Health Economics

Dr. Pratap C. Mohanty

Department of Humanities and Social Sciences,

Indian Institute of Technology Roorkee

Week – 04

Lecture 17- Equity and Redistribution: Theory

Welcome to our NPTEL MOOC module on Health Economics. We are continuing with the week on health equity or equity and health. We have been discussing the different conceptions of distribution or redistribution. We have started discussing in the previous lecture on different types of distinguishing equality and equity and different types of equity as well, horizontal and vertical equity, etc. So, in this lecture, we are going to discuss the theories of redistribution, hence, it is called equity and redistribution. So, largely we will be actually emphasizing on the reasons for redistribution or distribution and will be discussing on the most important three theories that are called utilitarian, then egalitarian and Rawlsian.

So, to introduce you once again about the distribution and hence it has value of efficiency. People are mostly concerned with fairness in distribution. Hence, redistribution really matters. Referring to the work of Hausman and McPherson in their writing, they discuss about notions of fairness, opportunity, freedom, and rights. Since these are considered to be largely useful directly or indirectly in policymaking, hence, it has value for society.

So, considering the issue of equity and redistribution, though there have been some papers, the discussion still requires attention because the clarity is still somewhere not addressed in detail, especially in the context of health economics. Hence, health economists and their explanations for equity require further importance. So, why does redistribution take place? Yes, it is quite understood that redistribution may be from the socio-political strategies or maybe from the context of political economy explanation and it reflects since about society, about justice, about people. Hence, different clarifications are given by Marxists and libertarians. So, in that case, especially for the libertarian's case, all redistribution other than the individual contribution as voluntary donations is considered to be coerced.

And since the rich force through the political process and the ballot box to redistribute some of their income to the poor, who hold their political power due to the tyranny of the majority. In the case of Marxian thought, this redistribution is considered to be insurance for the ruling capitalists. They will reduce the probability of revolution by bribing the working class with such things as a minimum income or pensions and access to education and healthcare. This is how it is defined from two schools of thought.

The third thought is on how people care about their fellow citizens. It's not just the distribution confining to the capitalist or confining to the elite ones who are capturing the power. It's rather connecting to how people care about their fellow citizens. Suppose within a two-person economy, we have rich and poor; R stands for the rich and poor, P stands for the poor, and redistribution involves R giving away some of their income to P. Hence, the delta income of the R is added as the delta income for the poor. So, voluntary redistribution will continue until R's gain in marginal utility from that is P increased income is equal.

$$P\ (-\Delta Y_R = \Delta Y_P).$$

Basically, As long as their marginal utilities are equivalent, then the contribution or the redistribution continues and not just the marginal utilities; though both the rich and poor are equal, it is also equivalent to their marginal utility of loss from their own reduced income. So, the theory of redistributive justice has three theories. So far as theory related to redistributive justice is concerned, it has three theories that define the fairness of the allocation of health resources, starting with utilitarianism theory. It concerns individual welfare in terms of utility or happiness mentioned in the initial work; we refer to the author Bentham for their contribution from 1748 to 1832 and J. S. Mill from 1806 to 1873.

So, Bentham's work is based on the simple premise that people do things to attain pleasure and to avert pain. This is measured cardinally as a number of utils and used to make interpersonal comparisons. This provides information about how people are happy and is specific to the person, and it is indeed neutral about the sources of pleasure and pain. So, whereas the utilitarian models rely on individual subjective assessment, their own utility and hence it is attached with the crucial distributional challenges. So, how many utils one individual can forgive or generate from the consumption of additional units of consumption or good compared to how many utils another individual can generate from the same unit is largely subjective.

Hence, the aggregate utility across individuals, according to an unweighted sum ranking rule, looks only at the sum total of utilities justified by the greatest happiness principle. So, we are referring to the work of Mill again in the context of utilitarian models. This distinguishes between higher and lower pleasure and claims that it is better to be a human being dissatisfied than a pig satisfied. As per the quotation of J. S. Mill, it is better to be a human being dissatisfied than a pig satisfied and better to be Socrates dissatisfied than a fool satisfied. Basically, it argues that no reasonable person would ever want to be a dog or a pig just for the sake of being more comfortable. Yes, being human can sometimes cause stress that animals or fools do not have to deal with. So, Mill totally cannot imagine someone wanting to give up their human brain just for the comfort of human life. So, in accordance with this view, society should be gaining pleasures, and in accordance with them, a higher or lower order can be placed based on weight.

So, this is an even weight sum ranking rule, etc. We already discussed the works of Bentham. So, we need to note that in healthcare particularly, we need to modify or there are versions presented as modified and simplified versions of the maximizing health conditions. Rather than utilitarian happiness, health is maximand. The utilitarian approach gives the view of the greatest happiness principle that is translated to the greatest health or the total health principle.

So, Bentham favored radical distribution because of his contribution during the radical change period of Britain in the 18th century period of Britain. Then, some other details related to radical measurement, etc., as mentioned by Bentham, etc. I am just going to mention that individual differences in the relative strength of preferences of health are disregarded by assigning the same finite aid point that may be 0 to 1 on the cardinal health scale. So the third, this is, in fact, one point, and the second, you can see it is the utilitarian concept considered to be a widely accepted method since it gives cardinal indications.

The third one is related to normative judgment. Some of the views are based on the maximum norms. The health gains are from the normative judgment that given health gain is assigned the same social value irrespective of the characteristics of the patients involved. So, even the tiniest gain in total sum would be taken to outweigh distribution inequalities of the most blatant kind.

The second one is called the egalitarian approach, where the meaning is considered to be equalizing. It is so often used as the distribuendum; this is general egalitarianism. Whenever we refer to it, this is often used when the distribuendum is income or wealth. Specific egalitarianism refers to an equal distribution of a particular good. Strong egalitarianism refers to this, which distinguishes it from the egalitarianism of maximin, which allows for inequalities so long as they benefit the worst-off. So you can read the example we have referred to strong egalitarians would prefer an equal split of 50 units of utility to each of two individuals in a situation where one individual had 80, and the other one had 51. So, egalitarians would prefer to split it into 50.

This is because, in the latter situation, which is the unequal case of 80 against 51, the former egalitarian approach is 50 by 50, even though the worst of individuals would benefit from having 51 rather than 50. So, in the healthcare context, when the distribuendum is no longer income but health, strong egalitarianism is concerned, but it is usually absurd in a policy context. It suggests that a situation in which two individuals are in an equally bad state of health is considered as better than a situation in which only one is in that state, and the other is fit and healthy. So, similarly, you can see, as we just said, the maximin one is emerging as the more sensible rule than the strong egalitarianism principle. So, maximin refers to the theory of works of John Rawls from the year 1921 to 2002.

It is on the theory of justice, which states that egalitarianism at the outset states the egalitarian at the outset but accepts inequality as long as it is not possible to further the improvement of the worst off. Rawls, in 1971, held that social and economic inequalities must be to the greatest benefit of the least advantaged. So, you can also follow this in our later chapters. We also discussed Rawlsian theory. The greatest benefit of the least advantaged refers to the difference principle.

Maximin is a lexicographic principle that basically compares alternative arrangements from the best to the least advantaged. If they are equally badly off, attention is to the second least advantaged, and so on. So, here is Rawls's individual well-being in terms of the index of primary goods consisting of some five different indicators like basic liberties such as freedom of thought, freedom of choice of occupation, powers and prerogatives, income, wealth, and social basis of self-respect, etc. Rawls even very less clarification on how items in the index are to be weighted. So, weights were not mentioned.

So, it even offers little guidance about the primary goods and their trade-off against each other, especially in the construction of the index. So Rawls's theory applies only to individuals who are normal, active, and fully cooperating members of society, and Norman Daniels views that there is no distributive theory for healthcare because no one is sick. Applying the maximin principle to health, the futile goal of eliminating or leveling all natural differences between persons as mentioned in Daniels in the belief that there is no sick in reality. So the maximin principle owes a much to the work of Rawls and similarly other details we have given and examples we have just cited for your reference. You can just read the meaning and interpretations in the context of illness or the severity of illness.

We even mentioned that the lexicographic nature of this principle means that the resources would be devoted to the most severely ill individual and one with the shortest expected remaining life. So, hence the minimum most ladder whoever is there, the utility function is used to be defined with the mean of the two choices. So, the differences between the three theories of justice are that if we just compare them, we are presenting two different indicators. So far as when the health life expectancies are concerned in the utilitarian theory or in the egalitarian theory, in Rawlsian theory, we will see, especially we have given their life expectancy in years for different contexts. So, in the first question, where is the average healthy life expectancy highest? When the average life expectancy, the highest, is concerned, we are referring to the utilitarian one.

You can just see out of these three comparisons. So if the average is 73.5 and even the average is the highest in this case, hence it is preferred. Similarly, where is the distribution of health most equal in the context of egalitarianism? In that case, if you see the most equal is in the case of 70 years life expectancy, if the range is there, then that is preferred, and the last one is the health of the worst of best, that is the 71, the best one 71, and that is the Rawlsian principle.

Health life expectancies	U 69 and 78	E 70 and 70	R 71 and 74
Where is the average healthy life expectancy highest? (U)	**73.5**	70	72.5
Where is the distribution of health most equal? (E)	69/78=0.88	**70/70=1**	71/74=0.96
Where is the health of the worst off best? (R)	69	70	**71**

So, I have already mentioned. Utilitarians opt for U because this is where the total health is the highest. Egalitarian opt for E because it has the most equal distribution of health, whereas Rawlsian opt for R because it is the best for the worst of cases that is worst. We say the different life expectancies, and among them, the best one is 71. So, depending on the questions, the choice of the theories can be marked correctly. The health frontier and the trade-off, where the equity principle is hidden, there is a trade-off between theories that can be analyzed in terms of social welfare functions, especially the health frontier cases.

There are three key assumptions in the health frontier approach, especially when we map its budget to that of maximization in terms of healthcare productivity. We are taking the case of A and B between two groups of patients. So, the assumptions are considered to be valid that the fixed total healthcare budget is to be distributed between these two patients, A and B, the productivity of healthcare on health is positive, and the marginal productivity is diminishing as per the standard production possibility frontier approach. Health outcomes are measurable on a cardinal scale, which may be equally or interpersonally comparable. So if the health production, we are just presenting here, if the health production function were similar, the frontier would be symmetric around 45 degrees, which we have just mentioned.

This indicates equality of the distribution between A and B. Health maximizing allocation is identical to the egalitarian approach as well as the max-min solutions. If health maximization were the only policy objective, then this point would become efficient allocation. So, given the budget, etc., and concerns, I think the maximum possibilities we have also tapped will be mentioned.

However, the egalitarian approach, if it is a 45-degree line, defines the best one. So, the shape of the frontier is concave and includes Pareto efficient distribution only, which is basically Pareto efficiency, where we say that improving the health of one group would imply a reduction in another group; hence, there is a trade-off. So, the frontier is concave. I am not explaining much. Due to these, the max-min and equality yield the same solution. We are attaining the max-min possibility and equality because both are getting an equal share. Given the efficiency concern, I think we are attaining another point for distinguishing the max-min from the egalitarian point. We have to include an increasing part as well.

For that, at least one of the above assumptions has to be relaxed, and only the frontier has to be different. Only then can you differentiate the max-min against equality? If this is the case, then we will have an upward-sloping section from the vertical axis to R, and then there will be diminishing portions. The treatment of A, if I just map it in this diagram, you can see the production possibility frontier or the utility frontier is actually increasing then decreasing till their death entire life. So, since it is 45-degree line, we can confirm very clearly that we are attaining the egalitarian approach here, whereas the max-min reaches R, and so far as the maximum from the efficiency is constant, we are reaching point U given the budget constant.

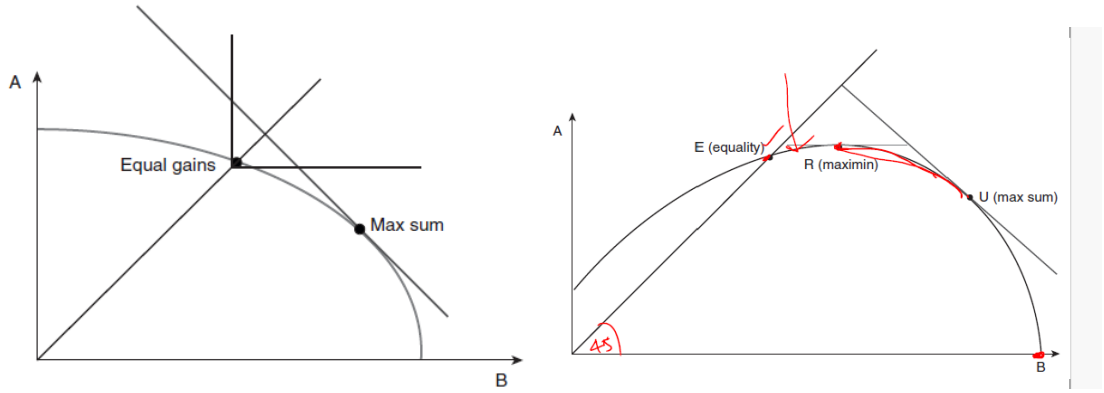


Fig: Equality vs efficiency

So, this theory of justice E involves equal health, R explain max-min and U is in fact called the maximum U point is maximum total health that is possibly even called the efficient most point. So, Pareto selection is that if we are moving from R to U. So, as mentioned by Elster in 1992, basically, this suggests that we have a common sense conception of justice. So, we still reach the maximum utilization point to the maximum health if this is the range where, if it is emphasized correctly, we have a Pareto efficiency section.

If equality for, say, is part of the health policy objective, then another one that is from here to here, E to R, this portion is relevant. So, in terms of social welfare function for health, of course, there is a trade-off, and this usually includes the level of utility of each of the

two individuals. In short, it is referred to as SWF, and sometimes, it is also mentioned as HRSWF. So SWF assumes a constant elasticity of substitutions, which means that the curvature of the iso-welfare curve is constant. So, we can present an equation about the social welfare function.

$$W = [\alpha H_a^{-r} + (1-\alpha) H_b^{-r}]^{-1\backslash r}; H_a, H_b \geq 0; r \geq -1, r \neq 0$$

W stands for overall social welfare. H_a and H_b stand for the health of the person A and B, and α is the respective weight of the individual relative to others, and R is a more important measure. So, the degree of aversion to inequality and based on the level of R, the properties of convexity are determined, and hence, the iso-welfare curve is presented. If both individuals are considered to have equal weight, then α, of course, is equal to half, and it will be symmetric around that 45-degree line, which I have already mentioned. If the parameter R measures the strength of equity preferences, which I just said, R is very important, and this shows how close to the equity point R is from the preferred location line. If R is equal to -1, that means the social welfare is equal to the sum of the individual welfare. You can check with this. If it is -1, then the sum of individual utility will be equal.

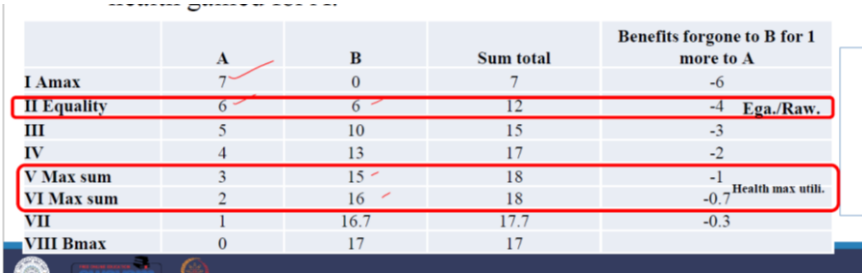
So, in that case, no aversion to inequality. This utilitarian type of social welfare function results in iso-welfare curves, that is, individual welfare curves that are parallel straight lines with a gradient of minus alpha upon 1 minus alpha. So, when alpha equals half, effective equality is defined in that case, then the gradient is, of course, minus 1. Social welfare is what we say as an iso-welfare curve; social welfare is maximized simply by summing their individual health. If R is greater than minus 1, then the greater the inequalities between A and B, the greater the weight between these two and, especially, the worst-off individuals relative to that of the better one. This results in an iso-welfare curve that is convex to the origin. In the other case, it is concave, but I will just come to it.

In this case, when R is greater than minus 1 in the extreme, the worst of the individual is all that matters, and R takes the value of infinity. This will result in a Rawlsian type of social welfare function with an L-shaped function, L-shaped preference function, or L-shaped iso-welfare curve. This is what is presented in this diagram. Hence, the higher the parameter value of R, the stronger the equity preferences and the closer one gets to the equity point, which is also the Rawlsian point R. You can just see and further away from the utilitarian point U.

So, we have discussed the distributive justice issues concerning these three points of view. We also discussed the health possibility frontier and these three approaches to redistribution, all of which are equally good according to Pareto criteria. So, these points are U, which we already mentioned; U is basically the point where the sum of ranking solutions suggested by the utilitarian; R is the point referring to the Rawlsian Maximin

solution; and W is basically the social welfare trade-off solution, which makes a trade-off between the arguments of the former to the solutions. The actual location of this third point critically depends on the degree of aversion to inequality. The point at which the iso-welfare curve is tangential to the health frontier represents the optimal distribution of health gains across two patients, which already mentioned the tangential point.

And so we can take off the opportunity cost etc. to the next class. These are all there. I will clarify through, or I can hardly take another minute to clarify. So, these three approaches, which we already discussed, can also be explained right now.



	A	B	Sum total	Benefits forgone to B for 1 more to A	
I Amax	7	0	7	-6	
II Equality	6	6	12	-4	Ega./Raw.
III	5	10	15	-3	
IV	4	13	17	-2	
V Max sum	3	15	18	-1	
VI Max sum	2	16	18	-0.7	Health max utili.
VII	1	16.7	17.7	-0.3	
VIII Bmax	0	17	17		

We have A and B through this example, and their healthcare budget is presented here. So A maximum in the first case, you can see A maximum, and in the second case, it is the equality 6 and 6 are equal. Third, it is not clearly understood, and in the fifth and sixth cases, you get the maximum possibilities. Hence, we can define our final answer to the principle or the redistributive theories that are applied. In the second case, we have highlighted it as the egalitarian principle or the Rawlsian principle, whereas the fifth and sixth one is precisely called the health maximum utilization or utility maximization principle or the theory. So, while the allocation of V and VI both involve maximum total health, which is 18, the last column shows the opportunity cost in terms of benefits forgiven to B for each additional unit of health gain for A.

So, which allocation is preferred? So, whether the egalitarian principle is followed, then option 2 we have already said, and if the health maximization utilitarian principle is concerned, then it is V or VI. Or there might be a trade-off between these two corner principles. Doing it might look at the final column and be confronted with the price of equity. So that is basically the benefits forgiven to B for one more unit of A, the opportunity cost. So, we will hence discuss these in our next unit on the new economic paradigm for equity, and we will also emphasize equity in health financing and their distribution.

So, these are your suggested readings. With this, I hope you will get further details in the next class. Thank you.