THE TRADITIONAL SECTOR AS EMPLOYER OF LAST RESORT

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In a paper presented to this association three years ago, Parzival Copes described the failure to limit access to the traditional fishery in Atlantic Canada as a failure of regional economic policy. By allowing rural residents to retain the option to work in the tradional sector, rather than force them to move to regions where modern jobs were available, the government was in effect, holding people in poverty. Copes simply restated the prevailing wisdom among economists when he postulated that the benefits of "rationalization" of the Newfoundland inshore fishery would be worth whatever economic dislocation followed. (Copes, 1987)

In this paper I argue that the way Copes and other economists have treated the traditional sector as the employer of last resort has been superficial and biased. A more objective look at the costs and benefits of open access to renewable resources in remote rural regions leads to no clear conclusion about the merits of "rationalization" on efficiency grounds. Limiting access eliminates options which can make people worse off in some circumstances; the balance of benefits and costs is an empirical question which is difficult to test. More importantly, it is possible to increase economic efficiency while preserving economic options. A clear understanding of this issue is especially relevant to many policy debates throughout the rural North about limiting or preserving access to fish, wildlife, and other renewable resources of the land and sea.

In the next section of the paper, I summarize the views of Copes and other economists who advocate rationalizing open access resource

harvests in rural northern areas. Then, I propose a model of migration and unemployment which clarifies the economic role of the traditional resource sector and its value as an option to rural residents. In the fourth section, I use the model as a guide to discuss how various ways to limit access to the common pool reduces the option value of an employer of last resort at the same time at the same time as it increases productivity. The final section presents some concluding remarks about the benefits and costs of access limitation schemes, which may perhaps some day lead to a revision of the conventional wisdom.

How Should Natural Resources Be Allocated in Remote Rural Areas?

Harvest of common property renewable resources has historically been a staple activity of many rural economies in remote regions. Particularly in northern regions where agriculture is not viable, fishing, hunting, and gathering have provided the basic subsistence for the rural population even in recent times. Ever since the expansion of the fur trade and the commercial fishery, dating back hundreds of years in some areas, renewable resource harvests have also provided the largest source of cash income. In the latter 20th Century, wage-paying jobs have become available to rural residents in public administration, service, and in some place, mining and tourism. However, the number of jobs has not been large enough, given population growth, to absorb the labor force in the region. Many rural northern economies have been further buffeted by declining

real prices for resource products as well as reductions in government support.

The inevitable result has been chronically high unemployment, low incomes, and relatively low productivity in the renewable resource sector. The situation in the traditional sector seems to follow the textbook example of excess capacity in a common property resource, where open access to expolitation of resources dissipates any potential surplus. In fact, incomes are even lower than wages from available employment opportunities because the open access resource industry remains the employer of last resort for those who cannot find jobs. As stated lucidly by Parzival Copes in his analysis of the Newfoundland economy:

> Until quite recently, anyone could join the fishery without let or hindrance and take a share from the common pool of fish without charge. . . . When a farmer decides to move to another industry and sells off his farm, he has burnt his bridges--he has lost the right to return to his farm. But if a fisherman decides to try his luck in the city and finds he doesn't like it, there is (or was) nothing to stop him from re-entering the fishery--he doesn't have to buy his way back. He needs very little capital to obtain a small inshore boat and he needs none at all if he joins an existing crew as a shareman. (Copes, 1987, p. 9)

Copes and other economists have called on governments to limit entry to rural resource harvest activities as the solution to the rural economic problem. Failure to limit entry in the Newfoundland fishery, Copes maintained, has meant a failed economic policy for Atlantic Canada. However, in other remote rural regions, various access limitation regimes have been imposed, and more are under

consideration. Most proposals to limit entry to traditional renewable resource harvest activities in remote rural regions have been justified by the need to raise incomes or improve economic efficiency. Often led by academic economists, proponents of these schemes are continuing to gain ground.

Arlon Tussing summed up the dominant ideology of the field about how resources should be allocated succinctly as follows:

> . . . There are two policy rules that point the way to a simultaneous maximization of social benefit, economic rent, and government revenues: sell or lease resource rights at market value, and above all, don't give them away; sell or lease them competitively in competitive markets. . . . Even if the original disposition of resource-rights is non-competitive, all is not necessarily lost: no matter how resource rights are originally allocated, make them freely combinable, divisible, and transferable. (Tussing, 1983, pp. 4-5)

Despite the wisdom of Tussing's advice and Copes' analysis, they address only the benefits of limiting access to renewable resources without addressing the costs. The treatment by economists in general of the rural resource industry as the employer of last resort has been superficial. Although loss of efficiency through open access to common pool resources is indisputable, we are taught as economists that people are rational, know their self interst, and that more choice can never make one worse off. The option to obtain income, even a relatively low income, can be valuable to people with few palatable alternatives. The next section attempts to formalize this option value using a simple two-sector expected utility model.

The Role of the Traditional Sector in Rural Economies

The traditional sector is defined here as a common pool resource traditionally exploited by a decentralized, open-access harvest using relatively labor-intensive means. I assume that there is only one traditional sector in the rural region.

Modeling the employer of last resort

The model examines choices made by residents in two regions--urban and rural--where the urban region is assumed to be large relative to the rural one. The real wage, w, is given and is the same in both regions. The number of jobs in the rural sector, n, is also fixed. Employment in the urban sector, however, is available with a probability of (1 - u), where u is the urban unemployment rate. If urban dwellers find themselves unemployed, they receive transfer income, t ($t < w$). In the rural sector, residents who are not employed work in and receive a share of the fixed total traditional resource harvest, Z, as well as remaining eligible to receive transfer income, t. The purpose of the model is to clarify the relationship between the rural economy and the urban depending on the availability of guaranteed employment (although at a low income level) in a traditional rural sector.

Thus the model closely follows Harris and Todaro (1970), and Huskey (1989), who extended the Harris-Todaro model to consider the effects of guaranteed transfer income. The model, here, however, more explicitly considers the effect of unemployment risk and the

option value associated with guaranteed employment. There are in essence two states of nature for both urban and rural residents. They can be employed at wage w, or not have a wage-paying job. The model implicitly assumes a multi-period planning horizon in which individuals decide in which region to reside based on future expected utility, given their choice of employment opportunities. Specifically, the rural potential labor force, N, depends on economic opportunities available in both regions.

Individuals maximize expected utility, V(Y), given by,

$$V = p_1 U(Y_1) + p_2 U(Y_2) \qquad (1)$$

where Y represents income and p represents the probability, and the subscripts 1 and 2 refer to the two states of nature ($p_1+p_2 = 1$).

Table 1 summarizes the potential earnings in each of the two states of nature and the probabilities of those states occurring in urban and rural regions. With the aid of Table 1, one can rewrite equation (1) showing expected utility as:

$$V^u = (1-u)\, U(w) + u\, U(t) \qquad (2a)$$

$$V^r = (n/N)\, U(w) + [(N-n)/N]\, U(Z/(N-n)+t) \qquad (2a)$$

where the superscripts u and r refer to the urban and rural regions, respectively.

Table 1. Earnings and Probabilities in Two States of Nature

State of nature	Urban	Rural
Income (Y)		
state 1 (employed)	w	w
state 2 (unemployed)	t	Z/(N-n) + t
Probability (p)		
state 1 (employed)	1-u	n/N
state 2 (unemployed)	u	(N-n)/N

A basic feature of the Harris-Todaro model is that people move based on economic conditions offered in the two regions. A rural resident will move to the urban region when $V^r < V^u - M^{ru}$, where M^{ru} represents the value of everything the rural resident has to give up in order to move to an urban community. The urban resident, of course, can also move to the rural area if $V^r - M^{ur} > V^u$. If there is net migration out of rural communities, however, then the equilibrium condition for the rural marginal migrant is that

$$V^r = V^u - M^{ru} \tag{3}$$

Note that individuals do not decide to move in this model depending on the state of nature, but rather based on <u>expected</u>

(long-term) utility.

To start with, we may clarify the basic building blocks of the model by assuming that individuals maximize expected income, and that there are no information lapses or moving costs between urban and rural areas. Harris and Todaro originally formulated the model this way, but does not fully describe the role of the traditional sector as employer of last resort, as will be shown below.

With $U(Y) = Y$, then equation (3) becomes

$$(\frac{n}{N})w + (\frac{N-n}{n})(\frac{Z}{N-n} + t) = (1-u)w + ut \qquad (4)$$

Solving equation (4) for N yields the equilibrium rural labor force N* as a function of the w, u, Z, n, and t as follows:

$$N^* = \frac{Z + n(w - t)}{(1 - u)(w - t)} \qquad (5)$$

In interpreting the Harris-Todaro equilibrium (5), one should note that if the rural traditional harvest, Z, is equal to zero, then the urban and rural unemployment rates are the same: $u = (N^* - n)/N^*$. The change in N* with respect to Z is $1/[(1-u)(w-t)]$. Equation (5) may be thought of as the demand function for residence in the rural region as a function of the opportunities to make a living there. As we move to discuss more realistic equilibrium conditions for the rural economy, one should keep in mind that the main variables--the number of rural jobs, the real wage, the value of the resource harvest, and transfer income--influence the size of the rural population in the same basic way as in equation (5).

Valuing the option to work in the traditional sector

The shortcoming of using equation (5) to describe the rural equilibrium is that most people, if they have any sense of self preservation, are highly risk-averse in situations where there is a significant probability that they will be impoverished. In addition, there are likely to be large transactions cost of giving up the traditional way of life and moving to an urban region. This means that the equilibrium rural labor force will remain larger than N* given by equation (1) whenever the rural unemployment rate is higher. More generally, it means that the demand for rural residence is less elastic with respect to n and Z. The higher the probability of being unemployed, and the greater the degree of risk aversion, the more inelastic is the equilibrium N*.

Rather than resort to messy calculus in this paper to describe how risk affects the equilibrium rural labor force, I will illustrate the role of the traditional sector with a few simple graphs. Figure 1a shows how a typical individual perceives the choices available in the rural area. The axes represent income in each of the two states of nature, and the indifference curves U_A and U_B show how the individual values the probabilistic income. The slope of this type of indifference curve, derived easily from equation (1), is the marginal rate of substitution (MRS) between the two states:

$$MRS = -\frac{p_1 U'(Y_1)}{p_2 U'(Y_2)} \qquad (6)$$

Point A in figure 1a shows an income of w in state 1 and an income of t in state two. Indifference curve U_A passes through point A and crosses the 45 degree line at point C, which represents the certainty-equilivalent income to A. Point B shows the same income in state 1 but an income of $Z/(N-n) + t$ in state 2. Point D, where indifference curve U_B crosses the 45 degree line, represents the certainty-equivalent income to B. The distance D - C is the willingness to pay (WTP) for the option of work in the traditional sector.

One might note with reference to equation (5) that if the marginal utility of income is constant (risk neutrality), the Marginal rate of substitution becomes $-p_1Y_1/p_2Y_2$, the ratio of expected income received from the two states. With risk aversion, indifference curve U_A has a steeper slope than the straight line $-p_1Y_1/p_2Y_2$.

Figure 1a shows only the utility of opportunities available in the rural sector as perceived by rural residents. If point B is an equilibrium, another indifference curve could be drawn to represent the value of opportunities available in the urban region. Figure 1b shows the same situation as figure 1a, but depicts indifference curves for both the urban and rural opportunities. Figure 1b represents the Harris-Todaro equilibrium if there are no costs of moving between the two regions. The urban indifference curve, U_A^u, passes through both points A and D. Without the opportunity to work in the traditional sector (available only in the rural area), but with a greater chance of finding a wage job, the

urban resident's expected utility is the same as the rural resident who has an employer of last resort. The slope of indifference curve U_A^u is steeper than the slope of the indifference curve U_A^r because p_1/p_2 is larger for the urban resident.

Figure 1b points out the fact that a rural resident's valuation of the option to work in the traditional sector is limited by the alternative of joining the urban labor force. Without moving costs, as in figure 1b, the WTP for the option is zero. This is not realistic of course, because moving costs--including the cost to individuals and families of giving up the rural way of life--are often very great. We observe tens of thousands of people remaining in poverty in rural areas of North America where much higher incomes are available in the urban sector.

Figures 2a and 2b show the Harris-Todaro equibilibrium including moving costs. In figure 2a, the rural region is expanding, while in figure 2b it is declining. If Z is large or grows relative to the rural population, incomes available in the rural region may exceed those expected in the urban area by as much as the moving cost for urban residents. The rural labor force will rise in equilibrium to reduce the share of resource harvests and keep the expected utility equal in the two regions for the marginal urban migrant. Both changes in harvest volumes and changes in profitability affect Z in this model. Increased profitability of renewable resource harvests is, of course, one of the main ways in which large areas of Alaska and other northern areas were originally settled.

In figure 2a, Z is larger than the real wage, w. Point B, representing the income opportunities in the traditional sector, lies above the 45 degree line. Since the income from the renewable resource sector is available to all with certainty, the willingness to pay for this income, point D in figure 2, is such that the distance OD is the same as Z/(N-n) (no transfers are needed in this instance). In equilibrium, N* would be rise until the distance D - C^u in figure 2a equals M^{ur}. The marginal urban migrant would receive just enough extra utility to cover the moving cost.

As a footnote one might note that figure 2a shows that the amount rural residents are willing to pay for the option to engage in the renewable resource sector is larger than urban WTP, because of a lower chance of finding alternative work. In reality, the rural wage would have to rise above the urban wage in order for employers to fill wage jobs in rural areas. This would reduce the rural WTP basically to the same amount as the urban.

While figure 2a shows the expanding rural economy, figure 2b shows a stable or declining rural area. In this situation, the urban indifference curve U_A^u crosses the 45 degree line, at point E, above the point D where the rural indifference curve U_A^r crosses it. Opportunities are better in the urban region even wthough it has no employer of last resort. The distance E - D is equal to the moving cost for the marginal rural migrant.

In recent times, rural northern economies have moved from the figure 2a economy to the figure 2b, if they were ever a surplus region to begin with. In terms of the model, a permanent rise in the

real wage, w, a decline in the number of rural jobs, n, rural natural population growth, a decline in resource harvests or prices, Z, or any combination of these factors could move the economy into a labor surplus region. An example of a study showing changing participation in the traditional sector of the Canadian Northwest Territories as it was associated with the changing value of available opportunities is given by Stabler, et al. (1989).

The supply and demand for rural residence

Figure 3 combines the information derived from figures 1 and 2 to show the equilivalent of supply and demand curves for residence in the rural region. The height of the curves are derived from the distance along the 45 degree line (certainty equivalent income) from figures 1 and 2. The demand curves figure 3 represent willingness to pay for the opportunities available in the rural region as it depends on the rural labor force, N. The lower demand curve, D_1, does not include income from the traditional sector. With a rural labor force less than or equal to n, all are employed at the real wage, w. With a higher rural labor force, D_1 declines because the probability of finding a job diminishes. The higher demand curve, D_2, adds the WTP for income from the traditional sector. As the rural labor force grows, the difference between D_2 and D_1 declines because the resource harvest is divided among more people. When the number of people engaged in the traditional sector declines below the level at which earnings exceed w, then D_2 becomes simply the traditional sector earnings.

The supply curve, S, represents the opportunity cost of remaining in the rural region. It is equal to the WTP for the urban opportunities--the horizontal line S' in figure 3, net of the moving cost. S slopes upward if one places rural residents with highest moving cost closest to the origin, implying that these would be the last people to move. The equilibrium point N_2, at the intersection of curves D_2 and S', represents the equilibrium rural labor force if there are no moving costs and the traditional sector is available as an employer of last resort. The equilibrium N_1, at the intersection of curves D_1 and S', is the equilibrium labor force with no moving costs and the traditional sector is not available as an employer of last resort. The equilibrium points N_3 and N_4, at the intersection of curves D_1 and S, and D_2 and S, represent the equilibrium rural labor including moving costs, without and with the traditional sector available as an employer of last resort, respectively. With the aid of figure 3, one can now discuss the welfare economics of alternative ways to limit access to the traditional sector.

Limiting access to the traditional sector

There are many ways to limit access to common pool resources. This section discusses the effects of some of the main ones which have been tried, using the model discussed in the last section as a guide. First, I examine the welfare effects of a simple limited entry permit system. Then I briefly discuss how differing access

regimes generate greater or lesser effects. The purpose is to generate testable hypotheses about the effects of each method as compared to the preservation of open access rights on rural communities.

Limited Entry

Consider first a system in which everyone who harvested the rural resource in the last time period (N-n people) obtains a permit to continue to do so in perpetuity. It may seem that the limited entry system simply imposes a transactions cost--albeit possibly a prohibitive one--inhibiting the passage of permits from those who do not need them to those who do. But before entry was restricted, N people possessed options, while afterward only N-n people have them.

There is no guarantee, of course, that the remaining people--now employed--will be employed in the future. If an individual becomes unemployed (state 2 occurs), he now must buy the right to participate in the traditional harvest. Since there is no reduction in effort expended on harvesting the common pool resource, the reduced number of options is a deadweight loss to society, equal to n times the difference between D_2 and D_1.

In order to achieve a welfare gain from improved productivity of the harvest, one must reduce the number of permits below N-n. This also increases the social cost. Suppose P permits are issued. Depending on how rural residents are able to fare in acquiring the permits, all P permits could eventually be acquired by urban

residents. Although the model suggests that rural residents would be willing to pay more for permits than urban residents, they are likely to have less access to capital and fewer business skills. At best, N-P rural residents will lose the option to participate.

As the option of the employer of last resort is taken away, some rural residents will move. There are two types of benefits of this mobility. First, it improves chances that the remaining rural residents can find a wage-paying job, and second, it reduces the likelihood that movers will need to receive transfer payments. This second effect can be added to the supply curve, S, to generate a social cost curve of rural residence. Figure 4 is identical to figure 3 but shows the potential reduction in social cost of transfer payments as an upward shift of the supply curve.

When the employer of last resort is no longer available, the curve representing rural opportunities shifts from D_2 to D_1. In equilibrium, the rural labor force declines from N_4 to N_3. The area ABC in figure 4 represents the loss in welfare for those rural residents who move as a result of limiting access. This loss is somewhat offset by the gain ABDE from reduced transfer payments to the unemployed. The reduction in the number of rural residents improves the welfare of those remaining by the amount BFGH, but these N_3 individuals lose an amount BHIC due to their loss of access to the traditional sector as well. Finally, the owners of the P permits accrue a capital gain equal to JKLM.

It is not clear that the net social benefit from limiting access will be positive or negative. It depends greatly on moving costs, or

more exactly, on the elasticity of moving with respect to changes in rural opportunities. If no one moves (e.g., S isinelastic), there are no benefits, only social costs. If there are no alternative productive opportunities for rural workers, limiting access only takes options away--it is a redistribution from those who need the option to those who do not. Social benefits to offset and possibly exceed this loss come from people being induced to move. But one must subtract the social cost of moving from these benefits, something Copes and other economists usually ignore. Actual effects--both costs and benefits--will be less than those shown in figure 4 to the degree that rural residents are able to retain ownership of permits.

Results obtained by Huskey (1989) for rural areas in western Alaska suggested that migration is indeed quite inelastic with respect to income opportunities, even in the long run. In a regression covering 17 years of data for the Nome, Wade Hampton, and Dillingham Census Areas, he obtained an elasticity of population with respect to real Alaska per-capita income (representing the urban sector real wage) of -0.27. The elasticities with respect to earnings and transfer income were 0.2 and 0.3, respectively. When the Bethel census area was included in the equations, the elasticities were larger, but still 0.5 or less in absolute value. Stabler, et al (1989) also found that the supply of "full-time" trappers in the Northwest Territories was rather inelastic (between 0.4 and 0.5) with respect to terms of trade and per-capita income.

This analysis suggests that advocates of entry limitation have greatly overstated its benefits in remote rural areas where the social cost of moving and giving up rural way of life is high. Since the potential benefits of improving productivity may be substantial, can this be accomplished through means which preserve options for rural residents and more equitably share the benefits and costs among urban and rural economies? The next section provides a cursory analysis of this topic.

Effects of alternative access limitation regimes

The key variables in most discussions of access limitation regimes are whether the limit is on harvesters or on the harvest, and the duration and transferability of access rights. In this section I consider only the effects of different measures on the option value, and ignore other effects, as these are well covered elsewhere (See, for example, Copes, 1986). One should keep in mind that the value which limiting access may destroy is that of the <u>option</u> to earn income from the traditional sector, not the actual use of the permit. First there is the degree to which a measure takes away options for an employer of last resort. Then there is the degree to which it raises the cost of acquiring the option.

<u>Duration and transferability</u>. The issues of duration and transferability are really inseparable. If permits or quotas are long-term or permanent, transferability is essential. If an individual is unlucky, either by birth or by economic misfortune, or by the luck of the draw in a lottery, then he or she has no ability

to obtain the option at any price until the next draw. If permits are of short duration, say one season or less, then their value as options is limited. For example, consider a permit to hunt big game which is allocated each season by lottery. (Many such permits are actually allocated this way by the Alaska Department of Fish and Game.) The option value of this permit is discounted by the probability of obtaining the permit. There is no way in which those who obtain permits and who don't need them this year may exchange them with those who did not get permits but end up needing them.

Making permits transferable introduces, of course, what Gordon Tullock termed the "transitional gains trap (Tullock, 1975). Those who obtain a permit in the initial allocation obtain the rights to the option, but anyone else who buys or leases one has to pay a cost equal to its value. I argued above that the transitional gains--the value of the options distributed in the initial permit allocation--must be reduced by losses suffered by those who had access before limited entry and have now lost it, in order to obtain net benefits.

Leasing. Leasing does not help an individual who does not have a permit acquire the option. But regardless of whether permits are transferable, leasing allows a permit holder to retain the option to use the permit without him having to use it. Since the efficiency benefits of leasing in a permanent limited access system are so obvious, it is difficult to comprehend why leasing is not universally accepted in limited access systems. I have heard that fishermen fear processors or banks will end up owning most of the permits, leaving harvesters in debt-servitude. Such a nefarious result, although a

real possibility, is easily prevented with a simple restriction on the number of permits any individual or company may own or control.

Limited number of harvesters or share quotas. The difference between limits on harvesters and on harvests, as far as the effect on the option value is concerned, comes from opportunities for greater divisibility and for contingent payment with the latter systems. As a hedge against unemployment, rural residents could buy a small quota, if it were permanent and could be leased, at a relatively small cost. Even more effective, of course, would be if rural communities were allocated quotas which they could divide and lease as they saw fit. This kind of flexibility is difficult to achieve with a limited entry permit system.

Another opportunity with share quotas would be that payment could be contingent on their use, i. e., as a royalty. With complete divisibility and with quotas auctioned off on a royalty bid, the option of the employer of last resort would be preserved for all (although at a reduced value, of course). This type of system is almost identical to a simple excise tax on the harvest of the resource. Taxation has long been recognized theoretically as a means of rationalizing common property resource harvests as well as extract resource rent, but it has largely been ignored as a policy tool to achieve that purpose for fish and wildlife resources. With reference to figure 4, an excise tax on the harvest would shift the curve D_2 down towards D_1, reducing but not taking away the option value. Taxation should be considered more seriously in rationalization programs for its more favorable treatment of rural communities.

Conclusions

Limiting access to formerly open access renewable natural resource harvests in remote rural economies has costs as well as benefits. Since these costs are usually ignored when the government limits access, the purported economic benefits are likely to be greatly exaggerated. Rural residents in particular lose the option value of the employer of last resort. If their mobility is low, which appears likely, then the loss is likely to be substantial, and could exceed the productivity benefits. Rural residents who do not receive access should be compensated for this loss in option value, so that it will be perceived correctly as a cost of the system. The model described in this paper provides a guide for calculating the appropriate level of compensation.

Different ways of limiting access impose differing costs to the rural economy. The size of the cost depends on the degree to which the access limitation regime takes away the option of an employer of last resort, or makes the option more expensive or more difficult to acquire. When resource harvests have significant commercial values, taxation of harvests is effective in encouraging rationalization while still reducing losses in option value.

References

Copes, Parzival, "The Fishery as Employer of Last Resort: a Failure of Regional Policy in Atlantic Canada," WRSA 1987.

Copes, Parzival, "The Individual Quota in Fisheries Management," *Land Economics*, 62:3, 278-291, August 1986

J. Harris and M. Todaro, "Migration, Unemployment, and Development: a Two-sector Analysis," *American Economic Review*, 1970.

Huskey, Lee, "Transfers, Mobility, and Rural Poverty in Alaska," WRSA 1989.

Stabler, Jack, Gail Tolley, and Eric Howe, "Fur Trappers in the Northwest Territories," WRSA, 1989

Tullock, Gordon, "The Transitional Gains Trap," *Bell Journal of Economics* 6:671-78, 1975.

Arlon Tussing, "Resource Disposition Systems: and Economic Overview," presented at a conference on Public Disposition of Natural Resources, Banff, April 1983.

Figure 1a

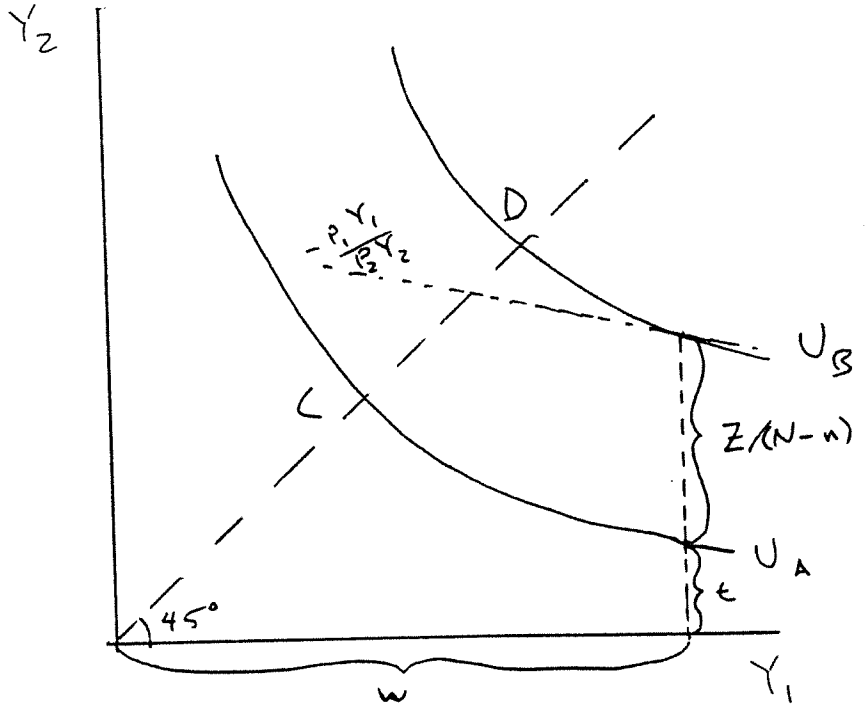


Figure 1b

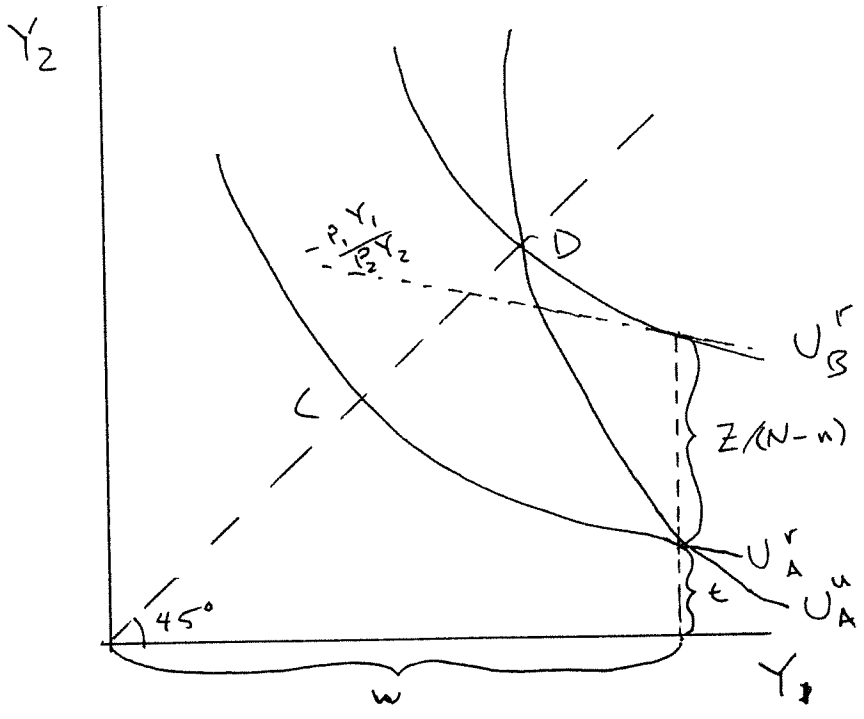
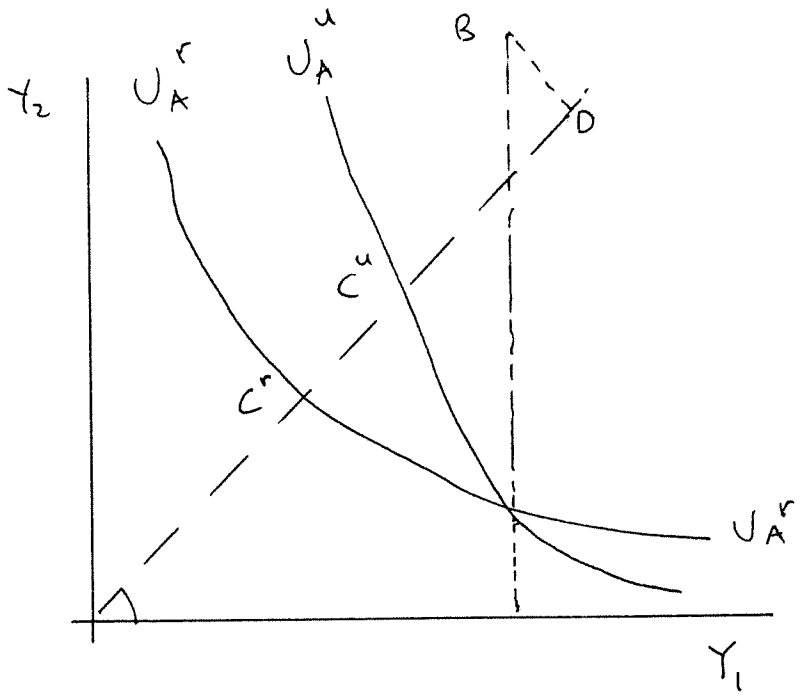


Figure 2a



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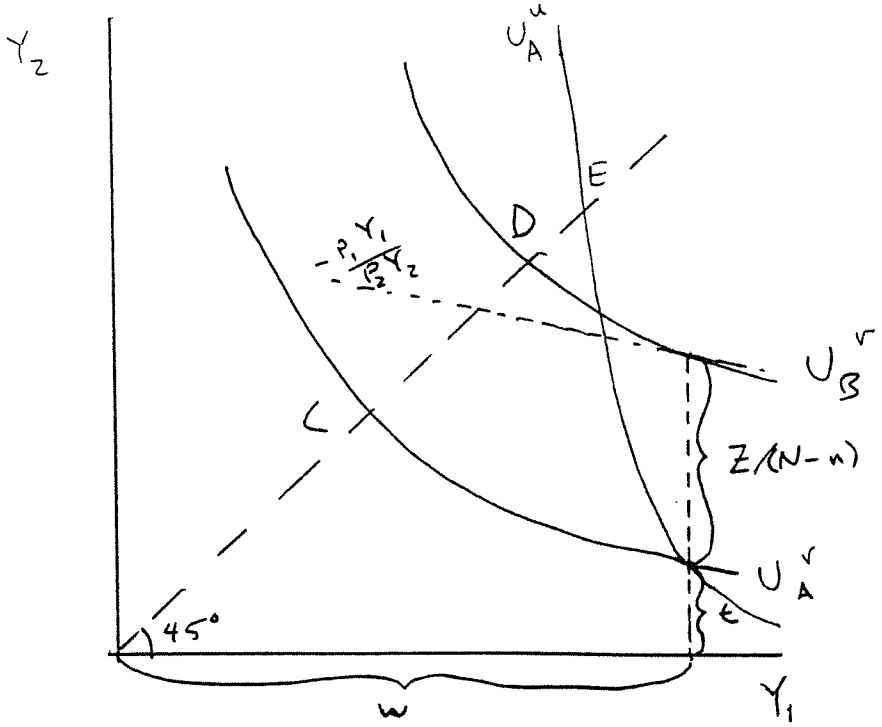

Figure 3

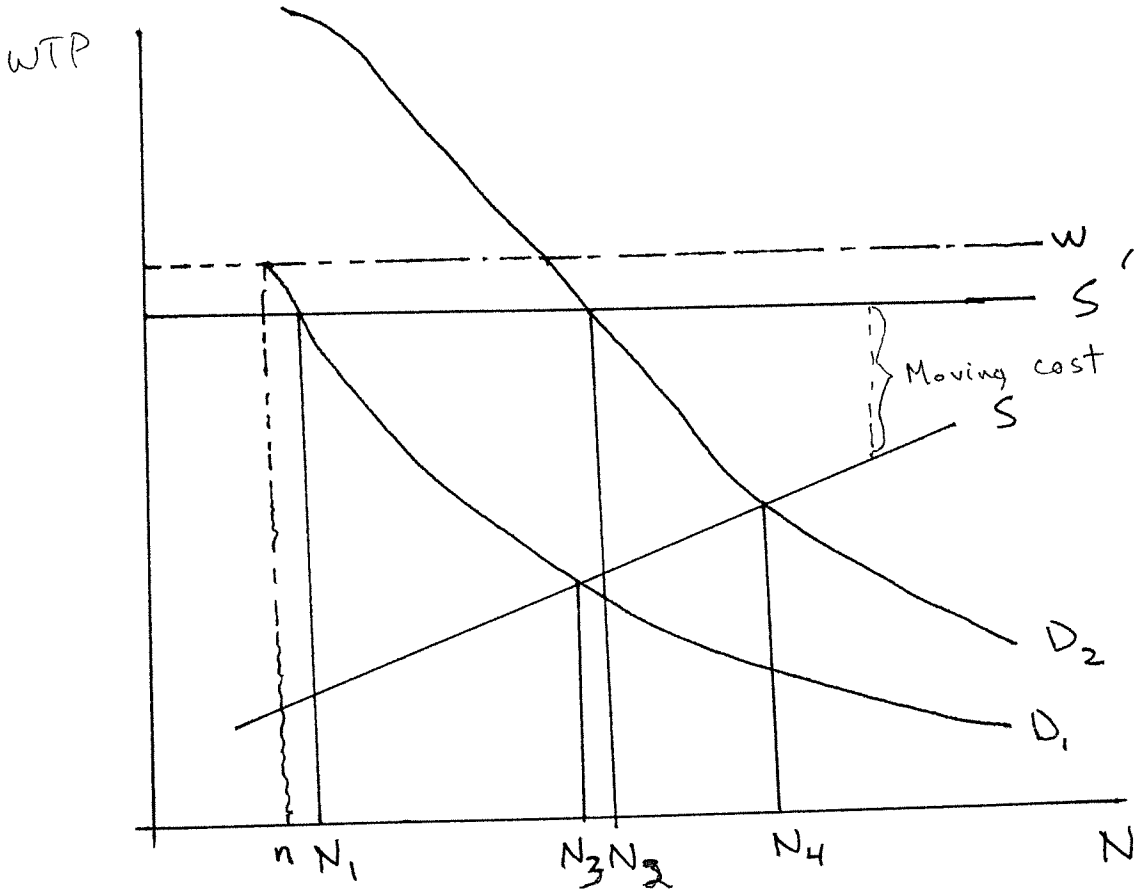

Figure 4