of taxation in the switch from the destination regime to the non-reciprocal restricted origin. Since the switch in regime has no effects upon resource allocation, equivalence again applies. As already noted for the universal origin regime, the result applies when consumers and firms face transport costs in importing or exporting goods, it also applies when intermediate goods are used in production, since transport can be interpreted as an intermediate good. The limitations to the result are the same as those given for the universal origin regime in section III.

V. APPLICATION TO EUROPEAN UNION PROPOSAL

It has been argued above that destination regimes and non-reciprocal restricted origin regimes are equivalent under certain conditions. If these conditions were satisfied in practice, then the choice for the European Union would be clear: the non-reciprocal origin regime should be adopted. The equivalence result eliminates all concerns about waves of cross-border shopping and tax competition between jurisdictions since the same incentives exist for both regimes. Since cross-border shopping and tax competition are not a problem under destination taxation they will not be under the equivalent NRRO regime. Furthermore, the non-reciprocal origin regime leaves countries free to pursue their own fiscal objectives and there is no necessary pressure for harmonisation of commodity tax rates. Border controls are unnecessary because

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1 In Genser et al (1994) the equivalence result is also shown to hold with internationally mobile capital.
tax inclusive prices are equalised internationally and there is no requirement to set up a clearing house. This results in a saving of resources that would otherwise be wasted in administration.

The system of taxation proposed by the EU is subject to a number of criticisms. Firstly, there is the sheer administrative complexity of the new system involving registered traders and clearing houses. Next is the encouragement which it gives to engage in tax competition involving each country trying to undercut its neighbours to attract cross-border shoppers and so divert tax revenues to itself. This will result in countries being pressured into uniformity of indirect tax rates and tending to set them at a lower level than would otherwise be desirable. Moreover, transport costs incurred by consumers and producers taking advantage of such tax differentials as remain are pure efficiency losses. A graphic illustration of the sort of thing which can happen is Canada's attempt to tax cigarettes at a rate much above that of the United States. Canadian manufacturers exported their products to the US and these were illegally re-imported to Canada. According to estimates by the government of Quebec, two thirds of cigarettes consumed in the province were bought illegally prior to the forced reversal of the tax policy in February 1994 (Globe and Mail, January 29, 1994).

A similar situation is currently arising in the UK over excise taxes on alcoholic drinks. A case of Stella Artois bought in Britain carries £3.26 duty whilst a personal import from Calais has only £0.47. It is estimated that in 1993 personal imports were in excess of £600m representing a loss to the UK Treasury of some 4-5% of total alcohol revenues (Gaysford, 1994). With the opening of the Channel Tunnel, these numbers are bound to grow unless the UK succumbs to the obvious pressure to cut its duties.

Given these overwhelming theoretical arguments, the question must be addressed of how they fare in practice. In this respect, three sets of issues arise. Firstly, the practical functioning of the NRRO system must be described. Secondly, the political feasibility of the NRRO regime must be addressed, particularly the double-taxation of exports from the customs union. Finally, the size and consequences of the deviations from equivalence resulting from the failure of the conditions required for the results to hold in practice.

The issue of practical functioning is easily dealt with. Countries outside the customs union will not be required to adjust their procedures. Inside the union, value

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2 Haufler (1994) provides a formal model with these characteristics.
added within a country is taxed at that countries rate. Imported inputs are costed at the price actually paid by the home firm. What proportion of these costs is foreign tax revenue as opposed to foreign producers is irrelevant in determining the tax liability of the home firm. Similarly, there is no need to keep track of whether home produced goods are eventually exported for no tax refund is due on such exports. An attraction of the NRRO regime is its simplicity.

The issues of political feasibility arises from the fact that goods exported from the customs union are taxed once in their country of origin and then taxed again at the importing country's rate of tax. In contrast, goods imported into the customs union are not taxed. Politically, this divergent treatment of imports and exports appears unpalatable since it would seem to place the customs union at a disadvantage compared to countries outside the union. Of course, the economics of the situation captured in the equivalence result show that this is not so and that the apparent disadvantage is eliminated by adjustment of wages or exchange rates. Nevertheless, if this logic is not appreciated by producers in the customs union it will politically be difficult to implement the scheme.

The second set of issues regard the applicability of the theoretical equivalence result in practice. Unlike many results in economics, it is not dependent upon assumptions concerning market structure and applies in both competitive and imperfectly competitive environments. The two most significant divergences from the required conditions are that commodity tax rates are not uniform and that there may be significant cross-country holdings of currency. As regards tax rates, it is uniformity of rates within countries and not between countries that is necessary. This is an important point to stress since one of our major arguments in favour of the adoption of the origin principle is that it would leave countries free to pursue independent fiscal policies. Although there is variation in VAT rates within countries between different commodities, this has been decreasing over time due to pressures for harmonisation. Many of these pressures would be eased under the origin principle. Furthermore, despite the fact that the equivalence result does not apply once the uniformity assumption is violated, there are no grounds for believing that this is an argument in favour of destination taxation.

In fact, numerical simulations indicate that the switch to origin taxation typically has direct benefits to residents of partner countries as well as yielding more tax revenue where taxes are not uniform between countries. The approach taken is to

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3 In fact different goods can be taxed at different rates as long as the ratio of tax rates (as opposed to their levels) is the same in all countries.
compute the optimal tax structure for member countries under the destination regime assuming no cross-border shopping and then consider the effect of a switch to the restricted origin regime at these tax rates. Given the structure of the example, it is then straightforward to describe what would then happen if the countries were to re-optimise their tax rates under the restricted origin regime.

In choosing their tax rates, in both the destination and restricted origin regimes, it is assumed that each country acts independently and ignores its power to influence its terms of trade. This reflects the fact that in a many-country world individual nations will have limited ability to move markets. Though the model is of a world with only three types of country, one interpretation is that there are many countries of each specified type, which would justify the price-taking assumption. Since the countries are identical in size with equal productivities and preferences are simply permuted between countries (see note 1), they must have identical wage rates in the destination regime equilibrium. Non-uniformities arise in this context because the efficiency cost of raising revenue is lower on some goods than others. This is the Ramsey principle where, to a first approximation, goods in inelastic demand should bear higher taxes (see Heady (1993) and Myles (1995)). Notice that with each country applying the Ramsey principle on the correct assumption that it cannot influence its terms of trade by its actions, a global optimum is not achieved. The collective actions of all the countries in a bloc do influence the terms of trade and, because taxes are present, these pecuniary spillovers have efficiency effects elsewhere. It is these spillovers that give rise to the possibility of gains under the NRRO regime.

The results reported in Table 2 are for the switch from a destination regime to a restricted origin regime where the tax rate on a good is the same as its producer set on it in the destination regime.

Table 2

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4 Residents of each country have utility function $U^i = x_{i1}^\rho + x_{i2}^\rho + x_{i3} - \ell_i \over k$ where $x_{ij}$ is the consumption of good j in country i and $\ell_i$ is labour supply. Each of the three goods is produced in only one country, labour is the sole input and productivity per hour is constant.
Notes: 1. The preferences in B and C are given by the permutation $\rho^{B1} \rightarrow \rho^{B2}, \rho^{C3}; \rho^{A1} \rightarrow \rho^{B3}, \rho^{C1}$.
2. Revenue is measured in units of labour. The revenue level in B has the same qualitative behaviour as that in A.
3. Welfare is consumer utility exclusive of the benefits of the tax revenue.

The switch from destination to non-reciprocal restricted origin regime at fixed tax rates either raises the direct utility of residents along with increasing tax revenue or, as in the second row of the table, leads to a sufficient revenue gain that a redistribution from government to consumer would raise welfare without reducing revenue below its initial level. Although in the latter case the overall superiority of origin taxation is only potential, rather than actual, these results do provide further support for origin taxation even when the equivalence results are not applicable.

It may be objected that in maintaining tax rates under the restricted origin regime, our methodology ignores the possibility that countries may have new incentives to alter rates and, granted the externalities present, when they re-optimise everyone may end up worse off. In fact, these issues do not arise. Assume that each country still wishes to maximise its own welfare subject to the original revenue constraint. Now consider country A. Its only policy instrument is the origin tax that it levies on production within its borders. The issue of optimisation is therefore redundant: it simply sets the tax rate at the level needed to meet the revenue constraint. In all cases considered in Table 2, this necessitates a reduction in the tax rate. Such a reduction raises welfare in all three countries since it leads to a general reduction in the price of good 1. Exactly the same argument applies to country B. Although country C has more flexibility since it has retained a destination system, in the re-optimisation it too will lower its tax rates by the same proportion on all goods. To see this note first that its revenue rises in the switch from destination regime to restricted origin at fixed tax rates. In addition, the solution of the optimal tax problem for C has the relative tax rates on the three goods determined by the elasticities of demand. Since these elasticities have not changed, neither do the relative tax rates. As for A and B, country C therefore also re-optimises simply by scaling down all the

<table>
<thead>
<tr>
<th>Preferences $\rho^{A1}$ $\rho^{A2}$ $\rho^{A3}$</th>
<th>Tax Rates $\xi^{A1}$ $\xi^{A2}$ $\xi^{A3}$</th>
<th>Tax Revenue in A Destination Origin</th>
<th>Welfare Gain % A B C</th>
</tr>
</thead>
<tbody>
<tr>
<td>.7 .5 .3</td>
<td>.037 .063 .091</td>
<td>$2000 \times 10^5$ $2007 \times 10^5$</td>
<td>11.5 10.0 0</td>
</tr>
<tr>
<td>.4 .5 .6</td>
<td>.035 .029 .023</td>
<td>$20 \times 10^4$ $29 \times 10^4$</td>
<td>-9 -12 -13</td>
</tr>
<tr>
<td>.7 3 5</td>
<td>.087 .229 .153</td>
<td>$2000 \times 10^5$ $2001 \times 10^5$</td>
<td>10.0 11.5 0</td>
</tr>
<tr>
<td>.8 3 5</td>
<td>.006 .022 .013</td>
<td>$2000 \times 10^9$ $2005 \times 10^9$</td>
<td>0 0 0</td>
</tr>
</tbody>
</table>
tax rates it levies. This world-wide reduction in tax rates must then lead to a further gain in welfare.\textsuperscript{5}

Such calculations admittedly involve rather narrow considerations. The origins of the existing non-uniformities often lie beyond attempts to minimise deadweight loss. For example, in the UK, books and newspapers are zero rated for VAT because an articulate lobby has persuaded government that their production or consumption confers beneficial externalities or represents some kind of 'merit' good. Whether origin or destination taxes bests serves these ends is ambiguous. A given tax cut is of course more beneficial to producers if the origin regime is in force since it applies to exports as well as home sales whereas readers gain more from a concession in a destination tax since imports are included\textsuperscript{6}. It is not obvious whether it is writing or reading (or both) that policy should be designed to encourage.

The most important zero rated items in the UK are childrens clothes and food. Income distribution impacts clearly motivated the initial introduction of these provisions. Whether manipulating commodity taxes rather than income taxes is the best way to help specific groups is unclear, but these are certainly emotive issues for the electorate. In the case of childrens clothing import penetration is high so a cut in an origin tax would not have much effect on relative price. If it really is desirable to have a big effect, a sales subsidy would have to be introduced. This should not be much harder to administer than existing non-uniform tax rates. In practice there would probably be much more political and popular resistance to explicitly paying out money than foregoing its collection, despite the equivalence of the two measures. Which response represents true preferences is impossible to disentangle. Our view is that most non-uniformities are inefficient ways of achieving their explicitly stated goals and their mere existence encourages undesirable lobbying activity. But if non-uniformities are to be sought, this does not obviously favour destination over origin taxation.

The same general comments apply to cross-country holdings of currency. They will also remove the equivalence result but do not imply the superiority of destination taxation. Furthermore, the equivalence results are only part of our argument. Even if the destination system were shown to be \textit{economically} preferable,

\textsuperscript{5} Since every country is better-off at existing rates, if public goods (which are financed by the tax revenue) are normal, the countries may want to increase tax revenue and so keep rates unchanged.

\textsuperscript{6} As publishing is characterised by free-entry and imperfect competition it is not certain in fact that tax cuts will benefit consumers. Titles may proliferate so much that the loss of economies of scale is actually harmful, see Maloney \textit{et al} (1994).
the arguments advanced above still apply to the benefits flowing from the administrative simplicity of the origin arrangement\(^7\).

There is one additional problem. Multinational firms may attempt to manipulate transfer prices in order to overstate the share of output produced in low tax jurisdictions. Problems of this kind have arisen with the taxation of corporate earnings, though without causing the collapse of the system. Indeed, all tax systems are subject to similar abuses so the possibility of evasion is not unique to the origin system. Thus, under the mixed EU system there is the problem of illicit personal imports and, in particular, of bootlegging\(^8\). This is in addition to licit but undesirable cross-border shopping.

The main drawback of our origin proposal is if the European Union is committed to fixed exchange rates and, ultimately, a single currency. Were nominal wages flexible this would be a close substitute for exchange rate movement but of course this mechanism cannot be relied on in practice. With a single currency, whether an origin or a destination regime is adopted, harmonisation of indirect taxes seems likely. If diversity and subsidiarity are of value a real cost of a common currency is the loss of national fiscal independence which could otherwise be easily achieved with an origin based VAT.

**VI. CONCLUSIONS**

The central argument of this paper is that the European Union should adopt a system of origin taxation for its definitive tax system. Drawing on recent theoretical results concerning the equivalence of destination and non-reciprocal origin regimes, we have argued that the origin system would be administratively simpler than the proposed definitive system (which is likely to involve the existence of a clearing house to reallocate tax revenues) and will eliminate problems associated with the potential for cross-border shopping. Although the theoretical results cannot be applied exactly, it is our contention that they are sufficiently robust to provide guidelines for practical policy formulation.

**Appendix**

\(^7\) Additional arguments in favour of the origin system (in a two-country world) have been advanced by Keen and Lahiri (1994).

\(^8\) It might also be felt that trade deflection, the routing of goods via a third country in order to minimise tax liabilities, could arise. It is easily shown that it is always cheaper to export directly so this issue does not arise.
The intuitive arguments behind the equivalence results have already been given in sections III and IV. In this Appendix the argument is presented more formally by deriving the equilibrium prices that must hold in the various situations.

Table A1 demonstrates equivalence between destination and universal origin regimes. It assumes a competitive world with two countries, A and B, and two goods, 1 and 2, constant returns to scale in production and a completely inelastic supply in each country of the single factor of production. Country A produces good 1 and B good 2. In each case, one unit of labour produces one unit of the good. Finally, labour in country A is the numeraire, so $w_a = 1$ and $w_b = w$. The uniform tax rate in A is denoted by $t_a$ and that in B by $t_b$ the tax rate in B. The entries in the table show the consumer price relative to the wage in the two tax regimes.

Table A1
Consumer Prices Relative to the Wage In Different Tax Regimes

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$(1+t_a)w^o$</td>
<td>$(1+t_b)w^o$</td>
</tr>
<tr>
<td>B</td>
<td>$(1+t_a)w^o$</td>
<td>$(1+t_b)$</td>
</tr>
</tbody>
</table>

The subscript "o" and "d" refer to the tax regime in operation.

The origin and destination regime are equivalent if the prices in Table A1 are the same in both regimes. It is clear that this requires $w^d = \frac{(1+t_b)w^o}{(1+t_a)}$. This equality can be satisfied when wages are flexible, so the two regimes are equivalent. This result demonstrates the argument of the main text that wage adjustment counteracts the consequences of a change between origin and destination principles.

Equivalence between the destination and NRRO regimes can be shown in the same way. Country C is now introduced and is assumed to produce good 3 subject to constant returns with labour as the single input. Choosing labour in country C as the numeraire, so that $w_c = 1$, and following the notational conventions described above, the ruling prices in the destination regime relative to the wage in each country are shown in Table A3.
Table A3
Consumer Prices Relative to the Wage in Destination Regime

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$1 + t_a$</td>
<td>$\frac{w^d_a(1 + t_a)}{w^d_a}$</td>
<td>$\frac{1 + t_a}{w^d_a}$</td>
</tr>
<tr>
<td>B</td>
<td>$\frac{w^d_b(1 + t_b)}{w^d_b}$</td>
<td>$1 + t_b$</td>
<td>$\frac{1 + t_b}{w^d_b}$</td>
</tr>
<tr>
<td>C</td>
<td>$w^d_a(1 + t_c)$</td>
<td>$w^d_b(1 + t_c)$</td>
<td>$1 + t_c$</td>
</tr>
</tbody>
</table>

Given the specification of the NRRO regime plus the assumptions made on technology, the ruling prices under the NRRO regime are given Table A4.

Table A4
Consumer Prices Relative to the Wage in NRRO Regime

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$1 + t_a$</td>
<td>$\frac{w^o_a(1 + t_b)}{w^o_a}$</td>
<td>$\frac{1}{w^o_a}$</td>
</tr>
<tr>
<td>B</td>
<td>$\frac{w^o_b(1 + t_a)}{w^o_b}$</td>
<td>$1 + t_b$</td>
<td>$\frac{1}{w^o_b}$</td>
</tr>
<tr>
<td>C</td>
<td>$w^o_a(1 + t_c)(1 + t_c)$</td>
<td>$w^o_b(1 + t_c)(1 + t_c)$</td>
<td>$1 + t_c$</td>
</tr>
</tbody>
</table>

Contrasting Tables A3 and A4 it is clear that if wages are flexible, a switch from the destination regime to the non-reciprocal restricted origin regime has no effects upon resource allocation. This can be seen by allowing wages to adjust so that $w^d_a = w^o_a(1 + t_a)$ and $w^d_b = w^o_b(1 + t_b)$. Prices relative to the wage in the two regimes can then be seen to be identical and resource allocation is unaffected.

References


