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The Uniform-Tax Controversy

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I. Introduction

In recent years an interesting schism has appeared within the ranks of public finance experts and practitioners. On one side of the divide we have a group that espouses uniformity of rates in indirect (value added) taxation and in tariff schedules. On the other side we have those who do not accept uniformity as a goal and who develop economic analyses showing how uniformity of indirect taxation is less than optimal.

This paper attempts to juxtapose these two views, and to explore the merits and limitations of each case. Without a doubt the bulk of those who argue for uniform value-added taxation do so from a real-world policy orientation, while their main intellectual antagonists argue on the basis of economic theory.

One important message of this paper might be summarized as saying that uniform taxation can best be defended on pragmatic policy grounds—it is hardly ever the best (the theoretical optimum), but it is always a really very sound pattern of taxation. Its distortions of resource allocation may not be minimal, but they are very low compared to plausible alternatives. Moreover, a system of uniform taxation is robust to changes in tastes and technology. Once such a system is in place it can typically be left in place for many, many years. That is, the dynamic movements of tastes and technology are not likely to call for important or frequent changes. Defenders of uniform taxation are cautioned to stick to this kind of pragmatic underpinning in building their case, and not to claim a global theoretical superiority for their “product.”

The counterpart of the above message is directed at the advocates of “Ramsey-Rule” taxation. Their case is built on a demonstration that to truly minimize the efficiency costs of taxation on some subgroup of commodities,

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Instead we use it to buttress the case for uniformity *vis-a-vis* alternatives in which lower-than-average tariff rates apply to imported inputs.

II. The Case for a Broad-Based Uniform Tax

Let us begin with the argument that uniform taxation is good because it strikes all activities at equal rates. Economic agents therefore cannot escape tax by shifting their demand or supply from one activity to another. Viewed in this way, a uniform tax is like the proverbial lump-sum tax, that economic agents cannot get away from by any known action available to them, and that therefore does not impinge on any of their decisions at the margin.

The above argument is true, but unrealistic. Very early in the academic discussion of these matters, the issue of *leisure* arose. Even if we could tax the consumption (or production) of all the goods and services registered in a country's national product, we could still not plausibly bring the value of leisure within the tax net. Thus people can escape taxation by substituting away from standard goods and services, by allocating more time (sometimes called non-market time) to leisure instead.

Quite clearly, if one cannot in practice tax leisure, but only standard goods and services, then it is no longer obvious that uniform tax is best. Indeed, one of the early propositions to be introduced into the tax literature on uniform taxation demonstrated that uniformity is indeed best only when all goods and services are equally good substitutes for leisure. In the case where they are not all equally good substitutes, one should in principle (and neglecting administrative costs, and costs of compliance) tax more heavily those goods which are complements to leisure, and less heavily those goods which are better than average substitutes for leisure. The reasoning can easily be seen by imagining a good that is a strict complement to leisure. We would like, on grounds of neutrality, to tax at an equal rate all activities, including leisure. However, we are not able to tax leisure directly. Hence, so the argument goes, the best we can do is to try to tax leisure indirectly. If one or more goods exist that are strong complements to leisure, we may improve welfare by taxing them higher than the rest. In a way this would amount to applying to them the standard (uniform) tax, plus a surtax that was really aimed at their complement, leisure.

The technical literature on this subject showed that such a strategy would in general improve welfare. This was the case not only where there were complements to leisure, but even where the different goods and services, all being substitutes for leisure, reflected different *degrees* of substitutability for leisure. Under these circumstances the "proper" solution—what is

one must in general apply higher rates to those goods which are poor substitutes for the commodities that are left out of the tax net, and lower rates to those that are especially good substitutes for the "left-out" group. While the mathematics underlying the Ramsey Rule solution cannot be denied, the message of this paper is that the Ramsey Rule solution requires far more knowledge of supply and demand relations than we actually possess. Moreover, changes in tastes and technology will tend to alter the optimum solution obtained by applying the Ramsey Rule. Ramsey taxation is thus considerably less robust than uniform taxation. It also has to cope with the aura of "exploiting" situations of inelastic demand and supply in a way that comes close to mimicking what private economic agents do when they exploit monopoly or monopsony power.

Uniformity in tariffs is rooted in a somewhat different intellectual tradition from uniformity in indirect taxation. For tariffs, the main line of defense for uniformity is that only in this way can one guarantee equal effective protection for all possible activities of import-substitution within the country. The resistance to uniformity has come from those who are reluctant to see tariffs on inputs (raw materials, component parts, capital goods) *raised* in order to make them uniform with the rest.

This paper points out that there are several ways in which the pattern of effective protection might fail to be precisely uniform, even under a uniform tariff, but in the main they are susceptible to correction by simple policy devices (such as applying the GATT-approved border tax adjustments on goods that are exported). It is not easy to achieve correction for export goods that are used as inputs into the production of import substitutes, but we know of no case in which serious adverse consequences would result from a failure to make such a correction.

The most important argument presented in this paper's discussion of tariffs demonstrates that very important gains of productive efficiency are involved in raising the rate of tariffs on inputs up to the level of tariffs on final products. Indeed, such gains continue even as input tariffs are raised well above the levels prevailing on final products. To appreciate how this result comes about, one need only recognize that in raising the tariff on an input used in the process of producing a final good, one tends to offset the protective effect of any tariff that may already apply to imports of that final good. This offsetting process continues up to the point where the extra cost added by the input tariff completely cancels the protective effect of the output tariff. That point is only reached when the percentage rate of tariff on the input is a multiple (equal to one over the share of the input in the total costs of the final product) of the percentage rate applying to the final product.

In this paper we make no attempt to use the above argument to support the setting of actual input tariffs at rates higher than final product tariffs.

the activities comprised by evasion and avoidance of the supposedly general tax. My main conclusion is that on the whole we have neither adequate data for concluding, nor sufficient basis for guessing, that one component of the taxed group is a better or less than average substitute for ill-perceived amalgam we are calling the "left-out" group.

A Simple Tax Scenario

Economics can, at least to some extent, help us out of our ignorance and thus provide some modest consolation. Consider this scenario. Assume that a group of commodities and services is covered by something that we were thinking of as a uniform, general tax. For reasons beyond our control, however, the tax is not and in practice cannot ever be completely general. What are our real margins of choice? What major decisions have to be faced?

To me at least, one key class of decisions comes up when we contemplate shifting some item, or some specific class of goods and services, from the "left-out" category to the covered category. In so doing we will quite surely cause output to increase both in the already-covered sector and in what remains of the "left-out" group. This is true so long as both the already-taxed group and the left-out group are substitutes for the subcategory of goods that we are shifting. For example, if we shift bicycle repair shops from the "left-out" of the taxed category, we see the output of that particular activity going down, with its resources being shifted both to the other items in the taxed group and to the remaining items in the untaxed group. Welfare goes down by the amount of a triangle whose height is the general tax rate and whose base is the reduction in bicycle repair shop activity. But there is a countervailing gain in welfare equal to the general tax rate times the shift of resources to other components of the taxed group. Is the gain bigger or smaller than the loss? Neither the gain nor the loss is easy to estimate with precision. It is a lot easier to try to determine whether one is bigger than the other.

In fact, so it is. The condition for the gain to exceed the loss is that at least half of the resource reduction in the newly taxed activity be reflected in an increase in already-taxed activities. One should accordingly be wary of shifting bicycle repair shops to the taxed group. If side by side with them we have an untaxed bicycle repair activity flourishing in the so-called informal sector, this would mean that the untaxed sector would get the great bulk of the released resources. We should be extremely cautious, then, about shifting to the taxed group any subsector that has strong substitutes still being left in the untaxed group. A corollary is that, when we add one activity to the taxed group, we should try to bring it in as part of a package that also includes all of its close substitutes that were previously untaxed. On the other hand, a

called the "second-best optimum"—would be to tax more heavily the goods that were less-than-average substitutes for leisure and less heavily the goods that were better-than-average substitutes for leisure. This result derives from a straightforward application of the Ramsey Rule.

In my view, economists in studying this problem have paid much too much attention to "leisure" as the "left-out" commodity. In reality, as any value-added tax administrator will tell you, there is a whole panoply of activities, quite apart from leisure, that seems to lie beyond the reach of any real-world value added tax. Consider this challenge: go to any country with a value added tax, preferably one that is trying to achieve broad coverage with a uniform rate. Then multiply the VAT rate by the country's consumption figures (as stated in the national accounts). The result is the amount of VAT receipts that would come from a fully general value added tax covering all those items that are actually measured in national-accounts consumption. Comparing this figure with actual VAT receipts, one will find it is far greater. Vast amounts of consumption escape value added tax even in countries that think about, talk about, and aim at a fully general tax. Typically even these countries fail to tax the services of domestic servants, the imputed income from owner-occupied housing, the services of teachers, doctors and nurses, the consumption represented by international airline tickets, and so on. And for most real-world cases, one would have to add many additional items to the list of those not covered.

What does this mean? Simply that even when we try very hard to achieve a general tax, what we get is still very far from being fully general. What is left out is not just leisure, but a whole array of other things. This seems if anything to strengthen the case for the Ramsey Rule group. For the classic statement of the Ramsey Problem is to "select a set of taxes t_1, t_2, \dots, t_k , on a subset x_1, x_2, \dots, x_k out of a broader set consisting of $x_1, x_2, \dots, x_k, x_{k+1}, \dots, x_N$ goods and services. Set these taxes so as to raise a given amount of revenue ($\sum_{i=1}^k t_i x_i = R$), at a minimum deadweight loss (read welfare or efficiency cost)." Equivalently, the Ramsey problem can be stated "set taxes on x_1, x_2, \dots, x_k in such a way as to maximize the revenue R that is raised, while imposing on the economy a given deadweight loss (welfare cost)."

In reality, then, we should think of a "left out" group consisting of a broad set of goods and services—leisure, many personal services, much of housing, etc. These comprise the untaxed group, while another set of goods and services comprise the taxed group. Ramsey rule taxation of the different goods within the taxed group would in principle require that we be able, at least roughly, to estimate their cross elasticities with respect to that grand composite that I am now calling the "left out" group. But we really know very little about this group. It represents the area of the economy where our data are poorest. Also—a point to which I will return later—it also includes

prime candidate for shifting to the taxed group would be anything that we might find in the untaxed group that had strong substitutes already under the tax.

The situation is more normal when the item we are contemplating to add to the taxed group does not appear to have any readily identifiable strong substitutes or strong complements. The most natural procedure in such cases is to rely on the phenomenon of generalized substitution that we know exists in economic activity. Under "generalized substitution" we would expect that the resources expelled from the newly taxed sector would be attracted to the (taxed and untaxed and groups) in rough proportion to the amount of resources already in each. If these two groups were of equal size, something like half of the expelled resources would go to the taxed sector, and in this case the triangle of costs would be just matched by the rectangle of benefits.

As the tax gets more and more general, the presumption becomes greater at each step that the resources expelled from a newly taxed activity will go predominantly to already taxed activities. This clearly increases the benefit of widening the tax net.

This is not the place to embark on an extended development and application of the above analysis to other questions. Suffice it to say that the preceding analysis is built on the same analytical machinery that leads to the Ramsey Rule. The only important distinguishing feature is the presumption of a *realistic level of ignorance* about detailed facts (and in particular about precise substitution parameters).

The pragmatic lessons that follow from the above are

1. In deciding upon the set of items to be covered by a "general" tax (say a value added tax), try to keep "packages" of strong substitute items together (i.e., either all in the taxed group or all in the "left-out" group).
2. If a package of close substitutes contains some important items that by their nature are difficult to tax, then the course of prudence may well be to leave the whole package in the untaxed sector rather than cause sharp tax-induced substitutions by introducing a tax just on a part of the group.
3. Once a "general" tax reaches a size worthy of the name, there is a reasonable presumption that shifting additional items from the "left-out" group to the taxed group will be beneficial in terms of economic welfare. This becomes of greater interest once it is realized that the addition of such items brings revenue increases as well.
4. Once a point of plausible generality is reached, the grounds for making the tax even more general are quite strong (see #3). Beyond this point the only strong technical arguments against further extending the scope of the tax are administrative in nature. Taxes that are easy

to evade will no doubt be evaded. This may determine that whole packages of substitute items be left in the untaxed sector (see #2).

The preceding scenario has derived operating rules for a uniform, reasonably general tax like the VAT, and has done so under what I consider to be reasonable assumptions concerning the amount and generality of the information available (to technicians and policymakers). I certainly don't want to claim that the resulting general tax would be an "optimum" tax in the technical sense. But it surely would be a good tax, raising a lot of revenue at a relatively low efficiency or welfare cost.

For now let us leave the technical side. We have outlined a good tax, with low deadweight loss per peso of revenue. This comes from the technical side.

Now I would like to add some items that are perhaps more philosophical than technical. First, is it desirable for a tax system to depend very strongly on people's tastes? Ramsey Rule taxation strikes heavily those items that people prize most (in the sense of having a relatively inelastic demand for them), and least heavily those items about which people are relatively indifferent *vis-à-vis* alternatives (as revealed in a relatively high elasticity of demand for them). On the supply side, likewise, Ramsey Rule taxation looks like a "search and destroy" mission aimed against economic rents. In a sense the job of a Ramsey Rule tax manager is to find out what are the conditions of supply and demand in the economy, and to set tax rates accordingly, imposing high rates where demand is less elastic, low rates where it is more elastic. (This statement holds where the taxed sectors are independent in demand. The correct technical condition is for taxes to be higher on goods that are poorer substitutes for the "left-out" group.)

One can argue that we shouldn't base tax policy on supply and demand parameters because we do not know enough about them, nor can we hope to in any foreseeable future. But while I would in general agree with that argument, that is not the line I am taking here as my *second* point. What I want to do here is to question whether we want our policy to be significantly dependent on changes in tastes and technology. I do not intend to answer the question. Rather, I simply note that a broad, general uniform tax of the type developed in the preceding scenario would not be seriously influenced by plausible changes in tastes or technology. Thus the above question—one that would prove to be of little import to people who worked and thought within the framework of our tax scenario—would likely prove quite troublesome to a Ramsey Rule advocate.

My *third* point is value-loaded in comparison to others. Here we ask whether we, in our own vision of the good society, think that the government *should* care about changes in tastes among its citizens? Should it want to change its tax laws because demand became more elastic for one good, supply less elastic for another, or because a new product was introduced or an old

one improved? Ramsey Rule advocates should in principle say yes to these questions. But there are many thoughtful citizens who would say no. Such citizens would feel more easier and more secure in the world described by our tax scenario than in one governed by the Ramsey Rule.

My *fourth* point concerns the fact that the Ramsey exercise contemplates a world of well defined commodities, technologies, and tastes. When a tax is put on x_4 , certain substitution occurs between x_4 and other commodities—say x_1 , x_2 , x_3 . The whole framework is known; what is a commodity is known, what are the tastes of people for that commodity and the different ways of producing it are known. Given all this, the Ramsey Rule says, raise the tax on x_4 to 60 percent, while the others are, say, at 30 percent.

Say x_4 is automobiles, and that automobiles are imported. A higher tax causes people to look around for substitutes. Some buy trucks and use them as cars. Some buy motorcycles and use them in place of cars. Some use buses instead of owning a car. All this fits within the framework of known commodities, known technologies, known tastes, from which we derive the Ramsey Rule. But now consider that some people will import trucks and build up a new activity that virtually converts trucks into cars. Others will import motorcycles and convert them into multi-passenger vehicles. Others will take such "newly-created" vehicles and use them to develop a new industry competing with existing taxis and buses. All this is in a way standard (and presumably legal) tax avoidance. But it also brings into question the definition of the commodity itself. After some four decades as a professional economist, much of it devoted to public finance problems, my considered judgment is that a commodity is what the tax law and administrative practice say it is. The law and its administration could, in the above case, have defined the commodity such that nobody would have the incentives to create new vehicle types by converting trucks and motorcycles into things that look and function more like cars. In Ramsey Rule taxation, the definition of each commodity is quite critical. But it becomes almost irrelevant when one deals with a broad-based uniform levy.

III. The Case for a Uniform Tariff

Economists are quite naturally drawn to the idea of free trade, if only from the point of view that it tends to maximize the welfare of the world as a whole. The only argument for tariffs that can be thought of as a first-best argument deals with the case where a country (or a group of countries like the EEC) possesses monopsony power in the market for one or more internationally traded products. In such a case, the imposition of a tariff on that good can help the country to exploit its monopsony position in the world market. But obviously, such a tariff does not augment world welfare. Moreover,

though technically correct, the argument is distinctly parochial, definitely self-serving from one nation's (or group's) point of view.

Parenthetically, one of the more curious truths about this topsy-turvy world is that hardly any case can be found of a serious attempt to impose a tariff for monopsony purposes. If one asks, who *has* monopsony power in world markets, the answer is undoubtedly the United States and the European Economic Community, with Japan as the most likely potential third case. Over what commodities does such monopsony power prevail? Quite clearly, goods in relatively inelastic overall supply—goods like tin, copper, other non-ferrous metals, agricultural products like coffee, tea, cocoa, and bananas. The mental experiment is easy to make. Suppose the US or the EEC were to place, say, a 50 percent tariff on its imports to any of these items. What would happen to its world price? Without a doubt the world price would go down, benefiting the tariff-imposing country (together with all other net importers of the good), and hurting suppliers of the commodity wherever they might be located (except in the tariff-imposing country itself). Now the odd fact is that the range of products that are the most likely candidates for monopsony-motivated tariffs are precisely those in which free trade has tended to prevail. In most of these products there is no serious domestic production to protect in either the US or Europe. As a result there is no political pressure for tariffs.

There are a few cases in which the policies of the US and the EEC have indeed affected world prices—notably the US sugar policy and the EEC policy on wheat and other grains, as well as meat. But in none of these cases can we ascribe to the policy an intent to exploit monopsony power in world markets. Straight, old fashioned protection of domestic agricultural interest is the self-evident motive in these cases.

Tariffs are no more than second-best policies under any argument other than that of national monopsony. Hence we must recognize that even a uniform tariff is second best. If the market exchange rate is 10 pesos per dollar, and a 30 percent uniform tariff is in place, then the domestic resource cost of producing all sorts of import substitutes will (at the margin) be 13 pesos per dollar's worth, while the domestic resource cost of producing export goods will be ten pesos per dollar's worth. Obviously, a distortion exists here, which can be rectified by bringing the 30 percent general tariff down to zero—which leaves us at free trade—or by introducing a uniform 30 percent export subsidy, which by the famous Lerner theorem brings us to free trade in another guise. (Together, a 30 percent general import tax and a 30 percent general export subsidy operate in just the same way, as far as trade items are concerned, as a 30 percent devaluation of the currency.)

We thus cannot realistically deal with real-world tariffs without recognizing that they are distortionary policies. My own thumbnail interpretation is that on the whole these tariffs get to be imposed out of protectionist pres-

tures, though in a few of the poorer developing countries the revenue motive may also play a significant role. Protectionist pressure also explains why tariffs tend to be concentrated on finished goods. They typically leave primary inputs alone, except when there is a domestic primary-producing industry to protect. The protectionist motive thus also explains the pattern that rates of tariff (where they exist) tend to be highest on finished goods and lowest on primary inputs.

I believe that the standard case for a uniform tariff relies on the protectionist motive. Indeed, one needs the protectionist motive in order to sanction the idea that one should accept a domestic resource cost of 13 pesos for producing a dollar's worth of import substitutes while at the same time the domestic resource costs of generating a dollar via the export route is only ten pesos.

In my view, the uniform tariff argument says, let us accept that the virus of protectionism is rampant throughout the world, and that we cannot stamp it out. But let us try to contain the disease that the virus causes. Let us try to limit the damage it can do.

By accepting the idea that the virus of protectionism is with us to stay, the uniform tariff argument "justifies," or at least explains, why one "should" be content to have a higher domestic resource cost for import substitutes than for exports. But then the uniform tariff argument goes on to point out the absurdity (from an economic point of view) of paying a DRC of 22 pesos per dollar in one place, of 16 pesos per dollar in another and of 10 pesos per dollar in a third—all being cases of import substitution, with the last one being (typically) that of raw materials which enter duty-free.

There can be no doubt that, in the absence of monopoly power, a country gains by moving toward equalization of the domestic resource costs of different import substitute activities. In advocating this, the economists who developed the theory of effective protection and who extracted its principal implications were acting as responsible representatives of the economist's traditional role in policy-making.

I would characterize that traditional role as follows: economists favor efficiency, fight ignorance, and strive to represent the general interest. In the case of the uniform tariff, the efficiency goal is served (in a second-best sense) by equalizing effective protection. A uniform tariff fights ignorance in the sense that many citizens and legislators may think (wrongly) that a 30 percent tariff on each of a number of final products represents fair and equal treatment for each industry that is so protected. But effective protection analysis shows how these industries can be favored in dramatically different degrees, simply depending on how much they use imported inputs and on the level of tariffs applying to those inputs. The uniform tariff is thus precisely what is needed to give "fair and equal treatment" in the sense of equal effective protection and an equal willingness by citizens to bear an extra domestic resource cost for import-substituting activities.

The traditional role of economists in representing the general interest makes economists the "natural enemies" of special interest groups. This has indeed been their traditional role. I do not think it has been modified by modern efforts by a small subset of our profession to "explain" why some interest groups have more power than others, and therefore why some tariffs are high and some tariffs are low. Industries with more political "clout" can inflict more damage on the average consumer than industries with smaller influence on governments and legislatures. That may explain, but does not justify the exploitation of consumers and taxpayers, nor does it free economists from what I would consider a moral duty to oppose such exploitation.

Just as in the case of efficiency, some compromise of the general interest is involved in a uniform tariff, but the costs are widely shared and limited in amount. In particular, tariff uniformity does not favor powerful political interests in any obvious way. Indeed, the move from a differentiated tariff to a uniform one might be considered as a way to equalize the political "clout" of all domestic producers of import substitutes. The critical step in bringing about equal effective protection goes beyond raising tariffs on the products whose domestic producers are politically weak and ill-organized. The critical step is that in which the uniform tariff is extended to goods—like some minerals perhaps, and tropical fibers—that are not now, and probably never will be produced in the country. The same goes for complicated capital goods in developing countries. Who is there who will fight for tariffs on such goods? Only the domestic consumers and taxpayers have their interests at stake. The producer groups that exist will be on the other side, fighting for zero or very low tariffs, for these are goods that are inputs into their production processes. To the degree they succeed, they will get greater effective protection, imposing greater costs on consumers and taxpayers. Economists have a very big task here, in defending the general interest. One of the great virtues of the idea of a uniform tariff is that it gives economists a general principle to appeal to as they wage this struggle. The idea that a uniform tariff gives equal effective protection to everybody is a potential mobilizing force that can be brought to bear on the difficult political task of raising tariffs where no domestic producer group will benefit and indeed where producer groups from the input-using industries are fighting on the other side.

IV. Tariffs on Inputs Revisited

Most discussions of the theory of effective protection commence by assuming a given tariff on some final products. They then proceed to demonstrate how the same final-product tariff can imply very different rates of effective protection, depending on whether imported input costs (here assumed to be free of duty) represent a high or low fraction of the world price of each final product. As a final step they show that when the inputs are subjected to

the same tariff rate as the final products, then effective protection on all the products converges to that same rate.

Most economists are familiar with the above line of analysis; indeed, they probably have worked through the relevant calculations themselves. What surprises many is the fact that a country can typically benefit by raising the level of input tariffs *above* that applying to the final products. The reason for this is that in the act of raising input tariffs one tends to *annul* the so-called production costs of a tariff on a final product.

First, let me review the standard analysis deriving the production cost and the consumption cost of a tariff. A tariff of 30 percent is equivalent in its effects to a subsidy of 30 percent on the domestic production of the tariffed good, together with a consumption tax of 30 percent on its domestic use. The producer cost of the tariff is the excess cost of producing at home versus importing from the world market. The consumer cost is the excess burden borne by consumers because the domestic price is higher than the world price.

Suppose now we have a commodity—say bicycles—that uses steel as an input. A 30 percent tariff on bicycles will cause the domestic price to exceed the world price by 30 percent. Consumption will be artificially restrained and production artificially stimulated. But if the price of steel is simultaneously increased, the artificial stimulus to production can be blunted. Suppose the world price of a bicycle is one hundred dollars, which translates into a thousand pesos at the market exchange rate of 10 pesos per dollar. The 30 percent tariff thus “invites” 300 pesos of extra domestic resource cost. A tariff of 30 percent on steel—here assumed to account for one fifth of the cost of a bicycle at world prices—reduces the extra domestic resource cost to 240 pesos. Producing a bicycle now is profitable at a domestic resource cost of up to 1040 pesos, instead of 800 under free trade. Since this operation saves 80 dollars of foreign exchange the domestic resource per dollar saved is now 13 pesos. But suppose the tariff on steel were set at 70 percent. Now the final product would cost 1300 pesos, and steel inputs would have a cost to producers of 340 pesos. Only 960 would remain to attract domestic resources to the activity of bicycle-making, and the resource cost per dollar saved would be $960 \div 80 = 12$ pesos. Effective protection would now be only 20 percent. By the same token a 110 percent tariff on steel would reduce the DRC to 11 pesos and the rate of effective protection to 10 percent. Obviously, by raising the tariff on steel high enough, one could bring the domestic resource cost down to 10 pesos per dollar and the rate of effective protection to zero. The critical rate in this case is 150 percent. With this tariff rate, steel inputs cost the producer 500 pesos per bicycle he makes. DRC will be $1300 - 500 = 800$ pesos for a bicycle whose domestic production saves 80 dollars of foreign exchange. The usage of domestic resources is 10 pesos *per dollar* of foreign exchange saving. With a market exchange rate of ten pesos per dollar, this implies a zero rate of effective protection.

Consider the general formula for the rate of effective protection t_{ex} on product x . This formula is $t_{ex} = (t_{nx} - \sum_j a_{jx} t_{nj}) / (1 - \sum_j a_{jx})$, where t_{nx} = nominal tariff on output x , t_{nj} = nominal tariff on input j , and a_{jx} = fraction of the world price of x accounted for by input j . If we have a tariff on only one input r , we can render t_{ex} equal to zero by setting t_{nr} equal to t_{nx}/a_{rx} . With tariffs on two inputs there are many ways to get t_{ex} equal to zero. One of these is with a single tariff t_{nr} applying to both inputs, r and s . In this case one would set t_{nr} equal to $t_{nx}/(a_{rx} + a_{sx})$ in order to make $t_{ex} = 0$.

The general insight to be drawn from the above analysis is that one can annul the production cost of any tariff t_{nx} by imposing on all its imported inputs a tariff equal to t_{nx} divided by the fraction that the aggregate cost of imported inputs bears to the world price of the output. So long as aggregate input cost is less than the world price of the output, t_{nr} will always exceed t_{nx} . That is, the production-cost-annulling tariff on inputs will always be *greater than* the tariff on final products.

To what use can we put this arcane result? I certainly would never argue in favor of input tariffs being made systematically greater than output tariffs. Among other things, many inputs are also final products at the same time. Imported inputs also enter different outputs in different proportions. Imported inputs also enter different outputs in different proportions. Moreover, if the ultimate objective is simply to reduce the rate of protection on final product, why not reduce t_{nx} directly?

To me the most relevant use of the above theorem is to reinforce the case in favor of uniform tariffs, if one is in a situation where on other grounds a uniform tariff (as distinct from free trade) seems to make sense.

It was pointed out earlier how real-world tariffs on inputs tend to be fixed at low or even zero rates, and how there is very little political pressure to raise them in the case where domestic production does not (perhaps cannot) exist. In the absence of political pressure, it is mainly economists who might plausibly make the case for raising such tariffs. For myself as an economist, my attitude toward raising tariffs on inputs became much more forthright and positive once I came to appreciate the argument just presented. I now feel less content than I would have been formerly on finding input tariffs significantly below the final product rate. The change in view came once I had learned that a second-best optimum rate for input tariffs would be greater—and usually very substantially greater—than the common rate on final products.

Note also that bringing inputs up to the rate on final products is fully compatible with the idea of uniform effective protection. Carrying any one input tariff (or any subset of them) beyond the uniform rate on final products would reduce the DRC for the affected final products to something less than the uniform final product tariff rate.

Personally I feel reasonably satisfied to draw from the analysis just presented a rather limited lesson—that it strengthens the case for raising input

tariffs up to the common level within a general context of a reform bringing final product rates toward uniformity. Speaking more broadly, I believe that the preceding analysis strengthens the case for uniform tariffs, *vis-à-vis* almost any real-world alternative other than free trade.

V. Conclusions

In this paper we have followed a different path than most tax analysis. We have not followed the common practice of looking only at individual tax changes as if they were the only distortions in the picture. At the same time we have also diverged from the less common practice of trying to find a second-best "optimum" package of tax rates, taking certain constraints as given. Instead we have taken as "our world" one in which some effort has already been expended to achieve a uniform rate of tax (or tariff), at least on some commodities.

In the case of value added taxation, we recognize from the outset that a fully general coverage is unattainable. Instead we examine possible guidelines that might help a policymaker to decide where to draw the line between a "covered" group of activities and a "left-out" group. Our broad conclusion is that a left-out activity should be added to the covered group so long as a) the move does not entail excessive costs of administration and b) the move does not shift one commodity into the covered group, while leaving important close substitutes in the "left-out" group. Conclusions a) and b) imply that, if some activities are themselves hard to bring into the tax net, it may be wise to leave their close substitutes outside the net as well.

In considering import tariffs, we explore the arguments for equalizing the domestic resource costs of saving a dollar through different activities of import substitution. They have a degree of merit once it is taken for granted that import substitution has some positive value. (Otherwise, there is no basis for having different DRCs for import substitutes than for export goods.) The practical problems arise from the fact that to implement a uniform tariff in a real-world setting one must typically increase the rates applying to imported inputs and (possibly) capital goods. This stimulates a political resistance on the part of the input-using industries, which must be surmounted if the reform is to succeed. I believe that the best basis on which to base a campaign for increasing tariff rates on inputs is to establish the notion of the intrinsic *fairness* of a system that aims at uniform effective protection.

A final issue concerning increases in tariff rates on inputs is treated in Section IV. There it is shown that gains in welfare tend still to be positive even when one raises the rates of input tariffs quite a distance above the rate applying to final products. This result stems from the fact that input tariffs tend to offset the protective effect of any pre-existing tariffs on final products.

To push input tariffs up to the point of an already existing uniform tariff on final products has the effect of bringing rates of effective protection into greater uniformity. Pushing input tariffs *beyond* this level can be thought of as a rather scattershot way of reducing protection still further, on at least some final products. Rather than urge this, most economists (myself included) would prefer simply reducing the uniform rate of tariff, once it had been achieved.

It should be clear from the above analysis that one cannot treat uniform value-added taxation or uniform tariffs as desirable and unquestioned goals on which all economists should in principle agree. Their justification is far more subtle and judgmental than that. It is important, therefore, for supporters of uniform taxation to recognize that their conclusion requires a well-reasoned defense. By the same token, those who argue against uniform taxation should quite clearly go beyond simple Ramsey Rule mathematics in defending their position, and should directly face some of the subtler arguments (philosophical as well as strictly technical) that comprise the best case for uniform taxation.

Résumé

L'auteur montre qu'il est impossible de traiter l'imposition d'une TVA ou de droits de douane uniformes comme des buts souhaitables et incontestables sur lesquels tous les économistes devraient, en principe, être d'accord. Leur justification est beaucoup plus subtile et subjective. Les partisans de la taxation uniforme ont donc tout intérêt à admettre que leur conclusion exige une défense bien argumentée. De même, il incombe à ceux qui rejettent la taxation uniforme de dépasser le simple cadre mathématique de la règle de Ramsey pour défendre leur position et répondre à certains des arguments les plus subtils (d'ordre philosophique et strictement technique) qui militent le mieux en faveur de la taxation uniforme.