# Time allocation and the importance of volunteering

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## Introduction:

Not so long ago, I went along to downtown Edinburgh with a couple of fellow students to witness the day of the Scottish referendum. I remember it very well; we saw a variety of people who were volunteering to ensure that the last undecided voters cast their ballots for a 'yes' or a 'no' – whichever side they represented. I also remember that in the evening a heated debate started, because one of my friends asked, a little tongue in cheek, what use it is to work voluntarily.

Because I am politically active in my home country, I therefore know only too well how important this type of election campaigning is, and since I also volunteer for a charity (one which works to integrate disabled youth into the working world), I quickly challenged my friend. However, the later the evening became the more beer flowed, which changed our initial dispute more and more to a kind of cosy conversation where everyone held their own view – cracker-barrel philosophy at its finest with little meaningful content.

Nevertheless, I am still firmly convinced that volunteer work is essential in a social state, and also yields bilateral utility. For this reason, I would like to take up the above mentioned question again within the framework of this essay.

To deal with it critically and from an economic point of view, I have divided my work into two main parts. First, I will show how one can maximise his utility with a limited time budget and the choice between paid work and unpaid voluntary work. Afterwards I want to devote myself to the question: does charity work provide a form of payoff, and for which reasons do people spend their time on unpaid work, instead of making more money or enjoying their leisure time? The end of this work will then be formed by my conclusion.

## The agony of choice:

Before we can determine the optimal choice for a person, or more precisely an economic agent, between work and volunteering, we have to clarify some questions. It is important to define firstly the utility function which forms the basis for the decision of the individual, and secondly what constrictions the agent might be confronted with.

To keep the following explanation simple, I will refer to a modified form of the neoclassical labour market theory which implies the assumptions of the perfect competitive market. These assumptions include, for example, that both producers and consumers are price-takers, which means that "neither of the individual agents can affect the market price of the good as well as the presumption of a standardized product so that the consumers regard the products of all producers as equivalent." (Krugman and Wells 2009)

To describe the aformentioned utility function, we first have to define what generates utility for the individual. Let us here assume that the person we are talking about receives utility by consuming two goods where the first good is a normal buyable good, denoted by ***C,*** and the second good is the consumption of volunteering, denoted by ***V***. From this, the utility function follows, which we can write mathematically as ***U (V, C)***. At this point it should be noted briefly that it is essential for our further derivation that we assume that the marginal utilities of this function are diminishing and positive which is $\delta U/\delta V, \delta U/\delta C > 0$ and $\delta^2 U/\delta C^2, \delta^2 U/\delta C^2 < 0$.

To select the variables ***V*** and ***C*** so that the individual can maximize his utility, we have to consider the fact that there exists a negative tradeoff between the consumption good and the consumption of volunteering. To see where this negative tradeoff comes from, we should take a closer look at the constrictions which confront the agent. It may seem plausible that the individual has to spend the amount of the price of the consumption good, here denoted as ***P***, to buy it. Moreover it seems obvious that to get this amount of money they have to work.

Let us also assume that they get, for every working hour, a wage of ***w,*** so that we can derive the equation $wL = PC$ for the case where they spend all their income generated through their working time, entitled as ***L***, to buying the consumption good.

Taking into account that they also want to volunteer their time, we are faced with the problem of limited time. With a fixed amount of time, denoted as ***T***, they have to decide how they should divide their time at the best possible rate, so that $T= L+ V$. Therefore the negative tradeoff simply means the more they work, the more they can buy but the less they can volunteer and vice versa.

Now that we have derived the utility function and the two auxiliary conditions ($wL = PC$ and $T = L+V$) we are able to dedicate ourselves to the maximization problem. The first step is a simple transformation of the additional conditions which yields the equation $0 = wT – wV – PC$.

Afterwards we just have to set up the so called Lagrange-function, which has the following form $L (V, C, \lambda) = U(V, C) + \lambda * (wT – wV – PC)$ and deviate the function respective of the different variables $V, C$ and $\lambda$. As shown in appendix 1.1, we will get the following solution $\delta U/\delta V / \delta U/\delta C = w/P$ for our optimization problem if we set our derivations at zero and solve for lambda. The left-hand side of this equation shows the proportion of the marginal utilities of volunteering and consumption of the buyable good, whereas the right-hand side indicates the ratio of the prices of these goods - or more, simply, the real wage. This means that the individual reaches the highest indifference curve at the optimal point where the ratio of the marginal utilities is equal to the real wage. Point A in Figure 1.2 in the appendix illustrates this.

To understand Figure 1.2 completely and also get the values for the optimal consumption of the consumer good and volunteering, we should at least derive the budget constraint, which results from the additional conditions. Taking into account that $w$, $T$ and $P$ are all exogenous variables, we get through a simple deformation of the auxiliary conditions the following budget constraint: $C = w/P * V + wT/P$ (a detailed derivation one can find in Appendix 1.3).

Finally, we just have to specify our utility function, where I have used a normal Cobb-Douglas function of the form $U(V,C) = V^{1/3} * C^{2/3}$ to come down with the results for the optimal time expenditures. As shown in Appendix 1.4, the rational individual should choose the utility function mentioned above, with the amount $V^* = T - \{2T / [2 + (w/P)^2]\}$ for volunteering and $C^* = [2 * (w/P) * T] / [2 + (w/P)^2]$ for consumption expenditures to maximize his utility.

Before I will come to my conclusion, I shortly want to dedicate myself to the question of why people spend time for charity work or volunteering.

## Individual reasons for charity:

Although the previous part of my essay was predominantly mathematical and economical, the coming discussion will also examine the question from a philosophical perspective. Perhaps readers will now wonder what philosophy has in common with economics - the answer is quite a bit. Even some of the most famous economists such as Adam Smith were philosophers before they became economists. Therefore it is more than justified if we also refer to philosophers to answer this question. Of course this does not mean that we can just think about the advantages of volunteering, and assert then without any proof that it yields happiness or other individual benefits. Rather, we must rely on scientific research. Meier and Stulzer for example, investigated empirically on the German Socio-Economic Panel (GSOEP) for the period between 1985 and 1999 whether individuals who volunteer are more satisfied with their life. They found that people who place more importance on extrinsic life goals relative to intrinsic life goals benefit less from volunteering and that volunteering influences happiness. Another result of their survey is that happy people are more likely to volunteer. (Meier and Stulzer, 2004)

Which financial payoffs one can obtain through charity work were examined by Day and Devlin. After different investigations they concluded that, on average, volunteers earn about 7 per cent higher incomes than non-volunteers, which is why volunteers often have more marketable skills and business contacts. (Day and Devlin, 1998)

One could continue for a long time listing investigations about volunteering and a positive correlation regarding happiness or life satisfaction. Examples of empirical findings show that volunteers are less prone to depression (Wilson and Musick, 1999) or that their physical health is stronger as they grow older (Stephan, 1991).

Each of the examples mentioned above suggests that volunteering is not only profitable for the acceptor but also for the donor, which proves that it is reasonable to get involved in this kind of work.

## Conclusion:

Whereas the first part of my essay has listed in detail how an individual can optimize their time distribution, the second part should show that there exists several reasons for volunteering.

As I have already mentioned, I am also active in voluntary work and consequently know that volunteering can often be stressful and time-consuming. Nonetheless it is worthwhile – because volunteering can be an enrichment in every respect. So one can collect new experiences, help others and expand their horizon. And, even if some happiness or frame of mind cannot be measured, Adam Smith made a valid point when he said: "How selfish soever man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him, though he derives nothing from it, except the pleasure of seeing it." (Smith, 1759)

## References:


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Stephan, P. (1991)*. Relationships Among Market Work, Work Aspirations and Volunteering: The Case of Retired Woman. Nonprofit and Voluntary Sector Quarterly 20(2).*

Smith, A. (1759) *The Theory of Moral Sentimens, Part I, London*

# Appendix:

**Derivation 1.1**

*Utility Function and additional conditions*

$$\max_{c,v} U(V, C)$$

*s.t.*

$$wL = PC$$

*s.t.*

$$T = V + L$$

*Transformation of the additional conditions*

$$wL = PC \Leftrightarrow L = PC/w$$

$$T = V + L \Leftrightarrow L = T - V$$

$$L = L \Leftrightarrow PC/w = T - V$$

$$0 = wT - wV - PC$$

*Lagrange-function*

$$L(V, C, \lambda) = U(V, C) + \lambda * (wT - wV - PC)$$

*F.O.C I* $\delta L/\delta V = \delta U/\delta V - w\lambda = 0$

*F.O.C I* $\delta L/\delta C = \delta U/\delta C - P\lambda = 0$

*F.O.C I* $\delta L/\delta \lambda = wT - wV - PC = 0$

*Solve for lambda*

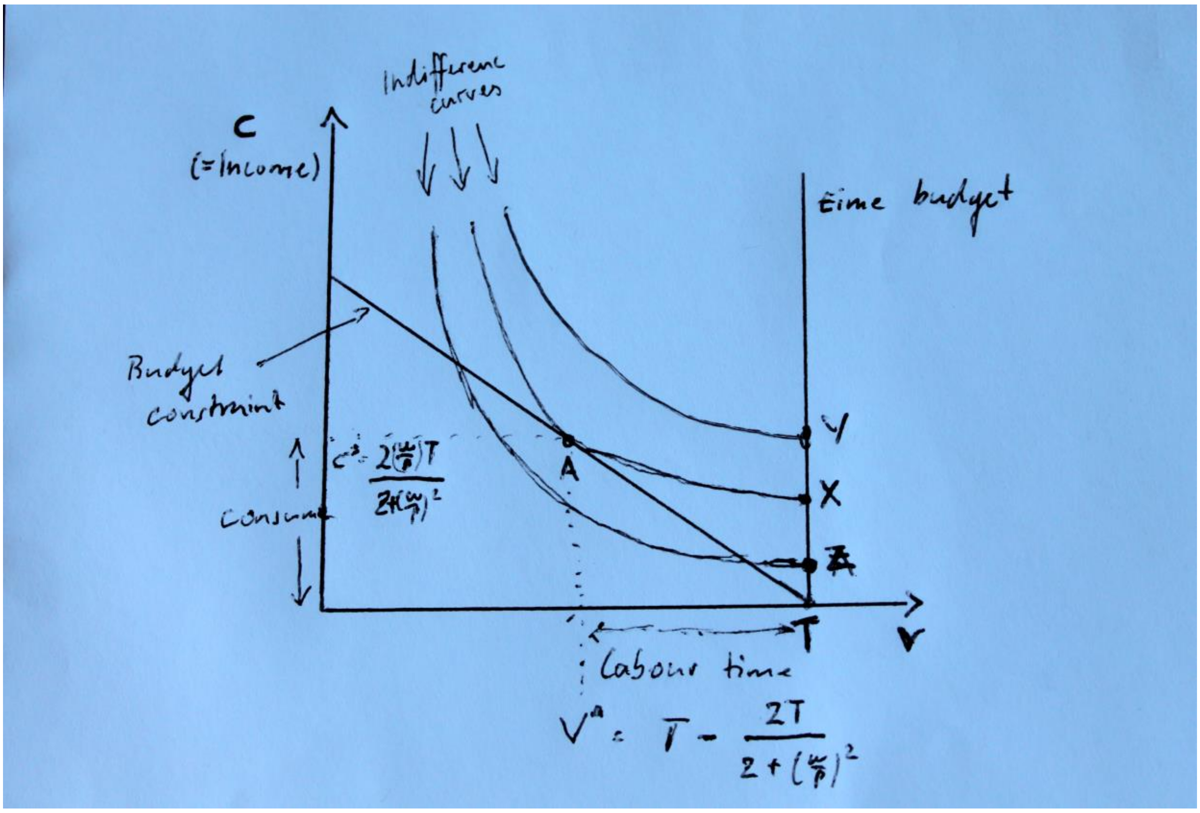
$$1/w * \delta U/\delta V = \lambda$$

$$1/P * \delta U/\delta C = \lambda$$

$$\lambda = \lambda$$

$$\delta U/\delta V / \delta U/\delta C = w/P$$

*Figure 1.2*




**Derivation 1.3**

***Derivation of the budget constraint***

***Time constraint*** $T = V + L \iff L = T - V$

***Consumption constraint*** $wL = PC$

***Insert time constraint in consumption constraint yields:***

$$w*(T - V) = PC$$

***Solve for C to get the budget constraint***

$$C = - w/P * V + wT/P$$

*Derivation 1.4*

*Cobb-Douglas function* $U(V, C) = V^{1/3} * C^{2/3}$

*F.O.C I* $\delta U/\delta V = 1/3 * V^{-2/3} * C^{2/3}$

*F.O.C I* $\delta U/\delta C = 2/3 * V^{1/3} * C^{-1/3}$

*Ratio of marginal utilities* $\delta U/\delta V / \delta U/\delta C$

$$=$$

$$1/3 * V^{-2/3} * C^{2/3} / 2/3 * V^{1/3} * C^{-1/3}$$

$$=$$

$$1/3 * V^{-2/3} * C^{2/3} * 3/2 * V^{-1/3} * C^{1/3}$$

$$=$$

$$1/2 * V^{-1} * C^{1}$$

$$=$$

$$C / 2V$$

*The optimum* $\delta U/\delta V / \delta U/\delta C = w/P$

$$C / 2V = w/P$$

$$V = (C * w/P) / 2$$

*Insert of $V = (C * w/P) / 2$ in budget restriction yields the optimal time spending for volunteering*

$$C = - w/P * [(C * w/P)/2] + wT/P$$

$$C = - [C * (w/P)^2]/2 + wT/P$$

$$C + [C * (w/P)^2]/2 = wT/P$$

$$2C/2 + [C * (w/P)^2]/2 = wT/P$$

$$\{C * [2 + (w/P)^2]\}/2 = wT/P$$

$$C^* = [2 * (w/P) * T] / [2 + (w/P)^2]$$

*Insert $C^*$ and solve for $V^*$*

$$[2 * (w/P) * T] / [2 + (w/P)^2] = -w/P * V + wT/P$$

$$w/P * V = - [2 * (w/P) * T] / [2 + (w/P)^2] + wT/P$$

$$V^* = T - \{2T / [2 + (w/P)^2]\}$$