Collected Ideas and Possibilities concerning Interest Free Wage Linkage

Here collected together, are various ideas and possibilities concerning interest free wage linkage to the average wage. Many of the ideas presented here can be found in articles of the author [1, 2, 3]. Thanks to everyone with whom I have discussed these ideas. As there are many, I will not single out any one by name, but sincere thanks to all.

Guidelines

1) Accurate and stable formulae should be used for measurement of prices, wages, currency, etc. "Stable" means that prices (or wages), which do not result in a significant quantity of sales (an insignificant number of people with such a wage), should have little or no effect on the value of the formula. These matters are particularly important when debts are linked to an index formula. The issue of accuracy is both a scientific and Halachic requirement. Stability of an index formula is important for economic stability.

2) An index should be based on data of a 12 month period. For example, an index published in May 2008, should be based on data for the previous 12 months. This technique avoids problems of seasonality and will contribute to the stability of the index.

3) In developing a proposal, an ideal situation where accurate data on everything is freely available should be first considered. No compromises should be made and "heterim" should not be used. A "lechatehila" proposal should be developed.

Expressing the value of money in terms of time (and vice versa)

This concept has various uses. In the body of this article it is the basis of linkage to the average wage. In the appendix and in [4, 5], it has other uses.

Any sum of money can be expressed in terms of time, by dividing the sum of money by an average wage. For example, if your bank balance on a certain date is 1800 shekel and the average wage on that date is 1200 shekel a month, then the balance can be expressed as 1800/1200=1.5 average monthly wage, that is the value of 1.5 months of average labour. In this way, prices can also be fixed in terms of the average wage.

(Similarly any length of time can be expressed in terms of money, by multiplying the length of time by an average wage.)

Debt Linkage

Regarding full linkage, the debt and debt repayments would rise and fall in proportion to some index, e.g. prices, wages, foreign currency, etc. This means that the new amount equals the original amount multiplied by the ratio of the new index value to the original index value.

If the linkage is partial, for example 99% linkage, then the
values calculated using full linkage would be multiplied by 99/100.

The main possibilities

The unit index [1] is used for measuring wages which seems a good choice. However, the published average monthly wage means the average gross wage per employee post of those employed. Should the nett wage be used? Should those unemployed be included in this average with an income of zero or perhaps other incomes such as unemployment benefit be taken into account? Is it more correct to use the average hourly wage calculated using the formula total gross salary paid nationally divided by total hours worked nationally? Is it more correct to use the average hourly wage calculated using the formula: total nett salary received nationally divided by total hours worked nationally? Should average monthly income be used? Should average annual income be used? Etc. It seems to us that linkage to average nett income is best in agreement with the commandment of "..." and that the unemployed should be included in the calculation, and income from all sources should be taken into account. It also seems to us that linkage to the published average wage is an improvement over linkage to prices, but the unemployed should be included in the calculation.

Using geometric means

The published average monthly wage means the average gross wage per employee post of those employed. For the purpose of linkage, we suggest using a geometric mean $G_i$ of this average wage over months i-11 to i (a twelve month period). We also suggest that the unemployed should be included in the calculation of the average wage as having a zero wage. (At present, the unemployed are left out of the calculation altogether.)

$$G_i = \sqrt[12]{\text{Product of average wage in months i-11 to i}}$$

Since indices are multiplied and divided for linkage purposes, the geometric mean is preferable to the arithmetic mean.

In view of the use of an average of a twelve month period, $G_i$ will fluctuate far less than the average wage itself.

After canceling common terms, the ratio of the above geometric means for months i and i-1 is:

$$\frac{G_i}{G_{i-1}} = \sqrt[12]{\frac{\text{Average wage in month i}}{\text{Average wage in month i-12}}}$$

This means that the monthly change in $G_i$ is the twelfth root of the annual change of the average wage.

It is also possible to use a weighted geometric mean $G_i$ of the average wage in months i-11 to i. The weight of a month is the number of its employee posts. Let $E_i$ be the total number of employee posts in months i-11 to i. In this case...
Reciprocal work agreements and loans

Firstly, a clarification. Regarding linkage we earlier defined that the debt and debt repayments would rise and fall in proportion to some index, e.g. prices, wages, foreign currency, etc. Linkage in equal measure to both rises and falls is important as this avoids the prohibition of interest. Seasonal and regional fluctuations are likely to be lessened in this way, thereby neutralizing and lowering the risk. For example, if the borrower worked for one month in the field for the lender in summer when it is dry and pleasant, and in return the borrower worked for one month in the field for the lender in winter when it is cold and raining, this would violate interest laws, as work in field in cold rainy conditions is harder than work in field in warm pleasant conditions. Furthermore, we see from Table 4 in [1], that the price/wage ratio is generally lower in summer than in winter, so this objection to lending one average wage in any month is lessened.

So for one average wage of each of the months of the year can be repaid in any month, and one average wage of each of the months of the year can be lent in any month. This is because one average wage of each of the months of the year is being lent and one average wage of each of the months of the year is being repaid. This is achieved when the lender in summer lends one average wage of each of the months of the year, and the borrower in summer when it is dry and pleasant, and in return the borrower in summer lends one average wage of each of the months of the year, and the borrower in the field during the cold rainy season repays one average wage of each of the months of the year. This in addition to the previous arrangement.

A) The lender can give a loan of one average wage per month over one year and the borrower returns the loan paying one fifth of an average wage per month over five years. This is because one average wage of each of the months of the year is being lent and one average wage of each of the months of the year is being repaid.

More generally, the loan can be provided in monthly instalments over one or more full years, and repaid in monthly instalments over one or more full years. This arrangement ensures that payments are made in terms of the average value of different kinds of labour of the whole country over one or more full years. Seasonal and regional fluctuations are thereby neutralized and the risk is lowered.

B) An average wage should be based on data of the previous twelve months from its month of publication. So if average wages over twelve month periods are used for linkage, then again one average wage of each of the months of the year can be lent in any month, and one average wage of each of the months of the year can be repaid in any month.

Here there is no need to give or collect the loan in instalments. Here too it is ensured that payments are made in terms of the average value of different kinds of labour of the whole country over one or more full years, and repaid in monthly instalments over one or more full years. This arrangement ensures that payments are made in terms of the average value of different kinds of labour of the whole country over one or more full years. Therefore the risk is lowered.

Better solutions to this problem

A) An average wage should be based on data of the previous twelve months from its month of publication. So if average wages over twelve month periods are used for linkage, then again one average wage of each of the months of the year can be lent in any month, and one average wage of each of the months of the year can be repaid in any month.

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whole country over twelve month periods. Here too, seasonal and regional fluctuations are neutralized and the risk is lowered.

**Combined solutions to this problem**

C) It is possible to combine (B) with (A). For example the loan may be given in one payment using a twelve month average wage as in (B) and collected in twelve monthly payments over a year using a monthly average wage as in (A).

D) It is also possible to combine (A) with (B). For example the loan may be given in twelve monthly payments over a year using a monthly average wage as in (A) and collected in one payment using the twelve month average wage as in (B).

The use of a twelve month period

This is an important technique used for dealing with the Halachic difficulty discussed in (A) above. In addition this technique reduces the risk, avoids problems of seasonality, and contributes to stability of an average wage, (and similarly for a price index, a foreign currency rate etc.).

**A PRINCIPLE:** Personal loans and mortgages should at most be fully linked to the average wage or income and should bear no interest.

1) This is how this principle can be implemented in terms of interest:

Annual prime rate = rate of increase of the average wage over the past twelve months (year), even if this rate is negative. All other rates are to be below this level.

Deposit rate = Annual prime rate - \(d\).
Lending rate = Annual prime rate - \(l\).

Here \(d > l \geq 0\) and this ensures that Lending rate > Deposit rate.

This also ensures that the return from lending and borrowing never exceed what would be obtained by interest free full linkage to the average wage.

2) This is how this principle can be implemented in terms of linkage:

New Average wage

New value = \(\frac{\text{Original value}}{\text{Original Average wage}} \times \text{New Average wage}\)

Deposit linkage value = \(\frac{(D/100) \times \text{New value}}{\text{New Average wage}}\).
Lending linkage value = \(\frac{(L/100) \times \text{New value}}{\text{New Average wage}}\).

Here \(100 \geq L > D > 0\) and this ensures that Lending linkage value > Deposit linkage value.

This also ensures that the return from lending and borrowing never exceed what would be obtained by interest free full linkage to the average wage.
Using the wage of the borrower

This suggestion is appropriate when lenders and borrowers are truthful, i.e. when the prophecy of Isaiah "And your people are all righteous ...." is fulfilled. It does not seem possible to use this method today when lending to the public at large. It may be possible to use it for loans in a family or in a small community, where everybody knows everybody.

We will describe three methods. In all the methods the repayments are a percentage of the actual wage of the borrower. These methods differ regarding the linkage of the debt.

1) Linkage of debt to the wage of the borrower - Repayments as a percentage of the actual wage of the borrower

The debt and its repayments rise and fall in proportion to the actual wage of the borrower, and the number of repayments of the loan is fixed at the time of giving the loan. For example, the lender gives a loan of 10% of the borrowers wage in one payment. The borrower returns two instalments of 5% of his wage to the lender - be it a profit or a loss to the lender. (Detailed Examples are given below.)

A question: What return can a bank expect when lending monies to the public at large with this method?

The bank makes a return according to the increase of the total wage of the public at large or according to the increase of the average wage of the public at large. In Israel, the average wage increases by about 1.5% a year above the price index. Therefore a bank can expect a return of about 1.5% a year above the price index.

If the borrower's wage decreases he then pays less and if his wage increases he pays more. With this method, the bank should make a profit from all its borrowers and not from each and every individual borrower. It may be that such a method will reduce poverty and the gap between rich and poor.

Here are two detailed examples.

We assume that:
1) The repayments and the debt rise and fall in proportion to the borrowers wage.
2) The borrower's wage is 10000 sheqels at the time the loan is given. The loan is 10% of the wage, i.e. 1000 sheqels.
3) The borrower repays the debt in 2 instalments of 5% of his wage at the time of repayment.

Here there may be a profit or loss.

Example 1:
The borrower's wage is 10000 sheqels at the time of the first instalment and 20000 sheqels at the time of the second instalment. Then he repays 250 sheqels (5% of 5000) for the first instalment and 1000 sheqels for the second instalment. Here the lender receives 1250 sheqels back and makes a profit.
Example 1:
The borrower's wage is 5000 sheqels at the time of the first instalment and 5000 sheqels at the time of the second instalment. Then he repays 250 sheqels for the first instalment and 250 sheqels for the second instalment. Here the lender receives 500 sheqels back and makes a loss.

Note: With this method, a problem occurs if the borrower's wage is zero at the time of giving the loan as the debt becomes undefined (division by zero error). This problem does not occur with the repayments, because they were defined as a percentage of the actual wage of the borrower.

2) No linkage of the debt - Repayments as a percentage of the actual wage of the borrower

The following examples will clarify what we mean. In all the examples we assume the following.
1) There is no interest.
2) The lender lends 1000 sheqels to the borrower without linkage of the debt.
3) The borrower repays the debt in approximately 2 instalments of 500 sheqels linked to his wage. If the debt is not cleared in 2 instalments there will be an additional instalment to clear the debt.
4) The borrower's wage is 10000 sheqels at the time of the first instalment and 20000 sheqels at the time of the second instalment.

Example 2:
The borrower's wage is 5000 sheqels at the time of the first instalment and 5000 sheqels at the time of the second instalment. Then he repays 250 sheqels for the first instalment and 250 sheqels for the second instalment. Here the lender receives 500 sheqels back and makes a loss.

Example 3:
The borrower's wage is 5000 sheqels at the time of the first instalment and 5000 sheqels at the time of the second instalment. Then he repays 250 sheqels for the first instalment and 250 sheqels for the second instalment and to clear the debt, an additional instalment of 500 sheqels is paid. Again he borrows 1000 sheqels and returns 1000 sheqels but here there is an additional repayment to clear the debt.
3) Linkage of the debt to the average wage - Repayments as a percentage of the actual wage of the borrower

Similarly, it is possible to link the debt to the average wage and define the repayments as a percentage of the actual wage of the borrower. Since debt and repayments vary in different ways, this means that the repayment period can only be known approximately. An example of this method will not be given.

A Comment regarding these three possibilities

Since the repayments vary in proportion to the borrower’s actual wage, this seems to be in the spirit of the biblical command “...thou shalt not be to him as a creditor...”.

Appendix – Preliminary ideas

Inflation as a tax and unlinked interest free loans

Inflation can be viewed as a tax, which is easy to collect. The author has heard that during the period of high inflation in Israel, more than 50% of government funding was raised through inflation.

An undesirable side effect of using inflation as a tax is the price instability it causes. However as explained in the beginning of this article, the average wage can be used as a meaningful unit for pricing purposes and its use in this role may cause prices to be stable relative to the average wage.

If interest or linkage were allowed, this would provide a way to avoid paying the tax via inflation. There is no interest and no linkage and if for example 100 shekels are lent, then 100 shekels would be returned.

Though pricing in terms of the average wage is permitted, linkage of any kind is not permitted. So if a used car is priced at 2 average wages and the average wage is 10000 shekels then 20000 shekels would be paid, whether in one instalment or several instalments, as agreed by the parties. Also there may be an agreement to buy half the car for one average wage and the other half of the car for one average wage in six months time, in which case there would be a period of six months of joint ownership and use of the car.

Can inflation as a tax replace income tax, national insurance contributions, value added tax? Should pricing in terms of the average wage be permitted or is this another way of avoiding paying the tax by inflation? Should pricing only be in local currency (shekels)? What inflation rate would cover government funding? Is this a more efficient method of taxation give the resources saved in tax collection both from the point of view of government and businesses? Which policy is needed for adjusting wages and prices? What are the costs, benefits, pitfalls and problems of these ideas?

I do not have answers to these questions.
Assessing Certain Life or Death Situations

It is with trepidation that I write on this topic. I am "thinking aloud" and am happy to receive comments and criticisms.

Expressing the value of money in terms of time may make matters clearer when assessing certain life or death situations.

For example, suppose that at a cost of 120 average monthly wages (10 average yearly wages), it is estimated that a seriously ill person will live for 12 months (1 year). Then by treating such a person, perhaps one person may be deprived of his livelihood for 10 years or 10 people of their livelihoods for one year. As a consequence, the next of kin of this person are likely to suffer.

Though the choice may seem clear, it is not a simple choice. All relevant factors should to be taken into account and not just this piece of information. Also, besides having heads, we also have hearts, and perhaps we should listen to both when making such decisions.

Further Thought is needed regarding how money should be expressed in terms of time for this purpose. Should a national average wage be used or should an average wage of the sick person be used for expressing money in terms of time? Should a nett or gross wage be used? Etc.

In my opinion, a nett wage should be used with both the national average wage and an average wage of the sick person. This would give an indication of the impact of such a choice for an average wage earner and for the sick person himself and his family.

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