

CHAPTER 2, "Labor and its Wages," FROM THE BOOK:

The Science of Economics

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1. Labor as a factor of production

This and the following two chapters will analyze the three factors of production: labor, land, and capital goods. Some people prefer the listing and analysis to be in the order of land, labor, and capital, for the reason that land appeared prior to human beings or is logically prior. But to understand the economics of land, we must first delve into that of labor, since the rent of land depends on the productivity of labor, hence labor is economically prior to land and capital goods.

Henry George (1879, p. 32) provided a concise yet comprehensive definition of labor and wages:

"the term labor includes all human exertion in the production of wealth, and wages, being that part of the produce which goes to labor, includes all reward for such exertion."

This exertion includes both mental and physical effort, and it encompasses the efforts of entrepreneurs, managers, and the self-employed. (The Austrian economist Carl Menger (1871, p. 172) noted that "Entrepreneurial activity must definitely be counted as a category of labor services.") "Wages" includes any return or yield to labor, whether it be a salary, commission, or the profit of the self-employed. Part of the value of crops grown by a farmer on his or her own property or the gold panned by a prospector are wages.

To be meaningful, the concept of labor must be distinct from capital goods and land.

George (p. 39) noted that people often speak of a worker's skill and knowledge as being "capital"; economists call these "human capital." But this meaning of "capital," he noted, is "a metaphorical use of language," and not to be confused with the use of "capital" as a resource or factor of production. A human being is different from a machine or a horse; persons are the subjects, not objects, of social science. One may consider all inputs into a productive process as "capital," but then one would still distinguish among the meaningful categories of such capital, one of which would be labor, distinct from natural resources and capital goods.

2. Do wages come from capital?

By contributing to the production of wealth, labor creates its own income. In the 19th century, political economists such as John Stuart Mill believed otherwise. Mill, in his book *Principles of Political Economy*, developed what was known as the "wages fund" theory. This was an attempt to account for the source of wages and the principle by which they were distributed.

In its crudest form, the theory states that there exists a fund of financial capital out of which wages are paid. The formula for this theory is

$$W = K/L.$$

Wages (W) are derived from the quantity of circulating capital (K) divided by the size of the labouring population (L).

According to this theory, if the population of the labour force rose, wages would drop as more workers competed against each other for a supply of fixed capital.

Population growth rather than institutional factors are thus portrayed as the cause of low wages and poverty. Also, the theory that wages are derived from the previous amount of capital implied that industry or employment is limited by that capital.

Not surprisingly, economists no longer subscribe to this theory. One of the first to refute it was Henry George (1879).

He showed that labor creates its own wages from its contribution to production. When workers are paid in advance of their labor, this is really an implicit loan paid back by the value of the labor (George, p. 57).

Yet, despite the inadequacies of the theory, the assumption on which it is based - that wages are drawn from some supply of capital - is still implicit in public debate. It seems to apply when labor struggles with the owners of companies for higher wages and benefits, but this contest is actually a game in which labor union leaders try to obtain wages greater than their marginal product, and the company managers or owners try to prevent this, or, in some cases, pay them less than their product. As is discussed later, this contest is largely due to taxes and other government interventions which make labor expensive to employers while reducing the wages of employees.

Psychologically, the erroneous idea that wages come from capital has had ruinous effects: workers have been led to feel overly dependent on the capitalist, who is given the whip-hand over labour. The fact that the dependency of the worker and the control of the capitalist is ultimately linked to the present tax systems is unrecognized by most.

3. The determination of the wage level

But how does the wage level get established in the first place. And how does one account for poverty? As Henry George (p. 205) pointed out, a free man would not agree to work for another for less than he could secure by working for himself. So wages are determined by what one could earn from self-employment elsewhere. But where?

A) Wages from the product of labor

The determination of the wages of different types of labor are the result of the supply and demand for that type and quality of labor. In a pure market economy, wages ultimately reflect the value put on a worker's product by consumers: if consumers put a low value on his product then his wages will be low; if it puts no value on them, then his wages will be nil, and he will have to

switch to producing a product other people want. As George (p. 77) put it, "The demand for consumption determines the direction in which labor will be expended in production."

Wages vary among different occupations because what some workers have to offer is valued more highly than what others have to offer. In consideration of one particular kind of labor, if there exists a shortage of labor then through the action of supply and demand wages for that labor will tend to rise. Conversely, where a particular labor is in surplus, wages for that labor will be reduced. The laws of supply and demand determine the relative wages among different types of labor. But this still does not tell us what determines the wage level in an economy. There is a tendency for wages in an area to be linked together, so that one can speak of wages being generally high in Japan and low in India. Barbers in the United States have had a higher wage, even relative to local prices, than those in Mexico or Latvia, although their quality of work is similar.

George (pp. 26-7) recognized the "fundamental truth" that the basic principles of economics evident in a simpler, primitive, society are still in effect in a more complex, more developed world. We can discover the principles of wages by first analyzing a primal economy. Suppose there is a village that gets its food from hunting and gathering, and that there is more than enough land and game to support the village. The land is owned by the village in common, and since land is abundant, there is no rental value. Suppose also that the village is really primal, so that they don't have any capital goods - no tools, like baskets or spears.

If the villagers go naked into the bush and gather nuts and berries with their bare hands, the only resources are land and labor. Here we see an economy in its most fundamental form: a person "endeavoring to obtain from nature by the exertion of his powers the satisfaction of his desires" (George, p. 27).

Since there is no rent, the fruit they gather is all wages.

Leaving out capital goods for now, what the naked hunters get from the forest, catching animals with their hands, is also wages. It is clear here that the hourly wage of the hunter/gatherer is equal to the produce that one can obtain from an hour's labor. Also clear is the principle that production precedes consumption.

When a laborer receives his wages in money instead of goods, the principle is the same. A worker "really receives in return for the addition his labor has made to the general stock of wealth, a draft upon that general stock..." (p. 29). Thus, money wages too are not an advance but only a claim on the amount of value one's labor has added to. George notes, further, that all workers contribute to the production of all wealth. For example, the person who repairs fish nets helps catch the fish as much as the ones who go out into the sea. But the one who made the boat also contributed to the catch. And so did the one who made the wood and steel for the boat. Extending this to its logical conclusion, everyone who labors helped catch those fish. You as a worker help produce bread and steel by demanding these products in exchange for the goods you helped to make as well as by contributing ultimately to the goods that the bread maker and steel maker need. As George (p. 77) put it, "in aiding in the production of what other producers want,

he is directing other labor to the production of the things he wants - in effect, producing them himself."

If we then add tools and buildings and other capital goods, labor is able to obtain more product, but again, the portion earned by labor in general will be its marginal (extra) contribution to the product. If land rent is zero, then since capital goods are produced by labor, both the tool maker and consumer-goods maker obtain their wages from their product. In practice, individual workers might get paid more or less than the economic value of their product due to personal biases of bosses, imperfect knowledge, inadequate or superior negotiating skills, or luck, but the general tendency in a pure market economy is for wages to equal the marginal product that labor provides.

Now, perhaps because the forest is destroyed, the society turns to farming. Each family gets a plot that it farms. Suppose it can grow 10 bushels of corn per unit of land per some period of time. They have as much land as they want of that quality, so rent is still zero. Again leaving capital goods aside, the 10 bushels grown by a farmer is all wages.

Clearly, wages are drawn from the goods it produces, and in any particular area, the amount and value of the goods that labor can produce determines the wage.

The fact that some goods are produced over a long period of time does not change the principle. As George (pp. 50-51) notes, if a shoemaker starts with leather and works it up into a pair of shoes, the labor has gradually added more and more value to the original capital good, the leather. Hence the wage comes from the value added rather than from the original capital. As George (p. 56) put it, "Production is always the mother of wages."

B) The extensive margin

Suppose now that the most productive land, where farmers can grow 10 bushels, is all taken up. Farmers will now cultivate the next best area, which we can consider to be 9 bushel land. Wages at the 9-bushel land is 9. What, then are wages now in the 10-bushel land? If someone offers a wage of 9.5, all the farmers in the 9-bushel land will come running to apply. Someone who wants to hire labor only needs to pay 9 bushels. If he offers any less, no one applies, since they can get 9 by working for themselves.

If someone owns a farm on the 10-bushel land and hires a worker instead of working on it himself, that extra bushel produced after paying 9 to the employee is therefore not wages, but goes to the owner as rent. So wages in all land is equalized, due to competition among the workers, and any extra product goes to the owners of the lands as rent.

The best available land that can be had for free is called the "extensive" margin of production. It is called "extensive" because people keep extending or moving it out to lands of ever lesser quality as the better land gets taken up.

The wage level is determined at the extensive margin, where the best free land is available. This boundary is also called the margin of cultivation, or more generally, for lands of all uses, **the margin of production**.

It is only when the margin is pushed further and further away and people are located on worse and worse land that the base rate of wages will fall. As George (p. 206) stated, "the wages which an employer must pay will be measured by the lowest point of natural productiveness to which production extends, and wages will rise or fall as this point rises or falls." If people are pushed to production on the land on which one can barely survive, then wages will be at a subsistence level.

In Great Britain, at the time when people set off to colonise Australia, wages were low. With labor competing for limited opportunities and a no free good land available, employers could afford to offer low wages. However, in Australia, New Zealand, and America, the situation was reversed. Land taken from the aboriginal inhabitants was available to European immigrants, and it had a much higher yield than the margin in Europe. Therefore, wages for other occupations had to be high to keep employees.

Suppose in some island all the land gets taken up. There is no more free land. The margin, however, is still there, if not for agriculture, then for something else.

- One can go to the sea and catch fish in waters where one does not have to pay rent.
- In towns, one can add an extra story or build a two-story instead of one-story building; the margin would then be vertical space, where the top stories of buildings are located, since another story can be built without paying any more for land.
- There is almost always some type of land, whether air, water, or surface soil, that is available.

If not, if in some location all lands are taken up and claimed, then there will still be some internal or "intensive" margin of labor, as discussed below.

If we now switch from a one-crop economy to many crops, different products, we see that labor can be used to produce one or the other. The value of the labor, its wages, will be determined by the values that the customers and consumers of the crops place on those products. If one person grows sour apples and few people want them, then his wage will be low. If there is a high demand for the good, the wage, over the time of production, will be high.

Workers will then tend to move from low-paid to higher-paid products, if they can. If workers are growing mangos and lemons, and one mango is trading for one papaya, but it takes twice as much work to grow the papaya as the mango, the mango growers will have a wage twice that of the papaya growers. If some workers are willing to switch from one crop to another, wages will tend to equalize among the crops or, more generally, among products, resulting in some overall wage level. More mangos will be produced and fewer papayas, reducing the relative price of mangos until one papaya trades for two mangos.

Hence, the principle remains the same in complex production, where we have many products and industries. The "law of wages," as Henry George (p. 213) called it, is that "Wages depend upon the margin of production." More generally, the wage level is determined by the margin of production, that boundary where the best land can be obtained free of extra rent, or, if all land is taken, the intensive margin where the next worker can get the highest wage without having to pay extra rent.

C) The marginal product of labor

What happens if one of the farm owners that has hired a worker wishes to hire a second worker? The second one is also paid the same wage as people can get by working on their own farms, but is the extra product of this worker the same? We now turn to the interaction between wages and the productivity of workers on the same lot of land, or in the same factory or enterprise.

The "marginal product of labor" is the increase in total output achieved by hiring one more laborer. If by raising the work force from 50 to 51 a firm raises total output from 1000 to 1010 units, then the marginal product of labor is 10. The "value of the marginal product" is the physical marginal product (the extra goods produced) times the price of the product. Suppose we have a farm of 100 acres (40 hectares). One farmer by himself might be able to grow 100 bushels of corn during a certain time. If a second farmer is hired, the total product might grow to 240. The marginal product of the second farmer is 140, since the two can do some things that the first could not by himself. A third farmer might raise total product to 350. He adds 110 to product, less than the second, since there is less marginal benefit from the added cooperation and work. Although in any particular case, the first few added workers may each add more to output than the previous, eventually, the added or marginal product must decline, since the fixed factor, in this case land, will not yield increased output forever. This was the third foundational proposition of economics, as presented in Chapter 1.

The phenomenon of each new laborer (or other factor) adding ever less marginal product is called the "law of variable proportions," or, more famously, the "law of diminishing returns". Eventually, the diminishing marginal product becomes negative as workers keep getting added to a fixed amount of land.

This **internal margin**, or "intensive" margin (since a given lot of land or a factory gets used more and more intensively), must equal the extensive margin, due to competition among workers. In the situation described above, where all the land is used up or claimed, there would still be some intensive margin for labor. If the extensive margin became zero, the intensive margin would normally still be positive, and would set the wage level. It is possible that due to the high costs of labor or enterprise imposed by taxes and restrictive regulations, the cost of labor to an employer can be higher than the marginal product of labor, so that no more labor is hired, resulting in unemployment.

When the marginal product is greater than the average product, it pulls the average up, and when it is less, it pulls the average down. Therefore, the marginal product equals the average product

when the average product is at its maximum. A rational producer, who wishes to have as high a profit as possible, will only hire workers when the marginal product is less than the average product but still positive.

Getting back to our earlier example, suppose that the margin of production is still at 10-bushel land, and one of the owners wants to hire a second worker. If the marginal product of the first worker is 10 but that of a second worker is only 9, the owner would not offer him more than 9 bushels as wages. But no one would want to be a second worker, since one could earn 10 as a first worker on his own land.

But suppose that the population grows and all the 10-bushel land is taken up. The extensive margin moves to the 9-bushel land. The owner will now be willing to hire an extra worker, and will be especially willing if the margin moves to just below 9, so he can pay a wage of less than 9 and get some extra rent. In general, an employer will hire more workers as long as their marginal product is greater than the wage. Since the marginal product eventually declines, workers are hired just up to the amount where the value of their marginal product, that extra revenue produced by that extra worker, just equals the wage.

Since a firm will hire labor at the amount that equals its value of marginal product, and since that marginal product declines with increasing numbers of workers, a firm's demand curve for labor is exactly the relation between its value of marginal product and the number of workers, whether depicted as a curve in a graph or a table of numbers. The firm's demand curve for labor will thus slope down, since it demands more workers as the wage declines.

It should be kept in mind that though conceptually the demand for labor seems to be a precise thing, in practice the marginal product is a fuzzy, uncertain, imprecise amount, so the demand curve or relationship for labor, like any demand or supply curve, is a fuzzy rather than sharply defined line or table. Also, as we know, other factors can affect the demand for a particular worker, such as his looks, personality, ethnic background, personal relationship with an employer, and just plain luck! So the equation of wage with marginal product is a general tendency rather than exact description for every worker.

What about the demand for labor by an entire economy? It is the result of the demand for labor by all firms, but this "demand" itself is derived from productivity, since self-employed workers are their own demanders. We can envision a "production function" for the entire economy, i.e. total output as a function of the number of workers.

Since labor exhibits diminishing returns relative to the land in any particular region or economy, total output goes up with increasing labor, but at a slowing rate of growth, each extra worker adding a bit less to output than the previous. That extra output is none other than the wage of the extra worker, so we have a downward-sloping demand for labor as a whole in an economy, wages declining with increasing labor at any particular moment. But it is important to note, and note well, that this is a static relationship between labor and output. It applies to the amount of labor at any particular moment in time, not to the addition of workers in an economy over time, which could also increase the division of labor and dynamically increase output per worker.

With the overall wage level being set by and at the margin of production, both extensive and intensive, the range of wages will depend on the supply and demand for labor of a particular type, with the demand ultimately derived from the demand for the product that type of labor produces.

The supply of labor for an entire economy, or the market supply curve, is the quantity of the labor force (all workers plus the unemployed who want to work) as a function of the wage level. In other words, it is a curve showing the number of workers at each wage level. Its exact shape depends on the culture and demographics (of age, sex, family size) in a particular economy. It is possible in some places for the curve to bend backwards, or be upward sloping at some wage level, because with higher wages, the workers will not want to work so many hours, preferring leisure to more consumer goods.

Generally, one would expect the curve to be rather flat at the subsistence level, since every family needs to eat, up to the number of families. Then it would slope up as second or third members of a family are willing to work at higher wages, and workers are more willing to work overtime or take less leisure. But then at a very high wage, the curve would become very steep, vertical, and then slope back as workers have a greater marginal desire for leisure time rather than more goods.

As with any market, the wage level would be determined at the intersection of the market supply and demand curves. With that type of market supply curve for labor, wages would be high if the demand curve crosses it at the steeply rising area.

This would occur if the marginal product of labor is high to begin with, in which case the supply curve would become steep or vertical after all families have applied their labor. Increasing demand for labor, or productivity, would only raise the wage without increasing the labor supply much. But if the demand curve for labor hits the supply curve at the horizontal section, then an outward shift (increase) in demand would increase employment without increasing wages.

4. How to create unemployment and impoverish workers

The above analysis assumes that there is no tax on wages. If wages are taxed, then the worker receives a lower net wage, so if the supply curve is sloping up, then there will be less labor supplied, since the worker responds to the take-home wage net of taxes. Thus, a tax on wages, such as a payroll or income tax, shifts the supply-of-labor curve to the left. As the supply curve shifts up along the demand curve, this increases the cost of labor to the employers. Employers must pay the gross wage, including the tax. The result is less employment at a higher cost to employers, and a lower net wage for workers. The tax is a "wedge" between the net and gross wage, which distorts or skews the market wage to employers and employees from what a pure market would yield.

To see the effect of taxes on labor, suppose there were a tax of \$1 million per worker. Almost all workers would be thrown out of work, including the self employed. The effect of a smaller tax is the same; the difference is only in degree. The higher the wage tax, the less employment.

Henry George (1883, p. 152) stated, "The essence of slavery is the robbery of labor." With chattel slavery, as existed in the 19th century and earlier, the slave owner expropriates the product of the slave's labor, beyond what the slave keeps to live on. "Free" labor has a choice of whom to work for, but if wages are taxed, labor is also robbed, the worker being a "wage slave." It is not working for an employer that makes a worker a slave, since in a free economy, he has the option of working for himself. Rather, it is being forced to work for others to the extent that part of one's wages is forcibly taken by government.

Another type of intervention in the labor market is minimum wages. If the minimum wage set by the government is higher than that of a market wage level, the quantity supplied of labor is increased, since more people want to work, while the quantity demanded is decreased, since labor is more expensive.

The result is an excess or glut of workers wanting to work but not finding it: unemployment. Minimum wages affect teenagers and those wanting to enter the labor market especially, since they are unable to get entry-level work that would give them experience to enable them to get better jobs later.

Thus, if a government wants to reduce employment and keep workers unemployed, a good way to do this is to tax labor heavily and also enact a minimum wage, in addition to restricting entry into some types of occupations. This has been the policy of the U.S. and other governments, and it has been quite effective in keeping many workers poor and unemployed.

5. Labor Unions

Low wages and bad working conditions are two reasons why labor unions have organized. Trade unions arose out of the conditions of the labor force during the Industrial Revolution. Workers could gain bargaining power through collective action, of which the most potent weapon is the strike. Unions also became mutual aid societies, offering various services to their members.

Unions can be effective in giving laborers more bargaining power in a particular industry, but they cannot change the overall wage level, since, as discussed above, that level depends on the margin of production, which cannot be increased solely by the organizing of labor. If an economy is divided into two labor sections, one with unions and the other without, then if unions raise the wages of workers in one industry, they reduce employment in that industry. The workers thrown out of work will then move to the non-union section, increasing the labor supply and so decreasing the wage level in that section. Thus the effect of the union will be to transfer income from the non-union section to the union section. The pushed-up wages in unionized industries also increase the prices of those products, decreasing the quantity bought, so part of

the cost of these union wages are borne by consumers (as cost-push inflation) and part are borne by the owners of the enterprise as lower prices for their stocks.

When, as in some states and industries in the U.S., unions have the legal power as a "union shop" to force all workers in an industry to join the union, they obtain monopoly power, enforced by its ability to strike. Such unions have shifted the supply of labor in their industry to the left, increasing their wage while reducing output and employment by restricting entry or setting wages above the market rate. Some have shifted the demand for labor out artificially by forcing employers to hire workers whose marginal product is less than the wage, a practice called "featherbedding." In either case, labor unions have monopoly power backed by the state, increasing the costs of that industry, with a loss of output and efficiency.

This does not mean labor unions are harmful in general, only that they reduce employment and output when they have a legally enforceable monopoly power. Labor unions can and have been useful in organizing social benefits for their members and in serving as a way to communicate in an organized way with the management of enterprises to negotiate better working conditions. But unions by themselves, whether voluntary or coercive, cannot raise the overall wage level or decrease unemployment. As analyzed above, the way to maximize wages and employment is to remove the barriers, wage controls, and tax costs imposed on labor.

But this still can leave the wage level low if the margin of production is at a low level while much of income is going to the owners of land as rent. An example of this relationship is illustrated by the history of Australia in the next section.

6. The relation between land and labor

Let the "exploitation of labor" mean

- 1) reducing the wage level below that which would occur in a pure market economy, or
- 2) control of the conditions of labor beyond that which would occur in a pure market economy.

Clearly, **slavery** is an example of exploiting labor. Any taxation of wages also exploits labor. But labor can also be exploited when economic policy creates an artificially high amount of unemployment, shifting economic power to employers, and also when government grants subsidized protection to large landowners who are granted the privilege of keeping the generated rents, and workers are thus denied an equal access to the benefits of natural resources.

7. Raising wages through education

As noted above, "human capital," education and training which increases the productivity of labor, is part of the labor factor rather than being a capital good. The general wage level is based

on that of unskilled labor. Workers obtain a wage premium above the unskilled wage level for their skill, talent, charm, and personal connections, and the scarcity of workers in the field. There can also be premiums or discounts due to discrimination and legal restrictions.

An individual worker can make himself more marketable relative to others by increasing his skill, including his skill at job finding. But when most workers attain similar skills, the comparative advantage of the skill will be lost, although there will still be an absolute advantage in being better trained. As we know, for education to increase productivity, it needs to be geared either to general skills such as reading and writing, or to the specific requirements of a field. A general education is also useful over the long run both for personal consumption, to better enjoy life, and to be a useful citizen. Education presumes the freedom to make use of it. When opportunities are blocked off, education makes a person frustrated. In some less-developed countries, young people obtain a university education and then find no job opportunities, other than the civil service, which expands to give them jobs, but without any productive purpose. In a free society, employment opportunities are abundant, and education does not need to be subsidized, since families can afford to pay tuition. Enterprises seeking skilled workers also offer training and scholarships. If government schooling is still provided, it is in equal competition with private schools, and this market competition maintains the quality of the education as well as providing different cultural settings. In a multicultural society, the problem of what to teach is resolved by the freedom to start new schools that offer education geared to the interests of the students and parents. Competitive schooling not only provides training and knowledge, but also preserves the cultural capital that is part of our diverse heritage.