Prof. Dr. Fritz Helmedag
Technische Universität Chemnitz
Fakultät für Wirtschaftswissenschaften
Lehrstuhl VWL II
D-09107 Chemnitz
Telefon: +49(0)371/531-34185,
E-Mail: f.helmedag@wirtschaft.tu-chemnitz.de,
Internet: www.tu-chemnitz.de/wirtschaft/vwl2/

Fair Wages as Just as Unemployment Benefits

Abstract

For a long time, the fair distribution of income has intensely been debated. Of course, it is easy to postulate a payment that corresponds with an employee's performance. The difficulty consists in the transformation of this vague hint into a clear instruction. Yet, minimum and average wages as well as unemployment benefits and social welfare can be ascertained with recourse to 'reasonable' proportions between the quantities. The suggested guidelines specify shares of the actual per capita net product and accord considerably well to empirical evidence.

JEL-Classification: D33, D63, J31

Fair Wages as Just as Unemployment Benefits

1 Income policy without truisms

The meaning of justice always was and still is one of the great topics of humanities. Again and again, distinguished scholars of philosophy, theology, jurisprudence, sociology, political science and economics were taken by this subject. In 1971, the publication of John Rawls' 'Theory of Justice' brought the characteristics of those actions into focus which comply with 'fairness'.[1] Recently, several authors gave new momentum to the issue.[2] However, general criteria for an appropriate division of national income are lacking. The present paper intends to provide reference points that mark a fair remuneration for those who are employed and those who are not.[3] Methodologically, this task is accomplished by elaborating plausible principles of proportionality. In order to do so, the considerations are carried out under Rawls' 'veil of ignorance': During the decision-making process the persons involved do not know whether they will be an employer, an employee or out of work in the future. Under such circumstances, mutually agreeable rules to cut the cake can be defined in theory. Thus, any deviation from these norms should be condemned as an infringement of *bonus mores* later on.

In the view of established economics and its model entrepreneurs, *every* positive wage rate appears to be too high eventually.[4] The consequence of this 'potato market theory of employment' has long been concisely ex-

---

[1] Cf. Rawls, J., *A Theory of Justice*, Harvard University Press 1971.

[2] Cf. e. g. Barbanel, J. B., *The Geometry of Efficient Fair Division*, Cambridge University Press 2005, Kolm, S.-Ch., *Macrojustice, The political economy of fairness*, Cambridge University Press 2005, Moulin, H., *Fair Division and Collective Welfare*, MIT Press 2003.

[3] This article bases on two previous German versions: Helmedag, F., Faire Löhne: Normen und Fakten, in: *Perspektiven der Wirtschaftspolitik*, Vol. 4 (2003), pp. 17-28 and Helmedag, F., Gerechte Löhne und Arbeitslosengelder, in: *Wirtschaftsdienst*, Vol. 85 (2005), pp. 402-404.

[4] Cf. Helmedag, F., Möglichkeiten und Grenzen eines Beschäftigungspaktes, in: *Jahrbücher für Nationalökonomie und Statistik*, Vol. 225 (2005), pp. 151-161.

pressed: "At a sufficiently low wage, a dismissed worker always finds immediately a new job."[5] From this angle, unemployment basically results from 'excessive' wage claims. However, this is an empty phrase as long as the question remains undecided what exactly constitutes an 'adequate' pay. Honest toil for a pittance as on a slave-galley to maximize labour input is surely not a convincing perspective for the majority of people. Therefore, it is necessary to put the issue of how to distribute national income on the agenda (once again).[6]

2 Suum cuique!

Let us start with a simple wage negotiation model. In his seminal paper on cooperative game theory, John Nash applied an objective function of which the maximum indicates an optimal result in many respects.[7] This approach has become a standard concept in labour market analysis.[8] With both parties being equally strong, the 'Nash product' reads:

$$N = (y - w)(w - z) \rightarrow Max! \qquad (1)$$

The first bracket on the right-hand side of equation (1) contains the employers' excess after signing the contract. Per period of time, the worker produces a certain net yield y and receives a (yet unknown) wage w. The residual ($y - w$) forms the per capita profit. If the worker is not hired, the entrepreneur cannot pocket an alternative pay-off. The situation is different for a

[5] Own translation of the citation in German: „Ein entlassener Arbeiter findet zu einem genügend niedrigen Lohnsatz immer sofort eine neue Stellung". Brunner, K., Eine Neuformulierung der Quantitätstheorie des Geldes, Die Theorie der relativen Preise, des Geldes, des Outputs und der Beschäftigung, in: *Kredit und Kapital*, Vol. 3 (1970), pp. 1-30, p. 26.

[6] Already in the first quarter of the 19th century, David Ricardo considered this question to be central for the discipline. Cf. the preface to Ricardo, D., *On the Principles of Political Economy and Taxation* (1817), in: The Works and Correspondence of David Ricardo, edited by Sraffa, P., Vol. 1, Cambridge University Press 1990. Incidentally, wage theory was an important branch of political economy in the past and is currently doomed to a shadow existence.

[7] Cf. Nash, J., The Bargaining Problem, in: *Econometrica*, Vol. 18 (1950), pp. 155-162.

[8] Cf. e. g. Layard, R., Nickell, S. and Jackman, R., *Unemployment*, Oxford University Press 1993, p. 100.

job searcher. Suppose that he or she is not entitled to receive unemployment benefits (what is called in German 'Arbeitslosengeld I'). Rather, the person is granted merely unemployment aid ('Arbeitslosengeld II') which coincides with income support or social welfare z in Germany since 2005. This payment forms the 'fall-back position' for long-term unemployed persons. Maximizing equation (1) with respect to wages leads to:

$$\frac{dN}{dw} = -2w + y + z = 0 \tag{2}$$

From this condition, the Nash wage (w^*) is calculated:

$$w^* = \frac{y+z}{2} \tag{3}$$

During the time unemployment benefits are paid, they amount to a certain share of the dismissed person's former income. For the sake of fairness, the sought-after percentage s should equal the ratio between a minimum compensation a and the wage w^*; both are still to be determined:

$$s = \frac{a}{w^*} \tag{4}$$

Therefore, the arithmetic mean of unemployment benefits tallies with the minimum wage. The latter can be considered as the remuneration just offering enough incentives to work. Moreover, it is postulated that the same proportion s also holds between the minimum wage and social welfare. Hence, the 'wage-distance rule' according to which income support should be sufficiently lower than the minimum wage emerges as:

$$z = sa \tag{5}$$

Finally, it seems justified to propose the identity of the 'internal' and the 'external' rate of return on labour:

$$\frac{w^* - a}{a} = \frac{y - w^*}{w^*} \tag{6}$$

The left-hand side of condition (6) shows the employees' 'own exploitation'. The nominator comprises the difference between the average wage w^*

and the minimum wage *a*. The latter appears in the denominator again. Thus, this quotient can be interpreted as the workers' surplus over the 're-production costs of labour' in relation to this 'input'. The derived expression represents the relative profitability to do a job, so to speak. On the other hand, this fraction should coincide with the entrepreneurs' profit rate on the right-hand side of equation (6). This is the ratio between the per capita profit and the respective expenditures on personnel.

Now, we are able to identify the four unknowns: the fair average remuneration w^*, the social minimum earnings a, the percentage s specifying the unemployment benefits, and the amount of social welfare z.

3 Justified wage claims

From the desired congruence of the internal and the external "yield" of labour in (6) follows a relation between the mean and the lowest pay:

$$w = \sqrt{ay} \tag{7}$$

Using this expression[9] in (4) produces the unemployment benefits ratio:

$$s = \frac{a}{\sqrt{ay}} \tag{8}$$

Social welfare amounts to:

$$z = \frac{a^2}{\sqrt{ay}} \tag{9}$$

From (3), (7) and (9) we get:

[9] Equation (7) corresponds with Johann Heinrich von Thünen's famous wage-formula which he put forth in the second part of his book „Der isolierte Staat in Beziehung auf Landwirtschaft und Nationalökonomie" published in 1850. By construction, the remuneration according to the geometrical mean of the subsistence wage and the return on labour reconciles the interests of workers and landowners.

$$w^* = \sqrt{ay} = \frac{y + \frac{a^2}{\sqrt{ay}}}{2} \tag{10}$$

Hence, the even-handed minimum compensation can be reckoned:

$$a = \frac{1}{2}\left(3 - \sqrt{5}\right)y \approx 0.382\,y \tag{11}$$

Combining (11) with (7) gives the fair wage rate:

$$w^* = \frac{1}{2}\left(\sqrt{5} - 1\right)y \approx 0.618\,y \tag{12}$$

This result can easily be confronted with data. The fraction of the pay over net revenue constitutes nominal unit labour costs; a parameter looming large in public discussions. The following table shows the empirical values for Germany based on working hours and employees respectively. The derived guideline of 61.8 % allows to ascertain a “fairness ratio” also presented in the chart.

Remarkably, reality scarcely deviates from the maxim: Over the years, the average fairness ratios based on working hours is 101.3 %, whereas the same measure based on the number of employees comes up to 95.5 %. Consequently, earned income appears *not* too high by and large.

Nominal unit labour costs: facts and norms

Year	Working hours		Employed persons	
	Nominal unit labour costs	Fairness ratio (Fair = 100)	Nominal unit labour costs	Fairness ratio (Fair = 100)
	In percent			
1991	63,5	102,7	60,6	98,0
1992	64,3	104,0	61,4	99,4
1993	64,3	104,1	61,3	99,2
1994	63,0	101,9	60,0	97,0
1995	63,2	102,2	60,0	97,0
1996	63,1	102,1	59,6	96,5
1997	62,3	100,9	58,8	95,2
1998	62,1	100,5	58,6	94,8
1999	62,2	100,6	58,6	94,9
2000	63,1	102,1	59,4	96,0
2001	62,7	101,5	59,1	95,6
2002	62,2	100,6	58,7	95,0
2003	61,9	100,2	58,5	94,6
2004	60,9	98,6	57,5	93,0
2005	60,2	97,5	56,7	91,7
Source:	Own calculations based on the national accounts 2005 of the German federal statistical bureau.			

4 Appropriate unemployment support

After having defined the concept of fair wages, the proper level of payments to jobless persons is of interest from a socio-political point of view. Substituting the postulated lower limit of compensation in equation (8) by (11) entails the rate of fair unemployment benefits:

$$s = \frac{\frac{1}{2}\left(3-\sqrt{5}\right)y}{\sqrt{\frac{1}{2}\left(3-\sqrt{5}\right)y^2}} \approx 0.618 \qquad (13)$$

The derived percentage is close to the actual one. At present, an unemployed person without children receives approximately 60 % of a standardized net income in Germany.[10] Finally, the social welfare or unemployment aid arises from equation (9):

$$z = \frac{\left(\frac{1}{2}\left(3-\sqrt{5}\right)y\right)^2}{\sqrt{\frac{1}{2}\left(3-\sqrt{5}\right)y^2}} \approx 0.236y \tag{14}$$

This transfer is granted independently of the previous income. It coincides with the difference between average and minimum fair pay:

$$z = w^* - a \tag{15}$$

As trained aesthetes will surely have noticed, the ratios laid bare so far amazingly enough fulfil the golden section.[11] Such proportions are often used in the fine arts since they create beauty in the eye of the beholder.

So far, the net product per capita y has been regarded to be fixed. Since social welfare is the same throughout the nation, it seems reasonable to use the macroeconomic productivity as the reference point. An estimation of (hypothetical) minimal wages gives 1075 Euro per month for Germany in 2003. At the same time in the U. K. e. g., 1083 Euro were stipulated. German social welfare would have amounted to 664 Euro, which corresponds roughly to the then paid support.[12] In contrast, for wage negotiations on the firm or industry level, the respective net revenue should be considered in order to determine the minimum and average pay.

Anyway, it is possible to contribute substantially to the discussion on financial aid and distribution by presenting exact figures that are not more or

---

[10] Besides, the proposed relation between lowest and mean wages differs only slightly from the 60 % recommended by Article 4, paragraph 1 (“Adequate remuneration”) of the European Social Charter.

[11] A point divides a line (100 %) in a shorter (38.2 %) and a longer part (61.8 %) so that the relation of the latter to the whole length is the same as the shorter section to the longer one. Cf. in more detail Atalay, B., *Math and the Mona Lisa, The Art and Science of Leonardo da Vinci*, New York: HarperCollins 2006.

[12] Cf. Helmedag, F., Gerechte . . . , op. cit., p. 404.

less arbitrarily chosen. Rather, they stem from a system of quantitative relations contrived to reconcile diverging interests.

If the suggested principles are adopted, there is hope that wages, unemployment benefits and welfare can be agreed upon impartially in the future. This would not only promote social justice, but also mitigate the material and immaterial costs of the struggle for shares in national income.

References

Atalay, B., *Math and the Mona Lisa, The Art and Science of Leonardo da Vinci*, New York: HarperCollins 2006.

Barbanel, J. B., *The Geometry of Efficient Fair Division*, Cambridge University Press 2005.

Brunner, K., Eine Neuformulierung der Quantitätstheorie des Geldes, Die Theorie der relativen Preise, des Geldes, des Outputs und der Beschäftigung, in: *Kredit und Kapital*, Vol. 3 (1970), pp. 1-30.

Helmedag, F., Faire Löhne: Normen und Fakten, in: *Perspektiven der Wirtschaftspolitik*, Vol. 4 (2003), pp. 17-28.

Helmedag, F., Möglichkeiten und Grenzen eines Beschäftigungspaktes, in: *Jahrbücher für Nationalökonomie und Statistik*, Vol. 225 (2005), p. 151-161.

Helmedag, F., Gerechte Löhne und Arbeitslosengelder, in: *Wirtschaftsdienst*, Vol. 85 (2005), pp. 402-404.

Kolm, S.-Ch., *Macrojustice, The political economy of fairness*, Cambridge University Press 2005.

Layard, R., Nickell, S. and Jackman, R., *Unemployment*, Oxford University Press 1993.

Moulin, H., *Fair Division and Collective Welfare*, MIT Press 2003.

Nash, J., The Bargaining Problem, in: *Econometrica*, Vol. 18 (1950), pp. 155-162.

Rawls, J., *A Theory of Justice*, Harvard University Press 1971.

Ricardo, D., *On the Principles of Political Economy and Taxation* (1817), in: The Works and Correspondence of David Ricardo, edited by Sraffa, P., Vol. 1, Cambridge University Press 1990.