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On The Welfare Benefits of Taxation-

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A large tax wedge can lead to a dramatic increase in economic efficiency. The market share of 'deadweight loss' produced by a tax wedge consists of inefficient producers and indifferent consumers. The high costs in resources involved in production of the relatively small quantity of 'deadweight loss benefits' can be much more efficiently applied elsewhere in an economy. Because of this increase in efficiency, we find a substantial government sector and its services may be maintained essentially without cost.

We also examine the case of regulation induced wedges and deadweight loss, and find comparable results. The case of price floors we find equivocal. Monopoly and comparable economic structures can also result in improved economic efficiency.

Because the resultant deterioration of economic performance may be dramatic, tax wedges and regulations already in place should be examined carefully before their removal.

Taxation has historically been considered to be a burden on the productive capacity of an economy. However, it is easy to show that taxation can increase the efficiency of an economy by rendering inefficient producers and processes unprofitable, and so eliminating them. What is eliminated from a particular market by proper taxation are the most marginal producers, and the least avid consumers. Under judicious taxation, as a result of this increase in efficiency in the use of resources, the services of government can largely be provided for for free. That is, resources which would be applied in some inefficient productive process, and so largely wasted, may be applied more efficiently in providing economically useful government services. And many of the services provided by government, by eliminating many of the costs of transaction and overhead that producers would otherwise bear, also act to increase the efficiency of the private productive economy.* Inadequate taxation, and the necessary reduction in economically useful services purchased with these taxes, far from increasing the competitiveness of an economy, decreases it, and nations with an inadequate public sector are at a competitive disadvantage with respect to foreign producers in countries with more robust public sectors. Further, even with the light tax burden, the citizens of countries with small public sectors are less provided for, and are a greater burden to the industry of that country, than countries with a larger government service sector.

We show this in **Diagram 1. S'** is the new Supply curve brought about with to the increase in costs imposed on producers from taxation. The marginal benefits (green striped triangles) otherwise attained at higher real cost are forgone, the resources which would have been spent to obtain those marginal benefits are instead available to be expended more efficiently in other sectors of the economy.

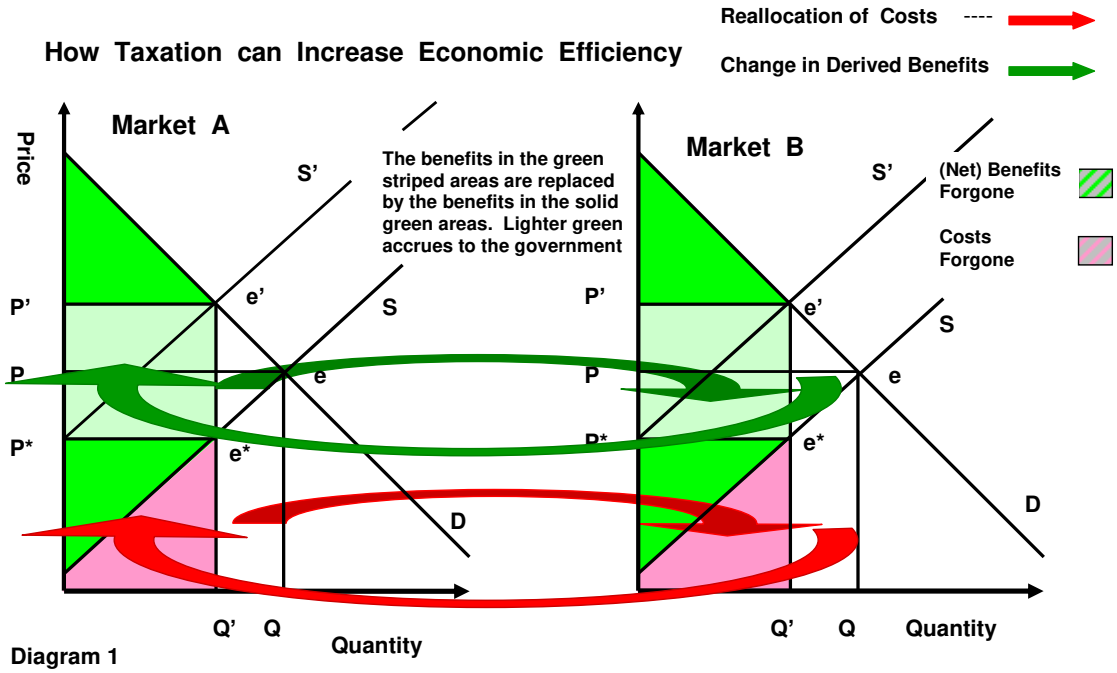

Diagram 1

In the diagram, the tax wedge is the difference between the price paid by the consumer, **P'**, and the income received by the producer, **P***. The total tax revenue, the pale green block in each market defined by: **Q' x (P' – P*)** is the surplus received by government. The lower brighter green triangle is the producer surplus; the upper brighter green triangle the consumer surplus. In these particular markets, with the application of a tax wedge the ratio of social welfare obtained to costs, that is to resources expended, increases from about two to one, roughly the ratio of the all the greenish areas to all the pinkish areas in each market, to almost four to one, the ratio of the solid green areas to the solid pink area. Although we have drawn the diagram for two particular and identically composed markets, it is apparent that for a wide variety of supply and demand diagrams, and thus for a wide variety of economic sectors, the application of a tax wedge will result in a large increase in economic efficiency. By implication, the opportunity costs of the small amount of marginal benefits forgone are large. The benefits forgone would be obtained by essentially wasting resources in producing them, and are a small fraction of the benefits produced by allocating these resources more efficiently. Indeed, we may expect this improvement to be even better than it initially appears, since we would expect the most marginal producers to be those most eager to externalize their costs in order to remain competitive. Pressure to externalize costs is thus also reduced on the more efficient producers. The economic results from failing to apply a tax wedge in a market are, apparently without exception, far inferior

Historically, of course, this relatively small region of forgone welfare has been labeled "deadweight loss.," whose existence has been considered a counter-argument to the efficiency and usefulness of taxation. The term dates back at least to Marshall (1), although its use in the analysis of tax policy seems to have been established much later by Arnold Harberger. Indeed, the very pejorative "deadweight loss," has been used by those ideologically opposed to government intervention in an economy as a justification for their position. However, they, and the economics profession as a whole, have over-looked the high opportunity costs involved in the creation of these marginal benefits. Taking these costs into consideration inverts the conclusion: The gain in freed resources, in almost any reasonable scenario, totally outweighs any gain involved in wastefully spending these resources for these relatively small benefits. Indeed, in the scale of economic activity, these resources are much more wisely spent elsewhere. And the tax wedge causes this to happen. Far from being a burden, taxation in a market, and at what is traditionally considered a rather high level of taxation, can yield much closer to optimal economic results. .

I leave it to the reader to find exceptions to the tax wedge increasing efficiency. I do observe that the apparent requirement for monotonicity in the supply and demand curves would seem to make finding these exceptions difficult.

One interesting argument, though, which remains, is the argument from liberty. This argument would seem to suggest that the wanton destruction of scarce resources is, somehow, 'liberating.' For example, this would seem to be the argument against higher gasoline taxes in the United States. The case shown here is that a higher gasoline tax, even with money spent (more efficiently) on public transit, would free up resources for everyone, as the European experience seems to show.

There does remain the issue of determining the balance between efficiency and quantity of production in any particular market required for the proper functioning of an economy. Considerations of scale indicate that, contrary to what is shown in the diagrams, the first unit of anything is seldom the most efficiently produced. Rather, there is an optimum scale of production, that which minimizes the average cost, (This ignores issues of demand, and thus actual profit.) and we must consider this to be true for an entire economy as well as for a particular production process. While with this consideration the improvement in economic efficiency would not be as great, it must still be expected to be impressive.

Further, it should be easier to tax economic wants as opposed to economic needs. (Although see problem three, below.) A more efficient economy, however, needs less, and so has relatively more resources available for the servicing of wants.

"Deadweight loss" is also found in other market situations. It would seem that, at the least, these other situations also need to be re-examined.

For example, the most marginal producers and the least avid consumers in a particular market can also be eliminated when the costs of production are increased by the costs of meeting a regulation. These kinds of regulation also can increase economic efficiency. Unlike the cost to the producer imposed by a tax, however, the government does not directly recover the costs imposed by such regulation. These costs are instead spent meeting the requirements of the regulation. In **Diagram 2, P*** is the price retained by the producer, which is the price **P'** paid by the consumer, minus the cost to the producer of meeting the regulation.

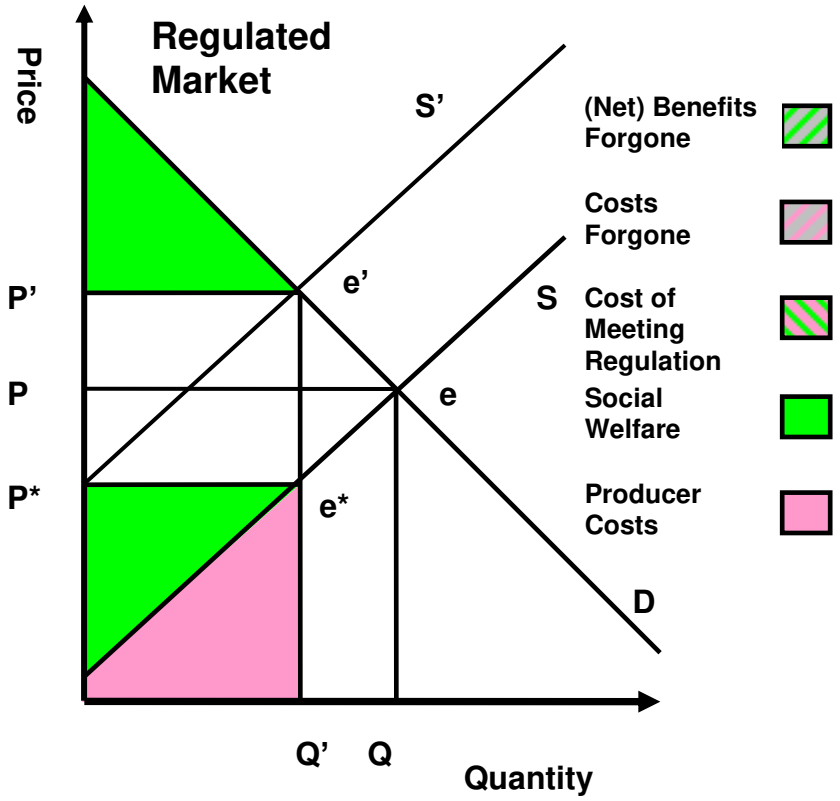

Diagram 2

Instead of the tax wedge, we have the revenue in the area **Q' x (P' – P*),** revenue which with a tax wedge would be going to the government, going instead to pay for meeting the regulation. The benefits are instead reaped by other sectors of society. A regulation against pollution, for instance, benefits the consumers of an otherwise contaminated resource. As such, it essentially represents a rightward shift in the supply curve for this other resource. (Similarly, an increase in pollution of a resource represents a leftward shift in the supply curve of that resource.) This increase in economic efficiency does provide compensation to the economy at large for the cost of the regulation.

Further, the purpose of regulation is to attain some benefit for the economy which cannot be captured in some unregulated market, and which is presumably greater than the cost of

the regulation. While one might hope, and expect, that the benefit to society of the regulation would be at least equal to its cost, it can be seen that, because of the increase in economic efficiency, society can gain even when the direct benefits from the regulation are substantially lower than its cost to the producer. (For the same reason, although one can hope, and the government should of course try, to make sure that the direct benefits to society of its expenditures are equal to the costs, even when the direct benefits of government expenditure are below their costs, there can still be a net gain to society, if the gain in efficiency is sufficient, and if these resources are not too thoroughly wasted by government.) Certainly, in the provisioning of an economy's necessities, the inefficient application of scarce resources may be necessary. However, even in these situations, alternative and more efficient means of supply may be found.

The issue of negative externalities is interesting in itself. Allowing producers to produce a negative externality effectively results in a downward shift in the supply curve: **Diagram 3.** Here **S** is the supply curve if the producers must internalize, ie pay, all costs. If they can externalize costs, **X** (equal to **P' – P*,** the price society pays for the externality**.**) they will supply more of what they produce on the lower supply curve **S'.**

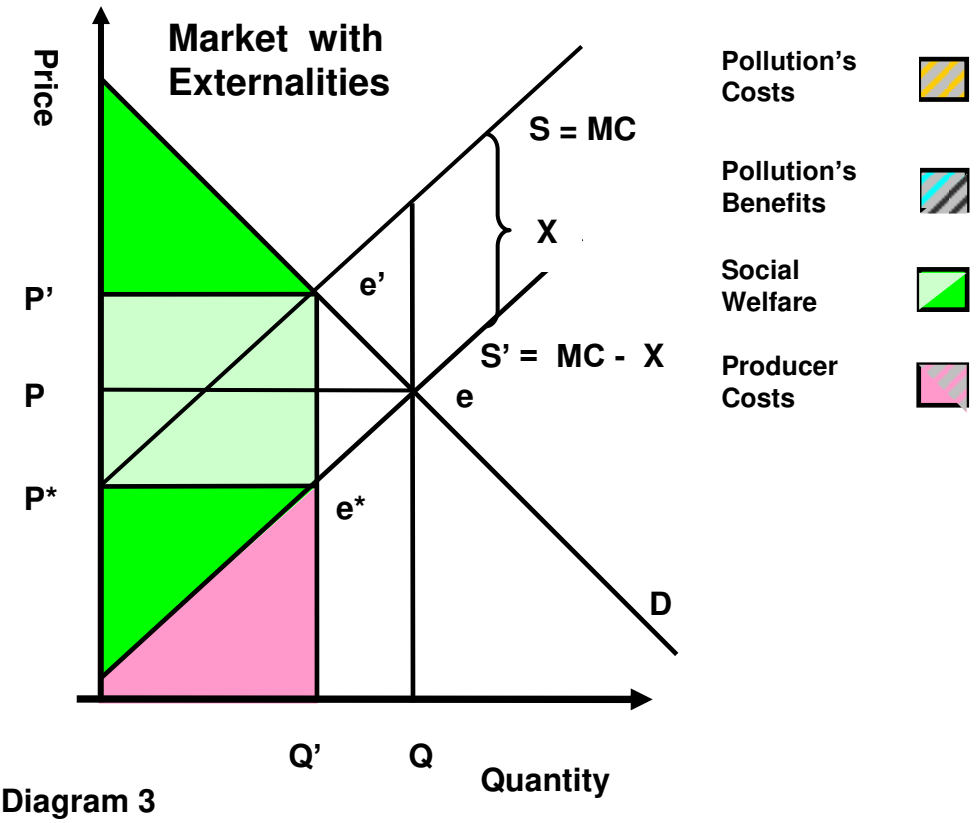

Diagram 3

Allowing the producers to externalize pollution costs, they produce quantity **Q** at price **P**.

Examining the striped region, we see that the increase in benefits to consumers, (and these are the least avid consumers,) and the benefits to producers (part of their reward for polluting,) is essentially balanced out by Pollution's Costs, (the official 'Deadweight Loss.') So what is produced is essentially a wash. That is, for considerable cost in resources, that is the Pink striped region, there is essentially no net benefit to society. So we see that, by placing a tax on the producer, equal to the savings the producer would gain by externalizing these costs onto society, not only do we get rid of the pollution, but we obtain an enormous gain is economic efficiency. In the example of the diagram, essentially the same quantity of social welfare is obtained for about half the cost.

We do notice, however, that the industry also gains the lower half of the lighter green region of social benefits when it is allowed to pollutes, which benefits are taken from the rest of society. In a sense, these benefits are also the polluter's rewards for its polluting behavior. So it is not exactly in the public interest when an industry advocates for its right to externalize costs onto society.

In **Diagram 4** we examine the effects of a price ceiling on efficiency, and see that, initially, at least, the effect on total welfare is similar to a tax wedge. However, unlike a tax wedge, there is no bridge between producer and consumer. With the price held down to the price ceiling **P***, the quantity desired **Q*** is far larger than that quantity **Q'** that producers are willing to produce at that price. Under these circumstances, formal costs, such as rationing, or informal costs, such as waiting lines, are imposed on consumers, which have the practical effect of shifting the Demand curve down to some **D'** which intersects the Supply curve at the same point as the price ceiling **P*,** and the produced quantity **Q'**. This is necessarily so since, (legally) this is the quantity and price that will be produced, and nothing more is available to be consumed. Here the eventuality of any increase in economic efficiency would seem to be problematic. Costs to consumers

which with a tax wedge might be harvested by government are instead merely dissipated.

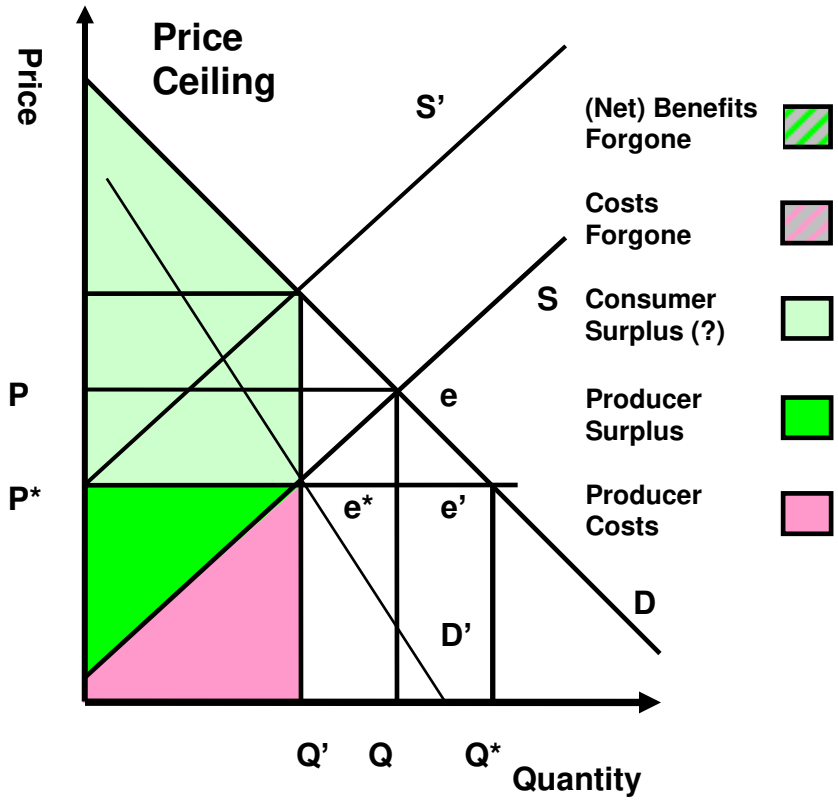

Diagram 4

Interestingly, however, applying a tax wedge, or imposing regulation are not the only ways to increase economic efficiency. Monopolies also eliminate much inefficient production of goods and services, as shown.

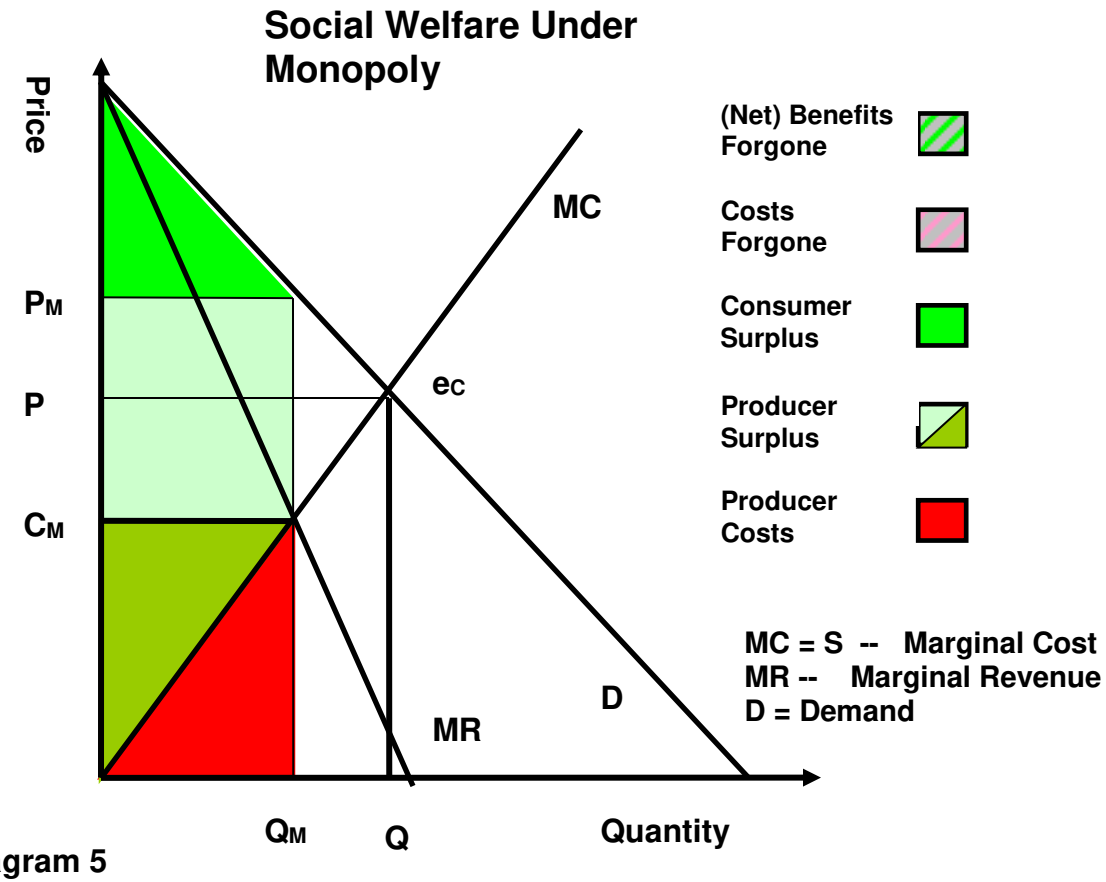

Diagram 5

Monopolies produce the quantity at Q_M, **(Diagram 5)** the quantity where the increase in cost for producing another unit equals the increase in revenue for selling another unit. This quantity maximizes their profit. (This is different from a competitive market, where the sum of production of all firms would be where the Marginal Cost **MC**, or the Supply curve, intersects the Demand curve **D** at e_C.) With monopoly, the striped areas are the costs (Red striped) and benefits (Green striped) forgone by society. These resources which would otherwise be consumed, these costs, may be more efficiently applied to other sectors of the economy. The solid areas are costs borne (Red) and benefits provided (the Greens) under monopoly. The light green regions are monopoly profits which, since a monopoly is a part of society, does count as an increase in social welfare. We may expect something similar with monopsonies, and to a somewhat lesser extent, with oligopolies, and oligopsonies. With oligopolies and oligopsonies, we would expect a greater elimination of inefficient production when they are collusive, and a less but a still significant degree of elimination when they are competitive. With oligopolies, although some inefficient producers may be protected because of the higher prices resulting from the reduced quantity produced, a reduced quantity *is* produced, and those firms which

remain in production would tend to limit their production to their most efficient processes. The inefficient production forgone, what would have been produced, and consumed, in a competitive market, constitutes the deadweight loss. The less efficient processes forgone constitute the 'deadweight cost.'

To return to monopolies, the great majority of benefits accrue to the owners of the monopoly, typically a small minority of the members of society. The consumer benefits, on the other hand, are much less, and much reduced from the competitive case. Indeed, by comparing the tax wedge in a competitive market with the monopoly case, we find the social welfare under monopolies is exactly the same as social welfare under a government tax wedge, where the wedge is such that the marginal cost to producers equals their marginal revenue. The competitive case results in a more equitable distribution of benefits between consumers and producers. Of course, consumer benefits per se are also much less under taxation, the same as under monopoly, and the producer surplus much less. However, the government spreads much of its income widely. It is, in its way, both a consumer and a producer. It re-distributes consumption, and capitalizes production, both directly, through capital investments, and indirectly, through subsidy of production, and creation and maintenance of infrastructure. And all of its expenditure, purported to be for the public benefit, does, one way or another, enrich various sectors of the economy.

One problem with the tax wedge, however, because it favors the more efficient producers, it also favors the economic drift toward concentration of ownership, and the creation of oligopolies and eventually monopolies. Narrowly held monopolies cannot be expected to spread their profits. Neither can monopolists be expected to spend their profits to provide services which increase the efficiency of the larger economy. Monopolies once formed, and where not widely owned, further to aggravate the natural tendency of economies to concentrate wealth and power, a concentration which leads to economic instability and collapse. This is especially so because the power concentrated in monopolies tends to translate into political power. And the monopolist must be expected to use this power to further his power, mitigating the impact of the tax wedge on his revenue.

A second problem is that producers which escape taxation will eventually displace those producers which are subject to taxation. The result will be a reduction in both taxes collected and in economic efficiency. This problem must be considered especially acute in open economies, where tax paying domestic producers can be expected to be displaced by non-taxpaying (and hence often less efficient) foreign producers. The interesting implication here is that, while a nation's economy may be producing less and consuming more, as an increased share of what is consumed is imported, (much of what is considered production actually either enables consumption, or is a form of consumption,) that economy need not be any better off for this increase in consumption. Because of the decrease in economic efficiency, fewer consumables will be efficiently used, and more of this consumption will be squandered.

A third problem is, of course, the politics of taxation. Nobody likes to be taxed, and the powerful, more than others, are capable of avoiding it. (This also bears on the second

problem.) This first suggests that the markets which serve the wealthy will be the least efficient, even though these are the markets where an economy can most easily bear the loss of marginal producers. (Marginal producers may be needed in the production of an economy's necessities.) And this further suggests that a disproportionate share of an economy will be dedicated to servicing the wealthy, even at the expenses of the necessities of that economy, such as maintenance of infrastructure. For instance, a recent study has shown that in the United States today, a very few policies are enacted by the government which are not also approved by the wealthy elite. (2) An implication of this is that the tax burden upon this elite can only be expected to diminish, and thus that the burden of taxation on the rest of economy and the population can only increase.

One final consideration. As an economy increases in efficiency, it inherently becomes less stable, and more vulnerable to collapse. An efficient economy becomes dependent on its efficiency in order to be productive enough to sustain itself. The greater the efficiency, the greater its dependence. A reduction in efficiency will result in a reduction of production, perhaps sufficient enough that that economy can no longer sustain itself.

A particular consideration regarding improvements in efficiency brought about by regulation and the tax wedge, where these increases in efficiency are already established, is that removing or even merely reducing these factors will result in a reduction of that efficiency, and a resulting reduction in the productive capacity of that economy. That economy may no longer be able to sustain itself. With a critical reduction in production, cascades may result, and the possibility of sectoral and even general collapse. Great care, therefore, should be exercised in the reduction of the size of tax wedges, or the elimination or alteration of any significant regulation.

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*Efficiency is a multiplicative factor in production, not an additive one. Although unlike thermodynamic efficiency, economic efficiency may be greater than 1, it is also subject to diminishing returns, at least where matters of the production of real goods and services are concerned.

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(1) Wikipedia Contributors. "Deadweight Loss" *Wikipedia, The Free Encyclopedia* Wikipedia, The Free Encyclopedia, 13 Dec. 2016. Web. 13 Dec. 2016. <https://en.wikipedia.org/wiki/Deadweight_loss>

(2) Gilens, Martin and Page, B. I. "Testing Theories of American Politics: Elites, Interest Groups, and Average Citizens." Perspectives on Politics 12(3) pp 564-581. doi:10.1017/S1537592714001595

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