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Development Oriented Tax Policy

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Task Force on Tax

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Development Oriented Tax Policy

Joseph E. Stiglitz¹

No public policy issue is of more importance than the *structure* and level of taxes. Tax reform has led governments to fall. Proposals to extend the V.A.T. or increase its rates have been a source of political agitation in Ecuador and Mexico. In many less developed countries, a shortage of funds impedes development efforts, and yet attempts to expand taxation not only meet enormous political resistance, but also often turn out to be futile. Simplistic recommendations to increase the power of the tax police often backfire—generating substantially more revenue for the tax collectors, but not much extra revenue for the public fisc.

Part of the problem surely lies in the fact that those providing advice on taxation to developing countries are neither sensitive to the differences in economic and political structures between developed and less developed countries, to the administrative difficulties faced by developing countries, or to the differences in objectives. To take but two examples: Standard textbook expositions of the objectives of tax policy *for developed countries*, for instance, emphasize efficiency, and more recent expositions discuss problems of tax avoidance and evasion, but seldom make note of corruption. But corruption has increasingly come to be recognized as one of the major challenges facing developing countries. Designing institutions and policies, *including tax structures*, which reduce the scope for corruption—what I call *corruption resistant tax structures*—should thus be a central concern in tax design. Yet while outside advisers often deliver moralistic lectures on the need to improve tax administration and reduce corruption, they seldom address corruption as part of tax *design*. This provides an example where differences in the *structure of the economy* (where that term embraces institutional capacities—the ability to control corruption) dictates a difference in tax policy.

Objectives too differ. It is at least arguable that tax policy should be used to promote development, or at least be designed not to impede development. And while both developing and developed countries may see redistribution as one of the objectives of tax policy, the set of instruments available for redistribution may be more restricted in developing countries, which in turn may impact tax design. For instance, a by now well known result holds that with an optimal income tax, there is (in a central case) no need to rely on commodity taxation for redistribution²; since a large fraction of value added is generated in a relatively few large enterprises, and the V.A.T. is collected from almost all sectors, the V.A.T. is an efficient tax. It can be combined with a progressive income tax as part of an “optimal” tax structure. By contrast, in most developing countries, the V.A.T. is typically collected from only a fraction (often under 50%) of the economy. It is

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² See, e.g. Atkinson and Stiglitz [1976], Mirrlees, 1975, or Stiglitz, 1998

effectively a tax on the organized sector of the economy—it is a tax on development. Not only is it accordingly potentially highly distortionary, but since most developing countries have limited income taxes, heavy reliance on the V.A.T. results in a regressive (or at least not highly progressive) income tax structure. While as I noted, a central objective of tax policy in developing countries should be promoting development, yet the V.A.T. arguably does just the opposite, since it is, in many countries, simply a tax on the “organized” sectors of the economy.

Consider, as a third example, the use of corrective taxation—taxes designed to “correct” market failures, such as those associated with externalities. Discussions of corrective taxation have, for the most part, been relegated to environmental issues. Yet in developing countries, market failures (including imperfections of information and incomplete markets) provide a much wider scope for corrective taxation. Recent work on imperfections of information and incompleteness of markets has emphasized how a variety of actions/choices give rise to externality-like effects.³ Many of the endogenous growth models⁴ recognize the existence of returns to scale and externalities. Yet, remarkably, discussions of tax policy have ignored the role that corrective taxes might play, generating revenues as they *improve* economic efficiency.⁵ A case in point is short term capital flows, which have been shown to be a major source of instability in developing countries. Chilean style taxes on capital inflows can thus play an important role in stabilizing the economy, thereby promoting economic growth, at the same time that they raise revenue.⁶

Earlier, I noted the central importance in developing countries of designing corruption resistant tax. One of the virtues of the V.A.T. in more developed country is the self-enforcing nature; taxes paid at a lower level are refundable at the next level, and so, it would seem, the downstream firm has an incentive to “report” purchases, which are, of course, sales to others. But if the upstream firm’s income is not easily observable, then it may be difficult to collect the V.A.T. from him; and he then has an incentive to engage in a “deal” with his supplier, with both agreeing not to report. The so-called self-enforcing property of the V.A.T. can easily unravel—and it often does in developing countries.

Developed and less developed countries typically provide rebates on exports under the V.A.T. This is supposed to ensure that the tax is a tax on domestic consumption, not on domestic production. But country after country has encountered problems in their rebate system. Sometimes, there are long lags in providing the rebates; for firms facing a shortage of capital this can be crippling. But even worse, the rebates have become a source of corruption, as fake documents have been used to get the government to provide large checks to corporations. (Kenya provided the most infamous example.)

³ Indeed, Greenwald and Stiglitz [1986, 1988] show that whenever information is imperfect and markets are incomplete, actions of competitive agents give rise to externality like effects.

⁴ e.g. Lucas [1988], Roemer [1986]

⁵ See, e.g. Stiglitz (1998)

⁶ See, e.g. Stiglitz, *et al*, 2006

Information is at the core of what are “admissible” tax structures: one can only tax what one can observe.⁷ The reason that optimal lump sum redistributive taxes are not feasible is that the government cannot directly observe individuals’ ability; it can only observe surrogates, like income, and the use of such surrogates gives rise to distortions. In the informal sector, market transactions are typically not easily observable by the government.

New technologies and organizational structures have changed the calculus of observability. Large organizations need to record many transactions—people are “replaceable parts”—leaving a trail of observability for tax authorities. Modern computers have made information “control” easier, and at the same time have eased the burden of the tax collector. It is difficult for firms to maintain two sets of books (and, outside of certain limited areas, illegal), so that information provided to investors—intended to increase share market value—has to jibe with information provided to the tax collector, designed to minimize tax burden, and that in turn has to jibe with the *true* information required for managing the organization.⁸ The convenience of credit cards has provided an audit trail that makes collecting taxes from retailers far easier, and the use of bank accounts has become so pervasive that there is automatic suspicion of someone who relies only or largely on cash.

Yet, these changes have largely bypassed developing countries. Financial depth is limited, and credit card usage is the exception. It is not just that many individuals might hide income from the tax collector; individuals do not know their income. They may know their savings—how much they have left over at the end of the year—but have no records that show how much of the revenues are spent on consumption, how much to purchase inputs into production. For an American or European firm, there would be a great burden not to have such information; for the typical African barely literate farmer, there would be an enormous burden to maintain such records.

One of the reasons that in earlier stages of development, considerable reliance was placed on tariffs is that imports often have to go through a limited number of ports (the cost of not going through such ports, of smuggling, can often be quite high.) That made it easy to monitor—and that in turn made it easier to tax. Of course, industrial tariffs represented quintessentially a development oriented tax structure, as explicitly recognized in the heated debates surrounding those tariffs in nineteenth century America.

By the same token, until quite recently, even in advanced industrial countries like the United States, tax avoidance⁹ among self-employed was rampant (and even today, aggregate reported incomes of partnerships in some recent years in the U.S. is negative, though that has more to taking advantage of certain tax loopholes than to non-reporting)

⁷ These ideas are developed further in the general theory of pareto efficient taxation. See Stiglitz [1987] and Brito *et al*, 1990.

⁸ See, e.g. Stiglitz and Wolfson [1988].

⁹ Or evasion—the boundaries in this arena are tenuous

¹³ Diamond and Mirrlees, 1971

In developing countries, small businesses are the dominant form of economic organization. Why should we expect that they have greater success in tax collection from small businesses than does the United States or other advanced industrial countries?

Thus, not only is information at the root of admissible tax structures, information is at the root of problems of enforcement, including the related issues of corruption. If there were perfect information, corruption would be no problem. It would be known who was bribing the tax official, and it would presumably be relatively easy to control. Corruption is a problem because it is so hard to observe. Understanding the limitations on available information is at the core of the design of corruption resistant tax structures.

Many developing countries face a fine balance: because the value of encoded information of the kind that can be used by tax authorities may be less, sometimes far less, than in the advanced industrial countries, basing such taxes on this information (e.g. information contained in bank accounts) is more likely to destroy the information—the tax authorities get no more revenue, but economic efficiency is impeded. It is noteworthy that China and Korea government deliberately decided to forswear the use of such information, by allowing no-name bank accounts; this allowed proportional taxation of savings, but made it impossible for the government to use banking information for more general tax purposes, e.g. for the imposition of progressive taxation.

I. The VAT as distortionary taxation

As noted earlier, advocates of the VAT argue both for its efficiency and its ease of administration. It is efficient because it is comprehensive. These advantages, it is contended, more than offset a major disadvantage, its lack of progressivity. The question is, is it efficient?

Economists have long recognized that any market taxation encourages non-market production, and that this can constitute a significant distortion. For instance, whether a family decides to buy a dishwasher to wash dishes (entailing a market transaction) can be affected by the tax rate. “Labor” inside the family (washing dishes) is not taxed; labor in the market (working to buy a dishwasher) is taxed. The high elasticity of labor supply associated with secondary workers may reflect the fact that, to some extent, the secondary worker is simply buying goods which are a substitute for the services that the secondary worker would otherwise provide at home. As a result of the high elasticity, taxes on wages of secondary workers are highly distortionary.

Similar issues arise in developing countries—except is not only labor within the household which escapes taxation, but work in the informal sector, which typically cannot easily be monitored, or monitored at all. Accordingly, a VAT shifts resources away from the formal sector into the informal sector, lowering GDP.

The question naturally arises, is there an alternative, less distortionary tax structure? The answer is yes, and Emram and Stiglitz provide a more complete analysis. But the following discussion provides a heuristic. Assume there exists an imported intermediate input, used both in the formal and the informal sector. While we cannot monitor the output of the informal sector, and therefore cannot tax it directly, we may be able to tax it indirectly, by taxing the usage of the imported intermediate good. A standard result of optimal tax theory—when all outputs can be taxed—is that one should not tax intermediate inputs, including imported inputs.¹³ But as Dasgupta and Stiglitz [1971, 1973, 1974] showed, in the more reasonable case where not all outputs can be taxed, it may be desirable to tax intermediate inputs. Assume, at the extreme case, that a unit of output requires a unit of this imported intermediate input. In that case, a tax on the intermediate input is equivalent to a tax on the output—in both the formal and the informal sector. The tax is completely non-distortionary. Converting this tax on imports into a value added tax introduces a distortion. For then, the formal sector faces a tax on its total value added, while the informal sector faces a tax only on its intermediate input (it does not get a rebate on its input.)¹⁴

¹⁴ See Emran, M. S. and J. Stiglitz (2003, 2004 and Knud J. Munk,

More generally, of course, taxing the intermediate input does introduce a distortion—there is a substitution away from the use of this intermediate input (and towards others, in the simplest case, labor). But introducing the tax on the intermediate input into a situation where there is only a V.A.T. tax (collected only from the formal sector) always increases output, since the deadweight loss of the distortion increases with the square of the tax. In short, *it is never optimal to rely on a value added tax*. See Appendix A.

This is one example in which tax policy for developing countries differs from that in developed countries. Another example is provided by Ramsey's classic result in optimal tax theory, suggesting that taxes should be levied at a rate inversely proportional to the elasticity of demand. Atkinson and Stiglitz [1976] showed that Ramsey's result depended on the absence of an optimal redistributive income tax, and Stiglitz [2008] showed that even with a simple linear income tax, the benefits of Ramsey taxation were very limited. The conclusion was that Ramsey's analysis was of limited relevance to developed countries. But in developing countries, income taxation is very limited; Ramsey's analysis is relevant for developing countries. Again, this goes against the spirit of the V.A.T., which suggests that one should not have differential taxation on different commodities.

The essential point of the Atkinson-Stiglitz analysis is that each tax needs to be viewed as part of overall tax structure, and in particular, in light of what other taxes can be imposed. That, in turn, depends on what is observable. For instance, it is difficult to observe hours worked, which limits the use of an optimal wage tax—which might be better, in some respects, than an optimal income tax. It is difficult to observe consumption of any individual of particular commodities, and this limits ability to use commodity specific non-linear consumption taxes. (Electricity is an exception, and we do use non-linear taxes there.)

Much of the advocacy of the V.A.T. is based on pre-Ramsey reasoning—uniform taxes are less distortionary than differentiated taxes. Pre-Ramsey reasoning turned out to be approximately correct, for advanced industrial countries, for reasons that have little to do with the simplistic analyses employed by the advocates of V.A.T. But it is wrong in the context of developing countries.

How the V.A.T. may impede growth

The previous section showed how the V.A.T. lowers national income. It may also lower growth, of particular concern to developing countries.

To see this, assume that the rate of productivity growth is higher in the formal sector. The simple case is that where there is no productivity growth in the rural (informal) sector. Assume $Q_u = F(\lambda L_u)$, where Q_u is output in the formal sector, L_u is labor input, and λ is the productivity measure. Then the rate of increase in national output can be written $g_Q = g_\lambda (s m)$, where s is share of formal sector in national output, g_λ is the rate of increase in λ , and $m \equiv F' \lambda L_u / F$ (the share of labor in the formal sector. It

is immediate that the larger m , the higher the rate of growth of national output, provided that as labor shifts into the formal sector, the share of labor does not decrease too much. The effect is even stronger if we introduce learning by doing. With learning by doing, $g_\lambda = \xi(L_u)$, $\xi' > 0$, so that the larger the size of the formal sector, the faster the rate of growth of productivity.¹⁵

¹⁵ See, e.g. B. Greenwald and J. E. Stiglitz, 2006

III. *How the V.A.T. may result in increased unemployment*¹⁶

Typically, the incidence of alternative taxes is analyzed within simple, competitive equilibrium models of the economy. While it is widely recognized that market economies differ in important ways from the competitive ideal, there is no widely accepted alternative model, and incidence analysis in models of the economy with oligopoly, incomplete markets, monopolistic competition, and imperfect information is sufficiently complicated that there has been a strong preference within the economics profession for being precisely and simply wrong rather than imprecisely and “complexly” correct. But developing countries are typically developing not just because they have few resources; markets, information, and institutions are often much less perfect. The imperfections cannot, or at least should not, be ignored.

Many developing countries are characterized by high levels of urban unemployment, itself associated with efficiency wages and costly migration.¹⁷ A V.A.T. imposed only on the urban sector (or collected more extensively in the urban sector than in the rural) effectively is a tax on urban wages.

In standard migration equilibrium model with efficiency wage, labor productivity is higher in urban than in rural sector. Hence V.A.T. lowers overall output as labor is induced to move to low productivity sector. If there is diminishing returns in rural sector, V.A.T. leads to lower wages in the rural sector. But firms in the urban sector will then not have to pay workers as much to induce them to work hard. The equilibrium will entail not just lower urban wages, but also higher unemployment. Thus, once again, the V.A.T. has both adverse efficiency and distributional consequences.

Appendix 2 provides a formal model showing this, and demonstrates that there are alternative tax frameworks without these adverse effects.

III. Concluding remarks on the V.A.T.

The usual argument for the V.A. T. is that the V.A.T. is not progressive, but it is efficient. Government should resort to other instruments for dealing with distribution
But for developing countries, the V.A.T. is not an efficient tax; it can, furthermore, lower growth and increase unemployment. But given the absence of other progressive taxes, the lack of progressivity of the V.A.T.. is of particular concern.

¹⁶ See also Stiglitz 1999

¹⁷ See, e.g. Sah and Stiglitz [1992], Stiglitz [1969, 1974, 1976a, 1982], Todaro [1968, 1969], Harris and Todaro [1970] **update references**

Our analysis shows not only that a V.A.T. is not optimal, but that a country should tax differentially imported goods. If imported goods differentially consumed by well off, such differentiation introduces an element of progressivity.¹⁸

Even with WTO restrictions on discrimination against imported goods, it may be possible to differentiate tax rates between *final* goods produced at home and imported final goods because they may differ in certain characteristics, e.g. imported goods may, on average, be of higher quality (price). The country can impose a higher excise tax on luxury biscuits than on ordinary biscuits; this discrimination may, at the same time, have favorable distributional consequences.

¹⁸ In a sense, this analysis can be viewed as a special case of Dasgupta and Stiglitz [1971], which showed that the Diamond- Mirrlees result [1971] that there should not be differential taxes was not true if there are restrictions on taxes that can be imposed (here, the restriction is on taxes in the informal sector.)

²⁴ it is easiest to construct the no-shirking constraint in the case of a fixed rural wage, but one can construct the curve with a wage in the rural sector that depends on the number of rural workers.

IV. *The design of corruption resistant tax structures*

Recent policy discussions have focused on problems of corruption in general, and in tax systems in particular. Interestingly, traditional tax policy discussions have paid little attention to corruption.

Corruption takes on many forms, including underreporting incomes by rich taxpayers, sometimes with the connivance of government officials; and insisting on bribes not to overreport incomes of “honest” tax payers.

Corruption can be viewed as a problem in observability. That is, if the income could be costlessly and objectively observed, then it would presumably be easy to devise administrative structures to ensure that every taxpayer paid exactly the amount that he should.

Some tax structures provide less opportunity for corruption than others. Some bases of taxation are easier to observe and verify. Consider, for instance, the window tax imposed in medieval England. The tax was very distortionary—it led to dark homes. But it had one advantage. It was easy to count the number of windows. It would be easy to check on the collection efforts of any tax official: a random check would quickly ascertain whether he had by and large counted the number of windows correctly. If a tax official tried to charge a tax payer for having too many windows, the aggrieved taxpayer could appeal to a court, which could, in turn, verify the number of windows.

In today’s world, there are other bases of taxation which can similarly be (relatively) easily verified—the number and size of cars, the square meters of a house. It may be easier to design institutional arrangements for the collection of such taxes without corruption

These “reforms” stand in marked contrast to many of the standard approaches to curbing corruption, which have often failed. For instance, one response to the failure of taxpayers to pay what they should has to been to give the government strengthened powers of enforcement. Such policies enable corrupt tax police to extract more money from private sector, inhibiting development, without generating much revenue for government

Modeling corruption resistant tax structures is beyond the scope of this essay, but centers around not just the issue of *observability* but also *verification*. Tax collectors must not just “know” the income of the taxpayer, but be able to “prove” it in a judicial proceeding. By the same token, those trying to circumscribe corruption among government officials must not just “know” that some government official has acted corruptly, but be able to verify it before a judicial proceeding. One must be able to distinguish between “honest” errors in judgment, and outright corruption. There must be some confidence in the integrity of the judicial proceeding. But no judicial proceeding is without error. There have to be penalties, but the penalties must be designed with a recognition that there may be errors in judgment.

V. Global General Equilibrium Effects

If the V.A.T. is imposed in all developing countries, it increases output of goods produced in informal sector, with global general equilibrium effects—the price of the *commodities* produced in the informal sector falls. To the extent that there are differences between these goods and goods produced in the formal sector, there can be global effects on prices. Many of the goods produced in the informal sector are inputs into production processes in the advanced industrial countries, while many of the goods produced in the formal sector are substitutes for goods produced in developed countries. To the extent that this is true, at a global scale, the VAT shifts the distribution of income/welfare to benefit developed countries at the expense of developing countries.

VI. Concluding Comments

This essay—and this book—focuses on the many ways in which tax policy in developing countries needs to be different from tax policy in developed countries. Both the objectives of tax policy, the structures of the economy, and the administrative capacities differ. The essays in this book highlight these differences.

In this paper, we have focused on the V.A.T., in part because it illustrates so well the difference between the design of tax policies in developed and less developed countries. For developed countries, the V.A.T. is efficient, but regressive (or at least not progressive). But, in theory at least, the lack of progressivity made up for by progressive income taxes. In developing countries, typically there is no effective income tax to make up for lack of progressivity. But the V.A.T. is also not efficient and may impede development; and when imposed in *all* developing countries, may have adverse terms of trade effects.

One of the key issues that tax policy for developing countries should focus on is promoting development. Promoting development entails shifting resources into sectors with faster economic growth, and more spill-overs. Every successful country has imposed industrial policies. Under WTO rules, it may be more difficult for countries to use tariffs. This may imply that tax policies will take on increasing importance in the design of industrial policies.

Sometimes it is suggested that it is lack of political will that explains the slowness of developing countries to make the tax reforms advised by the IMF—to adopt the V.A.T. Politics does matter; but it may be that the developing countries sense that the V.A.T. is neither fair nor efficient, and does not promote their development. It may be that they also recognize that there are other more important tax “reforms”—such as taxing the rents of oligopolies and monopolies, which might at the same time increase both equity and efficiency. In most cases, politics helps explain the failure to tax these sectors—the vested interests use their resources to influence the political process. It might be well if the international community in general, and the IMF in particular, devoted more of its efforts to these tax reforms.

It is not the intention of this book to provide all the answers, and even to provide a simple template: indeed, the tax policy which is appropriate to one developing country may differ markedly from that of another. Rather, our intent is to open up the debate on tax policy which has too often been too narrowly circumscribed, with developing countries being encouraged to follow a simplistic formula—adopt a V.A.T.—and to enhance understanding of how developing countries have been striving to raise taxes in a fair and efficient way.

Appendix A. Proof of the inefficiency of the V.A.T.

We present a simple, heuristic argument showing why it is in general desirable to impose a differential tax on an imported good, used in both sectors, enabling one to lower the V.A.T. tax rate *applied non-uniformly because of the unobservability of output in the informal sector*. The higher input tax serves as an indirect tax on the output of the informal sector, which otherwise would have escaped taxation.

For simplicity, we assume constant returns in the formal sector, and decreasing returns (but homotheticity) in the informal sector:

$$Q_u = F(X_u, L_u)$$

$$Q_r = G(X_r, L_r),$$

where Q_i is the output in the i th sector, X_i is the input of the imported good, and L is input of labor. The dual of the formal sector production function is written

$$P_Q = \Phi(w, p_X)$$

where P_Q is the (producer) price of output, p_X is the price of the input, and w is the wage. The international price of traded input and output are both assumed to be unity, which implies that before taxes

$$1 = \Phi(w, 1),$$

determining the real domestic wage in the formal sector. If the value added tax is imposed to be trade-non distorting, i.e. there is full rebates of the tax for goods which are exported, then the above equation still holds.

On the other hand, the price facing domestic consumers with a value added tax is

$$q = 1 + t$$

where t is the value added tax. By assumption, the value added tax is not collected on the output of the rural sector, but is imposed on the imported intermediate good that is used in its production. Thus producers in the rural sector maximize

$$qG - wL - x(1 + t)$$

so that

$$G_X = 1$$

$$G_L = w/1 + t$$

The value added tax thus shifts production towards the informal sector, and distorts the input mix in the rural sector towards labor. It is clearly distortionary.

We now ask, what happens if we add a surtax on imported intermediate goods (fully rebated in the formal sector, upon payment of the value added tax) at the rate τ , which allows a reduction in the value added tax rate (keeping government revenue constant). The revenue raised by the value added tax is equal to the value of the output of the formal sector that is not exported. We assume trade balance, so that exports equal imports.

Hence the value added tax revenue is $t(F - X)$. The net revenue raised by the import duty surtax is τX_r . Hence total revenue is

$$R = t(F - X) + \tau X_r,$$

And at $\tau = 0$

$$d\tau/dt = - [F - X] (1 - \eta_C) / X_r$$

where

η_C is the (absolute value of the) elasticity of formal sector net output that is not exported with respect to the tax rate. As the value added tax increases, more output shifts to the untaxed sector, so that normally we would expect value added tax revenue to be reduced.

We can assess social welfare by an indirect social welfare function

$$V = V(q, \pi(q, (1 + t + \tau))),$$

where π is the rent in the rural sector. An increase in the surtax on imports allows a reduction in the value added tax, which lowers q , which increases welfare. On the other hand, it will normally lower rents in the rural sector. *If we put little weight on the welfare of landlords (rents), then it is clear that it is desirable to have a tax on imported inputs.* But even if we put full weight on the income of landlords, normally a tax on imported inputs is desirable:

$$dV/dt = V_q + V_\pi \{ \pi_q + \pi_{PX} (1 + d\tau/dt) \}$$

$$\begin{aligned} &= - V_I \{ F + G - X - [G - X_r (1 - [F - X] (1 - \eta_C) / X_r)] \} \\ &= - V_I [X_r + [F - X] \eta_C] < 0 \end{aligned}$$

Appendix 2

Impact of VAT on Unemployment in Efficiency Wage Model

In this appendix we analyze the impact of a VAT on unemployment, using the Shapiro-Stiglitz efficiency wage model.

It is easy to derive (using the equilibrium migration constraint and the no shirking constraint) that there is a simple relationship between the equilibrium wage and the unemployment rate:

$$w^s = w^r(L^u/1-u) g(h(w^s)).$$

Moreover, since in equilibrium $u = h(w^s)$, we have what might be called a generalized no-shirking constraint, which we simplify as

$$w^s = \psi(L^u)$$

On the other hand, the labor demand equation gives

$$L^u = z(w^u)$$

In equilibrium $w^u = w^s$, so the equilibrium (before tax) is given by

$$w^* = \psi(z(w^*)).$$

The effect of a value added tax (imposed only on the formal sector) is to shift down the urban demand curve for labor.

Figure 1 shows the standard equilibrium in the urban labor market with a demand curve for labor and the “no shirking constraint.”²⁴ In panel A, the rural wage is fixed, and the no shirking wage can, accordingly, be drawn as a horizontal line. The V.A.T. has the effect of shifting the demand curve for labor down, lowering urban employment, but leaving the wage unchanged. That means, of course, that the unemployment rate is also changed. The tax simply shifts labor from the formal sector to the informal sector. National output,

$$Q = F(L^u) + w^r(N - L^u/1 - u^*)$$

is lower as L^u is lowered, since (under the hypothesis that the urban rural migration equilibrium condition takes the form $w^r/w^u = 1 - u$)

$$dQ/dL^u = [F' - w^r/1 - u^*] = tF'$$

where t is the value added tax rate.²⁵ Thus, even though each individual's labor supply is inelastic (so that in a standard model, the VAT, which is equivalent to a tax on labor, would have no adverse effect on output) here it clearly does.

In the case where the rural wage is not fixed, then the value added not only lowers the urban wage, but as it drives workers into the rural sector, it lowers the rural wage, so much so that the equilibrium unemployment rate actually rises. Let $G(L^r)$ represents rural output, where N^r is rural employment, then

$$Q = F + G$$

and

$$dQ/dt = (\partial Q / \partial L^u)(dL^u / dt)_{u=u^*} - w^r L^u / (1 - u)^2 du/dt$$

which is even more negative, since not only does labor move from the more productive to the less productive sector, but more labor moves into unemployment (zero productivity.)

Alternative taxes

There may be alternative tax structures with less adverse effects on output and welfare. One obvious candidate is a tax on land, which leaves unaffected all the relations described in this model.

Similarly, a tax on imported consumption goods (which are not at the same time produced within the country), consumed by the rentier classes, again leaves all the relationships unchanged, and thus is non-distortionary.

Taxes on goods consumed by rentiers, but produced within the country, or consumed by workers, have more complicated effects. A tax on imports of a good consumed by rentiers, but produced within the country, drives up the price of the domestically produced goods, shifting, in effect, the demand curve for labor. This has exactly the opposite effect of a VAT tax, increasing national output and lowering unemployment.

By contrast, a *uniform* tax, both on the production and imports of the good, has the effect of leaving the demand curve for urban labor unaffected, and thus there is no labor reallocation effect,²⁶ except to the extent that the higher price of the good shifts demand towards or away from goods produced in the urban sector. If non-traded domestically produced goods are complements of the taxed imported good, then the demand curve for urban labor shifts down, with adverse effects on rural wages, workers' welfare, and unemployment.

²⁵ In equilibrium, the urban wage is equal to the marginal product of labor, after tax, i.e. $w^u = (1 - t) F'$.

²⁶ Production of the good occurs to the point where the international price equals the marginal cost of production.

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