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Lectures on John Maynard Keynes' *General Theory of Employment, Interest and Money* (2):

Chapter 2, "The Postulates of the Classical Economics"

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Lectures on John Maynard Keynes' *General Theory of Employment, Interest and Money* (2): Chapter 2, "The Postulates of the Classical Economics"

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Abstract

Chapter 2 is one of the most important chapters in the *General Theory*. Not only does it set out Keynes' disagreements with key elements of the classical model, it lays out his own model of the working of the labour market, which underlies the analysis in the remainder of the *General Theory*. The issue of how labour's response to a change in its real wage differs depending on whether the change is driven by a change in the nominal wage or in the price of consumer goods plays a key part in the way Keynes' theoretical model is developed here. This chapter introduces Keynes' concept of involuntary unemployment and sets out his argument about the causal relation between the real wage and the level of unemployment, and about the consequent cyclicity of the real wage. Chapter 2 also includes Keynes' discussion of Say's Law.

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Lectures on John Maynard Keynes' *General Theory* (2):

Chapter 2, "The Postulates of the Classical Economics"

Introduction:

Chapter 2 of the *General Theory* is an important one, not just because it is in this chapter that Keynes sets out, as the title says, "The Postulates of the Classical Theory" but also because it is here that he sets out some of his own fundamental disagreements with the classical model. It is also important because the arguments he makes in this Chapter are the source of some of the confusions which are present in the conventional understanding of the Keynesian model, and that confusion is the source of some of the fundamental non-Keynesian elements which have crept into the way the Keynesian model is typically taught, at least in lower level undergraduate courses. It is not an easy chapter to read, mainly because Keynes makes a lot of use of Pigou's concepts and terminology, which were familiar to economists of his day but are unfamiliar to us. There are two at first sight unrelated elements to Chapter 2: one dealing with Keynes' criticism of the classical (and here we are using Keynes' own terminology, so we're including writers whom we would regard as neo-classicals) theory of the labour market, and the other containing his celebrated reference to Say's Law.

In terms of the labour market, Keynes' theme in this chapter is that classical economics has no theory of unemployment. He cites Ricardo as making the case that the correct object of study by economists is the distribution of income among factors of production, in the sense of studying the determination of the prices of factors of production rather than the determination of the level of national income¹. Part of Keynes' objection here is that the classicals have accepted

¹ As opposed to Adam Smith, who was concerned with explaining "The Nature and Causes of the Wealth of Nations", i.e. with the level of national income and wealth as well as national well-being, as indicated by the well-being of the mass of the population.

Ricardo's focus completely, to the point that he is able to quote Pigou as saying, in *The Economics of Welfare* (1920) ²:

“Throughout this discussion, except when the contrary is expressly stated, the fact that some resources are generally unemployed against the will of the owners is ignored. This does not affect the substance of the argument, while it simplifies its exposition.”

Pigou's argument is that the basic rules which determine the prices and relative incomes of factors aren't affected by involuntary unemployment of factors. The more fundamental objection, though, which Keynes had set out in his private evidence to the Macmillan Committee, is that the classical model doesn't have a model of unemployment, treating it instead as a side-effect of the business cycle. What Keynes wants to do in the *General Theory* is to make the determination of unemployment the central issue in macroeconomics, rather than covering it with rather ad hoc explanations. This will turn out to be his main criticism of Pigou, and the reason for his harsh treatment of Pigou.

Keynes gets into the meat of Chapter 2 by setting out³ what he sees as the two essential postulates of the classical theory of the labour market:

i. The wage is equal to the marginal product of labour

That is to say, the wage of an employed person is equal to the value which would be lost if employment were to be reduced by one unit (after deducting any other costs which this reduction of output would avoid); subject, however, to the qualification that the equality may be disturbed, in accordance with certain principles, if competition and markets are imperfect.

ii. The utility of the wage when a given volume of labour is employed is equal to the marginal disutility of that amount of employment.

That is to say, the real wage of an employed person is that which is just sufficient (in the estimation of the employed persons themselves) to induce the volume of labour actually employed to be forthcoming; subject to the qualification that the equality for each individual unit of labour may be disturbed by combination between employable units analogous to the imperfections of competition which qualify the first postulate. Disutility must be here understood to cover every kind of reason which might lead a

² A. C. Pigou (1920): *The Economics of Welfare* Macmillan, London, 1st edition.

³ *General Theory* pg 5

man, or a body of men, to withhold their labour rather than accept a wage which had to them a utility below a certain minimum.

These are still standard postulates of labour economics. The first says simply that a profit maximizing firm will hire up to the point where the nominal wage is equal to the value of the marginal product of labour⁴, while the second says that the labour supply curve can be thought of as a supply price curve for labour in the sense that it shows the wage levels which will be just sufficient to persuade workers to supply different quantities of labour. Keynes' worker is a utility maximizer – the wage he receives must be at least sufficient to compensate him for the disutility associated with the marginal unit of labour supplied. This is why the second postulate is stated in terms of the real wage – when the worker supplies an additional unit of labour he sacrifices leisure, or, more to the point, he sacrifices the utility which he would have derived from that unit of leisure. The compensation he gets, from his point of view, is not the cash wage which he earns, but rather the utility which he derives from the commodities which he can buy at going prices with that cash wage. There is nothing here which is in conflict with the way we typically teach the income-leisure trade-off in intermediate microeconomic theory: the real wage is equal to the marginal rate of substitution between consumption goods and leisure. The first postulate is also perfectly consistent with standard micro theory (not surprisingly, given that Keynes' Marshallian background underlies the theory he sets out in the *General Theory*). The only point in the statement of the postulates which might cause difficulty is the fact that the first postulate is set out in nominal terms while the second postulate is set out in real terms. This, though, is quite consistent with the maximizing behavior of firms and workers: workers aim to maximize the utility which they derive from the consumption of a bundle of goods while firms aim to maximize the profit they make from producing and selling perhaps only a single good. The Value of the Marginal Product of Labour (VMPL) to a firm is in terms of the price of the single product which that firm is producing, and while when we are talking about the firm in isolation we can divide the wage by the product price to get a real wage in terms of that product,

⁴ Although note that Keynes' wording is in terms of the revenue that would be lost if the firm cut its employment by one unit. Note also that his calculation of the value of the marginal product of labour allows for the possibility that employment of other variable factors will be reduced as a result of the reduction in labour. Keynes sometimes treated the variable inputs in production as a bundle, as if all of the variable inputs were combined in fixed proportions so that a change in the level of labour employed meant a corresponding change in the level of the other variable inputs.

giving what is sometimes referred to as the product wage, when we start talking about real wages from the perspective of the firm and the worker together, we need to deal with the different prices each uses in defining its “real” wages. On the whole it’s easiest to draw a single industry’s labour market diagram with the nominal wage on the vertical axis, treating the product price as a shift factor for the labour demand curve and the prices of consumer goods as a whole as a shift factor for the labour supply curve. This is also, as we’ll see in a later lecture, consistent with Keynes’ general preference for working in nominal, rather than real, terms, even when there are no logical difficulties involved.

To put this a bit more formally, consider the problem faced by a profit maximizing firm:

$$(1) \quad \text{Max } \Pi = P_i Q(L, K) - wL - rK$$

where P_i is the price of the good produced by the i -th firm, w the market nominal wage rate and r the price of capital. Since Keynes is working in the Marshallian short run, K is fixed so rK is a fixed cost and L is the only relevant choice variable (we are assuming here that the firm is a price taker in both output and factor markets. Then differentiating the expression for Π with respect to L , the firm’s only choice variable, gives as the First Order Condition (FOC) for the firm’s problem

$$(2) \quad P_i Q_L(L, K) = w$$

where Q_L is the marginal physical product of labour in that firm’s production function. We sometimes write (2) in real product wage terms as

$$(3) \quad w/P_i = Q_L(L, K)$$

But since Keynes works in nominal terms throughout most of the *General Theory*, it is more useful to write (2) as an explicit demand-price expression, since it lets us work with a labour market diagram which has the nominal wage on the horizontal axis:

$$(4) \quad w = P_i Q_L(L, K)$$

Notice that an increase either in the product price or in the marginal physical product of a fixed level of L will shift the firm's labour demand curve out and increase the demand price of labour. For a perfectly competitive firm, expression (4) is read as saying that the firm will hire up to the point where the nominal wage equals the value of the marginal product of labour, Keynes' first classical postulate.

Turning to the supply side, consider an individual who maximizes a utility function of the form

$$(5) \quad U(C, H)$$

where H = hours of leisure consumed. He faces a consumption budget constraint of the form

$$(6) \quad Y = PC$$

Where P is the consumer price index and C is the level of his consumption basket. We assume that his income, $Y = wL$ where L is the amount of labour time he supplies, and that his total time allocation T is divided between work and leisure, giving a time budget of the form $T = L + H$. Substituting the constraints into the utility function and recognizing that this makes labour the only choice variable (since for simplicity we are assuming that all income is spent on consumption and treating consumption as a single good) gives, as the consumer's problem, to choose L to maximize

$$(7) \quad U(wL/P, T - L)$$

The first order condition for this problem is

$$(8) \quad \frac{w}{P} U_C - U_H = 0$$

or

$$(9) \quad \frac{w}{P} = \frac{U_H}{U_C}$$

Equation (9) is simply the income-leisure trade-off condition which says that at the consumer's optimum the slope of the budget line equals the slope of the isoquant between consumption and leisure, which is marginal rate of substitution between the arguments of the original form of the utility function. At the consumer's optimum, given the real wage in consumption (CPI) terms the consumer can buy just enough additional consumption goods to compensate for the utility lost from having to work the extra time needed to buy them. To put this labour supply-price curve on the same diagram as the labour demand curve we re-write (9) as

$$(10) \quad w = P \frac{U_H}{U_C}$$

which says that an increase in P leads to an equi-proportional increase in the nominal wage, w , which we interpret here as the supply price of labour, holding L and C constant. A nominal wage any higher than this, given the level of consumer-goods prices, would more than pay for the current quantity of labour, in the sense that the utility which the worker would derive from the consumer goods which he could purchase at that money wage would exceed the utility he lost when he gave up leisure in order to work more.

Note that while “ w ” is the same for both the industry and the worker, the P_i in the industry labour demand expression is different from the P in the labour supply expression. This is why we draw the labour market diagram in nominal wage terms and treat prices as curve shifters, noting that the price-shift element on the demand side differs from that on the supply side. If we think in broad terms of there being two industries, the consumer goods sector and the capital goods sector, the price of consumer goods, P_C , say, would appear in both the labour demand

expression for the consumer goods sector and the labour supply expression, while for the capital goods sector the price of capital goods, P_K will appear in the demand expression but it will again be the price of consumer goods, P_C which appears in the labour supply expression.

It is important to emphasize here that Keynes has no objection to the logic of the maximization problems underlying these postulates. His firms are Marshallian profit-maximizers and his workers are utility maximizers who solve the income-leisure trade-off problem. His objection is to the use of the same wage value in the two postulate.

The use of the same “wage” term in both postulates means that we are looking at a labour demand-supply diagram as in Figure 1 below, where we have the nominal wage on the vertical axis and where the labour demand curve is a function of the product price and the labour supply curve is a function of the level of prices of consumer goods – of the consumer’s cost of living. The only way the same wage value can lie on both curves on that diagram is if we are at the equilibrium point, E, meaning that the labour market is in equilibrium with wage w^* and employment level L^* . Thus the starting point for Keynes’ exposition of the classical model is a labour market which is in equilibrium. Since the demand for labour equals the supply of labour, this is a situation of full employment, even if some part of the working-age population is not employed (optimally so, given the market wage and their income-leisure preferences).

People who choose optimally not to work at the going equilibrium wage are not regarded as unemployed. Keynes notes, though, that the classical model is consistent with two types of unemployment.

The first, in a term which we still use, is frictional unemployment. This basically refers to people who are between jobs and for whom jobs exist in the labour market but who haven’t found them yet. Typically, when we refer to full employment we are talking about a rate of unemployment which can reasonably be regarded as frictional. An unemployment rate of 4% is probably the most commonly quoted full employment rate of unemployment, but there was a period in Australian history when 2% was regarded as full employment and in Swiss history when the full employment rate of frictional unemployment was taken to be 1% at most.

More importantly, the classical model is consistent with “voluntary” unemployment, which Keynes characterizes⁵ as being:

due to the refusal or inability of a unit of labour, as a result of legislation or social practices or of combination for collective bargaining or of slow response to change or of mere human obstinacy, to accept a reward corresponding to the value of the product attributable to its marginal productivity.

We generally refer to it as being unemployment associated with the wage being held above the equilibrium level, as in the case of w' relative to w^* in Figure 2 below. The quantity of labour demanded at that wage is LD, the quantity of labour supplied is LS, employment is equal to LD, the lesser of the two (this is referred to as a min condition) and unemployment is equal to $(LS - LD)$. The unemployment rate would be $((LS - LD)/LS)$. When Keynes refers to labour refusing to accept a wage corresponding to the VMPL, he's referring to the fact that w' lies above the labour demand curve between LD and LS⁶.

Having set up what we would regard as a basic labour demand-supply model, Keynes proceeds to discuss four ways in which employment can be increased in the classical model. One point which sometimes causes confusion here – Keynes is not talking about four ways of reducing unemployment, he's talking about four ways of increasing employment, meaning that he includes methods of increasing the equilibrium level of employment (in cases where the actual level of employment is equal to the equilibrium level). As Keynes sets it out, the four methods by which employment can be increased in the classical model are⁷:

(a) An improvement in organisation or in foresight which diminishes 'frictional' unemployment;

⁵ *General Theory* pg.6

⁶ Keynes' terminology encompasses what is sometime called a wedge model, where instead of there being a fixed floor wage, a combination of taxes on employment, collected from employers, and benefits paid to the unemployed create a gap between the net value of the marginal revenue of labour collected by the employer and the wage which would just be sufficient to cover the disutility of certain amounts of work. In that case we could draw two labour supply curves, one representing the wage which would just compensate for the disutility of working, given current prices, and one which is the effective supply price of labour which the employer perceives. The lower supply function would be the one to which Keynes refers. The gap between the two curves represents the wedge. Equilibrium in the labour market would be at the intersection of the labour demand curve and the upper supply curve, which would give a wage in excess of the disutility-compensating wage.

⁷ *General Theory* page 7

- (b) a decrease in the marginal disutility of labour, as expressed by the real wage for which additional labour is available, so as to diminish 'voluntary' unemployment;
- (c) an increase in the marginal physical productivity of labour in the wage-goods industries (to use Professor Pigou's convenient term for goods upon the price of which the utility of the money-wage depends);
- (d) an increase in the price of non-wage-goods compared with the price of wage-goods, associated with a shift in the expenditure of non-wage-earners from wage-goods to non-wage-goods.

The first of these is straightforward: if the match between unemployed worker and suitable job vacancy can be made more quickly, frictional unemployment will fall.

The second is trickier. It deals with voluntary unemployment, so we're in a situation like that in Figure 3 below. A reduction in the marginal disutility of labour would tend, holding the price level constant, to shift the labour supply curve down – shift the supply-price curve of labour down from S_L to S_L'' . If the minimum wage which labour is willing to accept is somehow tied to the disutility of labour, that wage might fall from w' to w'' , increasing the quantity of labour demanded and therefore the level of employment. Alternatively, since Keynes was following Pigou's analysis in this discussion, the situation might be as in Figure 4 below. Keynes apparently had trouble sorting out how Pigou defined the supply of labour. In a 1937 letter⁸ Pigou said that what he had in mind was basically a backward-L labour supply curve, with a horizontal segment at the lowest wage labour would accept. That notion defined full employment not so much as a labour market equilibrium level of employment, the value of which could change if the labour demand and supply curves shifted, but as an absolute upper limit to employment (it's not unusual in introductory expositions of the Keynesian model for us to define a full employment level of national income in basically the same way). The actual level of employment would be at the intersection of the VMPL curve and the horizontal segment of the backward-L curve. A reduction in the disutility of labour would reduce the wage which labour demanded from w' to w'' , resulting in an increase in employment and a reduction in unemployment since the upper limit to employment hasn't changed. Keynes was taking Pigou's

⁸ In Donald Moggridge (ed) (1973): *The Collected Writings of John Maynard Keynes, Vol XIV, The General Theory and After: Part II, Defence and Development* pg. 54

The Theory of Unemployment as the definitive statement of the classical labour market theory, but Pigou had written other books on unemployment over the years. One of the difficulties in understanding Pigou's argument (and deciding whether Keynes characterized his theory fairly, a disputed point in the history of economic thought) is Pigou's tendency to change his terminology and concepts. In his 1927 book *Industrial Fluctuations*⁹, Pigou basically defined the supply price of labour as the lowest nominal wage which labour would accept in exchange for supplying certain quantities of labour, without tying it (as Keynes did in the *General Theory*) to the disutility of labour. If we accept that definition, then, in Figure 2, for example, the horizontal line segment at w' would be part of the labour supply curve, as in Figure 5 below, and the labour market would be in equilibrium at LD despite the presence of unemployment, as Pigou would define it. While this is consistent with the concept of the supply price of labour as we usually define it, it is not a very useful definition since it gives us no basis for establishing where the supply price is and no way of evaluating how it changes. The same problem arises, obviously, in Figure 4. The most that we can say about it would be that it might mean that the supply price is a social construct of some kind, although how rigorous a construct depends on how strongly labour resists a reduction in its wage.

Keynes' third Pigou-derived method of increasing employment is even harder for us to follow today than the second one was. To repeat it, it involves "an increase in the marginal physical productivity of labour in the wage-goods industries (to use Professor Pigou's convenient term for goods upon the price of which the utility of the money-wage depends)."

As Keynes notes, "wage goods" is Pigou's term, but as it happens, Pigou was not terribly consistent in his use of the term. In some cases (and this is the definition which Keynes generally adopts) it simply means consumption goods. Then the price level of wage goods is simply the CPI. In other cases, it refers to goods which non-wage earners consume but wage earners do not: luxury goods consumed by people who don't work for a living but rather live off their (or their parents') investments. One stumbling block in our reading of literature from the early Keynesian period is the extent to which, in England in any case, the functional and social distributions of income are related. Much of that literature assumes distinct social classes, and these social classes are also distinct in their sources of income – hence the working class earns a

⁹ A. C. Pigou (1927): *Industrial Fluctuations* Macmillan, London

wage equal to the value of the marginal product of its labour. Some of Keynes' disciples continued the practice of equating social and functional classes of labour in articles written well into the 1950s, with policy implications which often seem odd to us.

In this case, Keynes is talking about an increase in the marginal physical productivity of labour in (what it is simplest for us to refer to as) the consumption goods sector. That will drive down the price of consumption goods and, with no change in the nominal wage, increase the real wage of labour (defined as the nominal wage deflated by the CPI). The result will be a shift to the right of the labour supply curve on a labour market diagram which, like ours, has the nominal wage on the vertical axis, and an increase in the equilibrium level of employment. (Remember that Keynes is dealing with ways of increasing employment in the classical model, not just of reducing unemployment.) We should also note, though, that an increase in the marginal physical productivity of labour in the wage goods industries should also tend to shift the demand curve out, increasing equilibrium employment.

Having got past the third method we then hit the fourth one: "an increase in the price of non-wage-goods compared with the price of wage-goods, associated with a shift in the expenditure of non-wage-earners from wage-goods to non-wage-goods."

In this one we not only have wage-earners and wage-goods, we also have non-wage-earners and non-wage-goods. If we stick to defining wage goods as consumption goods this mechanism might refer to the case of an entrepreneur taking part of his spending away from consumer goods and spending it on investment goods, but that interpretation could get us into trouble when we move on to Keynes' discussion of the relation between savings and investment, since it might be taken to imply that a reduction on spending on consumption goods would automatically lead to an increase in spending on investment goods, at least when it was being done by the non-wage earning classes, and this is not consistent with Keynes' theories on saving and investment¹⁰. Alternatively, we might be referring to members of the leisure class deciding to spend less on potatoes and more on caviar. In any event, the shift of demand away from wage goods towards non-wage goods should leave the total demand for labour unchanged, for the story to work.

¹⁰ On the other hand, what Keynes is setting out here is the classical argument, and there is much less of a contradiction in assuming that reduced spending on consumption goods translated into increased spending on investment goods in that model.

Then the reduction in the demand for wage goods will lower their price (and the increased demand for non-wage goods will raise their price, both in absolute terms and relative to the price of wage goods) with the result that the real wage (which again, is defined in terms of the purchasing power of nominal wages over wage-goods) will rise and the supply of labour (against the nominal wage) will increase. Since the demand curve for labour in total hasn't shifted, an outward shift of the supply curve will increase the level of employment.

Up to this point, Keynes has been setting out the classical model of employment as he understands it, taking Pigou's *Theory of Unemployment* as his reference. Next, he turns to a discussion of the validity of the model.

He starts by noting that it was pretty clear that in the mid 1930s the quantity of labour supplied at the going money wage was greater than the quantity demanded – if more job openings appeared he had no doubt that there would be workers applying for them, with no need for an increase the nominal wage. He argues that the classical model interprets this observation as meaning that by some mechanism the wage is being held above its equilibrium level – that there is “an open or tacit agreement amongst workers not to work for less”. If that is the case, the unemployment, which might appear to be “involuntary” (a concept which he introduces here but doesn't define until a bit later in Chapter 2) is actually voluntary. This is a point worth emphasizing – the fact that there are more people looking for work than there are jobs available, or that there is an excess supply of labour at the going wage, cannot be used to differentiate between Keynesian involuntary and classical voluntary unemployment.

Jumping ahead a page, he also says that:

...the contention that the unemployment which characterises a depression is due to a refusal by labour to accept a reduction of money-wages is not clearly supported by the facts. It is not very plausible to assert that unemployment in the United States in 1932 was due either to labour obstinately refusing to accept a reduction of money-wages or to its obstinately demanding a real wage beyond what the productivity of the economic machine was capable of furnishing.

This last quote is important in terms of our understanding of Keynes' explanation for unemployment: persistent unemployment is not due to downward stickiness of wages. The downward stickiness story is usually taught with a diagram along the lines of Figure 6 below. An economic downturn, perhaps due to a drop in exports (just to keep it exogenous) shifts the labour demand curve to the left, from D_L to D_L' . The nominal wage had been in equilibrium at w_1^* , after the shift the new equilibrium wage is at w_2^* but the actual wage is still at w_1^* . Stickiness prevents the wage from falling to the new equilibrium, so unemployment persists. With persistent stickiness we have persistent unemployment, and the preferred policy is for the government to use fiscal policy to increase demand, shifting the labour demand curve back to the right and restoring full employment at the unchanged wage.

This explanation for persistent unemployment and concomitant justification for expansionary fiscal policy is not Keynes' story. If anything, it is the story told by those among the classical economists who saw a role for government spending during economic downturns. We find it, for example, in Pigou's *The Theory of Unemployment*. Keynes objected to it on empirical grounds, as in the quote above, but also on logical grounds – as we have already noted, he disliked having unemployment, which he saw as the prime economic problem of the day, treated as an afterthought to business cycle theory and explained by an ad hoc tacking on of wage stickiness. This is not to say that there is no element of the wage stickiness story in Keynes' writings: in the *Tract on Monetary Reform*, he said that it was a commonplace that wages tended to lag behind prices, and in his Macmillan Committee evidence there is definitely still a role for wage stickiness and slow adjustment, but by the time he wrote the *General Theory* he had rejected the wage stickiness argument as an explanation for a prolonged period of high unemployment.

But while he had rejected the wage stickiness story, he still accepted the diagram which we have set out in Figure 2 below. What had changed by the time of the *General Theory* was his interpretation of the diagram.

His reinterpretation of Figure 2, which we will discuss in terms of Figure 7 below, rests on two points “the first of which relates to the actual attitude of workers towards real wages and money-wages respectively and is not theoretically fundamental, but the second of which is

fundamental.” Unfortunately for the way we typically teach the Keynesian model, at least at the introductory level, later economists paid a lot more attention to Keynes’ first, non-fundamental point than they did to his second, fundamental point.

The first point is quite a simple empirical observation. Labour will generally resist a cut to its nominal wage and if the nominal wage is cut will reduce the quantity of labour supplied, perhaps by striking. But if it experiences an identical cut in its real wage as a result of an increase in the price of consumer goods, it will generally not reduce the quantity of labour supplied.

This observation has been interpreted as meaning that Keynes assumed that labour suffered from money illusion – that they judged their wages only in terms of the number of currency notes in their pay-packet and not in terms of the amount it could buy. Thus they could tell that a reduction in their nominal wage would reduce their standard of living, and reacted by reducing the quantity of labour which they supplied, but when the cost of living went up, so long as their nominal wage did not fall they ignored the cut in their real wage and didn’t reduce the quantity of labour supplied.

The money illusion argument got considerable play in the Phillips Curve debates of the 1970s. In 1958, A.W.H. Phillips published¹¹ an article entitled “The Relation Between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861–1957” in which he reported evidence of a negative relationship between the rate of unemployment and the rate of increase in wages – higher unemployment was associated with lower (and possibly negative) wage inflation. This relation was quickly translated from wage inflation to price inflation by dint of the assumption that prices could be found as a constant percentage markup over wages, and an industry of estimating Phillips Curves was born. It was seized on by Keynesian economists and policy makers and its take-up was explosive – no other result has ever spread as quickly through the profession¹². Its appeal was simple – the existence of a stable trade-off between inflation and

¹¹ A. W. H. Phillips (1958): “The Relation Between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861–1957” *Economica* 25, Issue 100, November, pp. 283-299

¹² Phillips apparently regarded it as an interesting curiosity, but never expected his reputation with posterity to rest on it. He expected to be known for his work on the role of fiscal policy rules in dynamic Keynesian models – proportional, derivative and integral stabilization rules. See A. W. Phillips (1954) “Stabilisation Policy in a Closed Economy” *Economic Journal* 64, 290-323, A. W. Phillips (1957) “Stabilisation Policy and the Time Form of Lagged Responses” *Economic Journal* 67, 265-277.

unemployment meant that governments could keep unemployment low at the price of tolerating some constant rate of inflation. Eventually, it turned out that the Phillips Curve trade-off wasn't stable and certainly could not be counted on for policy purposes.

One of the theoretical arguments against the Phillips Curve as a policy device was that it depended on workers having money illusion, and never realizing that the effect of the continuing inflation would be to reduce steadily the purchasing power of their wages. When workers did start to react to the inflation of the 70s, bargaining explicitly for real wages by having Cost of Living Adjustments built into their contracts, any trace of a tradeoff pretty much vanished. It was not uncommon at the time to hear it said that Keynes had assumed that workers did suffer from money illusion but this is a misinterpretation of the argument which he was making.

Keynes' point about workers tolerating a cut in real wages which was due to increases in the cost of living but not tolerating equivalent cuts to their nominal wage was a simple empirical observation. At the same time, it was evidence against the argument that the observed wage lay on both the labour demand and the labour supply curve simultaneously. Keynes quite explicitly accepted the profit maximizing origin of the labour demand curve and assumed that the wage is equal to the value of the marginal product of labour, but the fact that the quantity of labour supplied was not reduced in response to an increase in prices convinced him that the wage did not lie on the labour supply curve. Thus he argued that the actual labour market wage-employment must be at a point like A on Figure 7. It is important to be clear on a couple of points – Keynes was not saying that labour suffered from money illusion but rather that they didn't react the same way to reductions in real wages which were due to price increases as they did to reductions in real wages which were due to cuts to nominal wages “unless they proceed to an extreme degree” (the “they” being increases in prices). Labour will eventually get fed up with watching a rising cost of living eat into their standard of living and will react, but will tolerate periods in which wages lag the cost of living to a moderate degree. Keynes also accepted the existence of the income-leisure trade off labour supply curve as a real wage supply-price curve, saying that labour would not resist reductions in real wages due to price increases “unless the reduction proceeds so far as to threaten a reduction of the real wage below the marginal disutility of the existing volume of employment.” That is to say, what we would call the neoclassical labour supply curve does operate in the Keynesian model – it sets a lower limit to the real wage

at any level of employment and it sets an upper limit to employment at any given real wage, meaning that it defines full employment. It is simply that his observation that labour responded differently to nominal wage cuts than it did to price increases which would have the same effect on real wages convinced Keynes that the wage, while it lay on the VMPL curve (so the first classical postulate about the labour market held) did not lie on the labour supply curve.

Keynes was still, of course, left with the need to explain why labour would object to money wage cuts if it were not going to object to real wage cuts via rising prices, and he seemed to settle on a relative income explanation: that the focus of money wage negotiations is the distribution of total wage income among groups of labour. This seems a slightly ad hoc argument, but Keynes was harking back to the situation in 1925/26 in his discussion here. That was the point at which Britain returned to the Gold Standard at the pre-First World War parity¹³, overvaluing the pound and in the process overpricing British exports. The industry most immediately hit by the overvaluation was the coal industry, which needed to reduce prices in domestic currency terms in order to cancel out the effect of the return to gold on British coal's foreign currency prices. Doing this without firms having to take significant losses, however, required that costs be reduced and, given the importance of labour in total costs, this in turn required that the coal miners take a pay cut. The miners were just the first - ultimately, of course, an overvaluation of the pound would require significant price cuts in virtually all British export industries, which would require widespread reductions in nominal pay, and would also require cuts in prices of non-tradable goods which were elements of the costs of the tradables; domestic rail freight costs, for example. Basically, Britain would require a domestic devaluation in the form of price and wage cuts to counter the effect of the overvaluation of the pound and restore the attractiveness of British exports in foreign markets, where they were priced in foreign currency terms.

As Keynes noted in *The Economic Consequences of Mr. Churchill*, this kind of general cut in wages and prices was very difficult for a democracy to achieve. It could not simply be imposed, as it could be in, say, Mussolini's Italy, but would have to be achieved by agreement between

¹³ The pound was defined as being equal to 113 grains of pure gold while the US dollar was set at 23.22 grains. 1 Troy ounce is 480 grains of gold. Britain went off gold again in 1931 and the US went off it in 1933. There is evidence to support the view that going off gold marked the beginning of recovery from the depression for a number of countries.

owners and labour¹⁴. The primary obstacle here was a lack of trust – labour would have to be convinced that once they had swallowed their wage cut, owners would cut prices in the same proportion, leaving real wages unchanged but stimulating exports (or at least cancelling out the effect of the revaluation). Rather, labour (and the coal miners in particular) tended to see pressure for wage cuts as attacks on them in particular, and to be very resistant to accepting them. It seems likely that Keynes had this episode in mind when he was writing about labour's resistance to nominal wage cuts. Individual groups of labour were likely to regard efforts to make them take wage cuts as attacks on them in particular meaning that, in general, nominal wage cuts would require significant pressure in the form of rising unemployment if they were to be achieved. General increases in the cost of living would be seen as affecting everyone, including many, though not all, non-wage earners, and would probably be more readily accepted¹⁵.

The issue of domestic devaluations has arisen recently (as of 2013) in the context of the current recession in Europe. Countries like Greece which are on the Euro and which are seen as being uncompetitive are seen as needing to reduce the prices of their exportable goods in Euro terms, something which can only be done if wages are cut, permitting domestic price cuts. In the Greek case the austerity measures needed to push prices down have been met with stiff resistance¹⁶. An interesting case in this regard is that of Latvia which, while not a Euro member has run a fixed exchange rate policy relative to the Euro. Faced with a downturn and the need to improve its international competitiveness, Latvia could have depreciated its currency relative to the Euro but instead opted for austerity measures to drive wages and prices down in domestic currency terms¹⁷. The Latvian population has apparently accepted this policy with more equanimity, or

¹⁴ See also the brief discussion of A National Treaty for the simultaneous adjustment of all money incomes, in part (c) of Addendum I to the Macmillan Committee Report, reprinted on pg. 297 of Volume XX of the *Collected Writings of John Maynard Keynes*.

¹⁵ Keynes accepted, especially in his earlier writings, that a general downturn would create unemployment, which would in turn force wages down.

¹⁶ The austerity measures are also aimed at bringing the government's budget into balance – wage cuts would impart some stimulus to the economy by increasing exports, and, since the prices of Greek imports would not fall, by encouraging import substitution.

¹⁷ We set aside the question of whether the Latvian government and population have significant Euro-denominated debt, which would affect the optimal policy decision.

perhaps more fatalism, if grudgingly, than has the Greek population¹⁸. The relevant point in the Latvian example is that proponents of devaluation are assuming that nominal wages in local currency terms will not rise in the same proportion as the depreciation of the currency raises the cost of living. If they did rise, then depending on the proportion of inputs in the Latvian consumption basket, at least part of the export-stimulus effect of a devaluation would be cancelled out. Proponents of devaluation tend to focus on their export boosting effects and generally do not seem to be worried that domestic wages would rise to cancel that effect out, but at the same time there does not seem to be any suggestion that the Latvian population suffers from money illusion, and similarly arguments to the effect that countries like Greece would be better off if they were not on the Euro and hence could devalue do not seem to rest on the assumption that the Greek population suffers from money illusion.

The claim that Keynes assumed that workers suffered from money illusion, which was once widely believed, is not consistent with what he wrote in the *General Theory*. He assumed that labour would be more tolerant of price increases than of nominal wage cuts, not that they wouldn't notice them. More importantly, the argument that the quantity of labour supplied does not automatically fall when the real wage falls as a result of an increase in the cost of living is an observation which Keynes characterized as not theoretically fundamental. His second criticism of the classical model of employment was one which he did regard as theoretically fundamental and is one which seems to have been lost in later debate about the Keynesian model.

As Keynes puts this second criticism:

The second postulate flows from the idea that the real wages of labour depend on the wage bargains which labour makes with the entrepreneurs. It is admitted, of course, that the bargains are actually made in terms of money, and even that the real wages acceptable to labour are not altogether independent of what the corresponding money-wage happens to be. Nevertheless it is the money-wage thus arrived at which is held to determine the real wage. Thus the classical theory assumes that it is always open to labour to reduce its real wage by accepting a reduction in its money-wage. The postulate that there is a tendency for the real wage to come to equality with the marginal disutility of labour clearly presumes that labour itself is in a position to decide the real wage for which it works, though not the quantity of employment forthcoming at this wage.

¹⁸ Andrew Higgins (2013): "Used to Hardship, Latvia Accepts Austerity, and Its Pain Eases" *New York Times*, January 1.

The traditional theory maintains, in short, *that the wage bargains between the entrepreneurs and the workers determine the real wage*; so that, assuming free competition amongst employers and no restrictive combination amongst workers, the latter can, if they wish, bring their real wages into conformity with the marginal disutility of the amount of employment offered by the employers at that wage.

Keynes' reference to bringing the real wage into conformity with the marginal disutility of labour is a stumbling block to easy understanding of what he is saying here, but basically this criticism boils down to arguing that cuts in nominal wages do not automatically translate into cuts in real wages. The classical theory assumes that if the wage is above the equilibrium level so that the labour market is in disequilibrium, negotiated cuts to the nominal wage will reduce real wages and restore equilibrium at full employment. In terms of Figure 8 below, when the nominal wage is above its equilibrium level, the classical model assumes that it will fall from w_1 to w_2 , where w_2 is the new equilibrium level and satisfies the twin conditions that, at the going price level the wage equals the value of the marginal product of labour and that it yields a real wage which compensates for the disutility of supplying the new equilibrium quantity of labour.

We can get a sense of Keynes' argument here if we look at the difference between firm level analysis and market level analysis. In Figure 9 below, a cut in the nominal wage shifts the marginal cost curve for an individual firm down and increases the profit maximizing level of output. Since increasing its output will require the firm to employ more labour, firm-level employment will increase. At the level of the industry, however, the situation is as in Figure 10 below: the reduction in the money wage still shifts the supply curve down, since the industry level supply curve is a horizontal aggregate of the marginal cost curves of individual firms, but now we have to take account of the effect of the downward shift of the industry-level supply curve on the price of that industry's output. A downward shift of the industry supply curve will drive the equilibrium level of the output price down, cancelling out part or all of the cut in nominal wages. As a result, the real wage will drop by much less than the nominal wage, if it drops at all, and the increase in employment will be much smaller. If the firm was originally operating at the level of employment where the nominal wage equaled the value of the marginal product of labour, so the real wage (in product price terms) was equal to the marginal physical product of labour, a large drop in the nominal wage may well result in a small drop in the real

wage in product terms, causing a small slide along the marginal physical product of labour curve and a small increase in the level of employment. As Keynes put it¹⁹:

... there is no longer any reason to expect a tendency towards equality between the real wage and the marginal disutility of labour.

Essentially, Keynes' argument here is that the labour market cannot be analyzed in partial equilibrium terms. The only reason workers supply labour is to be able to buy commodities and the only reason firms hire labour is to be able to produce output. Further, labour costs are likely to be the largest part of costs of production, at least if we judge by labour's share of GDP. His basic proposition, which is key to his rejection of the classical model, is that wage negotiations at the level of the individual firm are concluded in terms of nominal wages (since labour is concerned about the cost of consumer goods in general and not about the cost of their employer's output) and that, even if labour does accept a reduction in nominal wages in the face of unemployment pressure, it cannot be assumed that this will lead to the reduction in real wages which will be necessary to restore equilibrium.

Interestingly, the argument that a cut in the nominal wage will not lead to a reduction in the real wage is not new to the *General Theory*: Keynes made the same argument in his private evidence to the Macmillan Committee. What is new in the *General Theory* is the way Keynes interprets it.

In his Macmillan Committee evidence, Keynes was talking about with a world in which the gold standard was in operation, and in which, in response to a question from one of his fellow committee members, he defined "equilibrium" to refer to a situation in which gold inflows exactly matched gold outflows, so there would be no need for any actual, net gold shipments in either direction. In that context, he considered the case of a disequilibrium which led to a tendency for gold to flow out of Britain. The appropriate policy response would be for the Bank Rate to rise. This would have two effects: it would attract investment funds, and therefore gold, from the rest of the world and it would discourage investment spending and business in general in Britain. The unemployment this caused would put downward pressure on wages, and as wages fell, prices would also fall so that by the time the process had worked itself out, labour's

¹⁹ *General Theory* Chapter 2 pg. 11

real income would not have changed very much. The drop in prices would lead to an increase in exports, which would help counter the tendency for gold to flow out of the country. In essence, Keynes was discussing the domestic devaluation story, a key element of which was that labour could be reassured that its real standard of living would not fall very much. The Macmillan Committee sessions were in 1930 when, despite the fact that the stock market crash of 1929 had shaken world financial markets, the Great Depression was still not a world-wide phenomenon. Keynes was still thinking of post-1925 Britain, and interpreting the long British slump as being a result of the return to the gold standard at the pre-War parity, meaning that the root cause of the downturn was a misalignment of British export prices, and the real policy question was why wages hadn't dropped enough to eliminate the unemployment – perhaps wages were much more sticky downward than they had been pre-War, due to the increased power of Trades Unions and to the spread of unemployment benefits. Whatever the reason for the prolongation of the slump, Keynes' solution in 1930, although he had started advocating public works spending, was still heavily dependent on Britain engineering an export-led recovery.

By the time of the *General Theory*, the Depression was world-wide, and Keynes' modeling focus had changed, from a large (at least in terms of financial markets) open economy to a closed economy. There was, after all, not much point in looking to the rest of the world to pull Britain out of its slump when the rest of the world was also in a Depression. There is remarkably little in the way of open economy macroeconomics in the *General Theory*, especially in comparison with Keynes' earlier writings. With regard to the real wage he said²⁰:

The classical conclusions are intended, it must be remembered, to apply to the whole body of labour and do not mean merely that a single individual can get employment by accepting a cut in money-wages which his fellows refuse. They are supposed to be equally applicable to a closed system as to an open system, and are not dependent on the characteristics of an open system or on the effects of a reduction of money-wages in a single country on its foreign trade, which lie, of course, entirely outside the field of this discussion.

In this context, looking at Britain's economic situation in a closed economy context, Keynes came to the conclusion that a drop in the nominal wage could not be counted on to restore full employment in the way Pigou, for example, seemed to assume that it would:

²⁰ *General Theory* Chapter 2 pg. 11

For there may be *no* method available to labour as a whole whereby it can bring the wage-goods equivalent of the general level of money-wages into conformity with the marginal disutility of the current volume of employment. There may exist no expedient by which labour as a whole can reduce its *real* wage to a given figure by making revised *money* bargains with the entrepreneurs. ... We shall argue that there has been a fundamental misunderstanding of how in this respect the economy in which we live actually works.

Keynes' basic model, then, is one in which the demand curve for labour at the level of the firm is the value of the marginal product of labour curve, and the aggregate demand for labour is an aggregation of VMPLs. Throughout the *General Theory* he holds fairly consistently to the simplifying assumption that changes in aggregate economic activity do not involve changes in the distribution of economic activity across industries, which spares him the need to consider a lot of issues of aggregation and composition. He also assumes that there exists a labour supply curve – really a labour supply price curve – which is derived from the individual's utility maximizing income-leisure trade-off problem. He makes the argument that the empirical evidence on the response of the quantity of labour supplied supply to changes in the cost of living suggests that in most years the observed wage-employment point does not lie on the labour supply curve and in fact lies above it. He is classical enough to argue that this is evidence that the nominal wage is above its equilibrium level, but he argues that a cut in the nominal wage, because it will result in a drop in prices, will not restore labour market equilibrium. Along with this he argues that the suggestion that the persistence of the depression in the United States after 1932 was due to a deliberate refusal of labour to accept a cut in its real wages made no sense. Whatever he thought about wage stickiness by the time of the *General Theory*, he did not see it as the explanation for the Depression.

The fact that the wage is above the equilibrium level would seem to be consistent with the classical concept of voluntary unemployment, but Keynes' rejection of the idea that labour has been stubbornly refusing to accept wage cuts through the depression predisposes him to reject that explanation and to introduce the concept of involuntary unemployment – what we today would call Keynesian unemployment. His next problem is to come up with a definition of involuntary unemployment. It is not sufficient to say that there is involuntary unemployment when there are more people willing to work at the going wage than there are jobs available, since that condition also applies in the case of classical voluntary unemployment. His definition of

involuntary unemployment, while not exactly transparent, follows from his argument about the response of labour to changes in the real wage due to changes in the price level:

Men are involuntarily unemployed if, in the event of a small rise in the price of wage-goods relatively to the money-wage, both the aggregate supply of labour willing to work for the current money-wage and the aggregate demand for it at that wage would be greater than the existing volume of employment.

This is not, it must be acknowledged, the most obvious of definitions and it is not one which could be called easy to implement empirically. Still, the logic of the approach follows from Keynes' earlier arguments. You can't determine whether there is involuntary unemployment simply by noting that there are more people willing to work than there are jobs available since that would also hold in the case of classical voluntary unemployment. For the same reason the observation that an increase in the demand for output, and hence the demand for labour, increases employment isn't sufficient to identify the unemployment as involuntary. The identification of involuntary unemployment should be based on something which is inconsistent with the classical model, since there can be no involuntary unemployment in that model. This brings Keynes back to the response of the labour market to an increase in the price of wage goods.

The essential idea behind Keynes' definition of involuntary unemployment seems to run as follows. Suppose the labour market is in equilibrium, as in Figure 11 below, where the nominal wage is on the vertical axis. Let the price of consumer goods rise. This will increase the value of the marginal product of labour, and shift the labour demand curve to the right but will at the same time shift the labour supply curve to the left. To see this, it is important to keep in mind that Keynes accepted the logic of the classical labour supply curve: what he rejected was the view that the system was always on it, or always tending towards it. Figure 11 below would characterize full employment in both the classical and the Keynesian models; the difference between the models was that in the Keynesian model there was no intrinsic dynamic tending to take the economy to the situation in Figure 11.

The increase in price, then, would move us to Figure 12, with the demand curve shifted to the right, to LD' and the supply curve to the left, to LS'. At the original equilibrium nominal wage there is clearly an excess demand for labour equal to the distance D1-S1, and there will be a tendency for the nominal wage to rise until the effect of the price increase has been countered –

i.e. until the real wage has been driven back up to its original level as a result of the nominal wage rising in the same proportion as the price of consumer goods has already risen. We know that this will be the outcome since the labour demand curve is based on the marginal physical product of labour curve and the labour supply curve is based on the “real” disutility of labour curve, and neither of those real curves have shifted. On the supply side, in particular, note that the true Marshallian supply price of labour will be just sufficient to allow the worker to buy a quantity of real wage-goods which will yield a level of utility just sufficient to balance the disutility of the additional work necessary to purchase them.

Keynes’ definition of involuntary unemployment (which clearly does not exist in the case of an excess demand for labour) states that there is involuntary unemployment when in the event of an increase in the price of wage goods relative to the money wage, both the aggregate quantity of labour supplied and the aggregate quantity demanded *at the current wage* will be greater than the *existing* quantity of employment. The key to understanding his argument lies in the terms current wage and existing volume of employment. Presumably, existing volume of employment refers to the level of employment prior to the price increase and the current wage refers to the original wage level.

On that assumption, consider Figure 13. Here in both the classical and the Keynesian models there is unemployment, in the amount $LS_0 - LD_0$. The test of whether it is voluntary or involuntary lies in what happens if the price of consumer goods rises. In Figure 14 below, as in Figure 12 above, the effect of an increase in P is to shift the labour demand curve to the right and the labour supply curve to the left, to LD' and LS' respectively. At the original wage, W_0 , there is still a gap between labour demand and labour supply, equal to $S_1 - D_1$. The crucial question is whether that can still be taken as a measure of unemployment.

In the Keynesian model of involuntary unemployment it can, since W_0 was determined by the level of demand for output: specifically, W_0 was the value of the marginal product of labour at the quantity of labour just needed to produce the original level of output, given the capital stock. In the classical model of voluntary unemployment, though, W_0 was the nominal wage which represented, at the old price level, the lowest money wage which could be reached, perhaps as a result of unions refusing to accept a lower real wage than W_0/P_0 , where P_0 was the original price level for consumer goods. In *Industrial Fluctuations*, Pigou basically defined this kind of a wage

floor as an element of the supply price of labour. Keynes is defining the supply price of labour in a more rigidly Marshallian sense, as the real wage which would just compensate for the disutility of lost leisure and leave the worker indifferent between working or not working an extra hour. A wage floor, if that was what W_0 was, would leave workers who were lucky enough to have jobs better off than the true supply-price level of utility.

The issue here is whether W_0 is a genuine cost-of-living based wage floor. If it is not, if we are in a world of Keynesian involuntary unemployment, the wage can stay at W_0 and unemployment fall to $S_1 - D_1$. If it is, however, it is a floor on the nominal wage only because that is what we have on the vertical axis. If it is a true classical wage floor, the floor level of W is itself a function of P and rises in the same proportion as P . In that case, the wage floor level in Figure 14 rises from W_0 to W_s , and while the quantity of labour demanded at the old wage rises the quantity of labour supplied drops significantly. Effectively, the labour demand and supply curves look as shown in Figure 15 below. If Keynes was thinking in terms of Pigou's backward-L labour supply curve, the situation would be as in Figure 16 below. In either case the increase in the price level of consumer goods would cause a noticeable reduction in the quantity of labour supplied. The floor might not be so rigid as to cause the quantity of labour supplied at W_0 to drop to zero, as in our diagrams, but labour would respond to the increased cost of living by withdrawing labour to the point where the quantity of labour willing to work at the old nominal wage would not be greater than the volume of employment existing at that old wage.

This is quite clearly not a test for the presence of involuntary unemployment which would be easy to apply. The logic behind it is clear: both voluntary and involuntary unemployment would be reduced by, say, an increase in exports which shifted the labour demand curve to the right. The fact that there are unemployed workers who would be willing to work at the current money wage does not preclude the possibility that they are unemployed because organized labour is holding the wage above the equilibrium level. If that is the case, though, then, because labour does not suffer from money illusion, the wage floor must be tied to the cost of living. If it were not, it would not be a floor in any meaningful sense – a process of rising consumer prices which shifted the labour demand curve to the right would reduce unemployment because labour would not react to the drop in its standard of living which was the result of rising prices. In the case of

classical, voluntary unemployment, then, an increase in the cost of living would simply translate into a higher nominal wage floor, with no reduction in unemployment.

In the Keynesian model a process of rising prices would reduce unemployment, but not because of money illusion. Labour would be perfectly well aware of the drop in their standard of living, and while they wouldn't be thrilled by it, they would accept it so long as the nominal wage stayed above the labour supply curve (which would be shifting up as the cost of living rose). Unlike in the case of classical voluntary unemployment there would be no significant withdrawal of labour by either the employed or the unemployed (who would be withdrawing the offer to supply labour) until the process had continued long enough to raise the supply curve of labour until the actual wage-employment point lay on it rather than above it. At the same time, the demand for labour would have shifted to the right, raising the level of employment.

It can't be said that this definition lends itself easily to empirical testing. Fortunately, while Keynes introduces it here he doesn't actually make much use of it in the remainder of the *General Theory*.

Keynes' arguments about involuntary unemployment lead him to another empirically tricky observation. He notes, in Section V of Chapter 2 that, while he rejects the hypothesis that the observed wage-employment point lies on the labour supply curve, he accepts the proposition that it lies on the labour demand curve – the VMPL curve. Throughout the *GT*, Keynes is consistently Marshallian in his microeconomics, with a few key exceptions like the argument about labour market clearing. His firm is always a Marshallian profit maximizing firm, and a profit maximizing firm will always hire labour at the point where the nominal wage equals the value of the marginal product of labour. In terms of Figure 17 below, the firm is operating at wage w_1 and employment level L_1 while the full employment wage is at w^* . This diagram looks exactly the same as the classical diagram for the case of voluntary unemployment. It is also the case that, if we look at the same firm at a different point in time and observe that the wage has risen to w_2 , we will find that employment has fallen to L_2 . Again, a very classical looking result.

The difference between the Keynesian and classical models here is in the direction of causality. As Keynes puts it:

... a decline in employment, although necessarily associated with labour's *receiving* a wage equal in value to a larger quantity of wage-goods, is not necessarily due to labour's *demanding* a larger quantity of wage-goods; and a willingness on the part of labour to accept lower money-wages is not necessarily a remedy for unemployment.

It will turn out that while in the classical model it is the increase in the wage from w_1 to w_2 which causes employment to fall from L_1 to L_2 , in the Keynesian model it is the fall in employment from L_1 to L_2 which causes the wage to rise from w_1 to w_2 (note that we are holding the price of output constant here, so the VMPL curve does not shift). Just to add to the problems of testing the two models, in both models a move towards full employment will be associated with a fall of the wage towards w^* ; in the classical model the wage cut causes employment to rise and unemployment to fall while in the Keynesian model it is the increase in employment and the fall in unemployment which causes the wage to fall towards w^* . Both the classical and Keynesian models, then, assume that the VMPL curve is the labour demand curve and both assume that the firm will always be on the VMPL curve, but the direction of causality on the labour demand diagram is reversed.

Say's Law

It is in Section VI of Chapter 2 that Keynes introduces his celebrated definition of Say's Law, which he says holds that "supply creates its own demand". William Baumol wrote an article²¹ in which he set out eight different versions of Say's Law, none of which seemed quite consistent with Keynes' version of it, leading Baumol to suggest that maybe the explanation might simply be that Keynes wasn't a very good historian of economic thought. Keynes did have an eye for a catchy phrase, though, and there's a good case to be made that "supply creates its own demand" is what has kept Jean-Baptiste Say from vanishing into historical obscurity.

The basic idea of Say's Law (which works best in a barter economy) is that nobody would incur the disutility of producing a commodity for sale unless they were going to get something in

²¹ Baumol, William J (1977): "Say's (at Least) Eight Laws, or What Say and James Mill May Really Have Meant" *Economica* 44(174) May, pp 145-61. See also William J. Baumol (1999): "Retrospectives: Say's Law" *Journal of Economic Perspectives* 13(1), Winter, 195-204

return for it. In a barter economy, an individual produces a unit of output, takes it to the market and swaps it for a unit of some other kind of output. The first individual's supply of output to the market reflects his demand for someone else's output. Say's discussion of the market process in his *Treatise on Political Economy*²² says that:

It is common to hear adventurers in the different channels of industry assert, that their difficulty lies not in the production, but in the disposal of commodities; that products would always be abundant, if there were but a ready demand, or market for them. When the demand for their commodities is slow, difficult, and productive of little advantage, they pronounce money to be scarce; the grand object of their desire is, a consumption brisk enough to quicken sales and keep up prices. But ask them what peculiar causes and circumstances facilitate the demand for their products, and you will soon perceive that most of them have extremely vague notions of these matters; that their observation of facts is imperfect, and their explanation still more so; that they treat doubtful points as matter of certainty, often pray for what is directly opposite to their interests, and importunately solicit from authority a protection of the most mischievous tendency.

And then goes on to say:

A man who applies his labour to the investing of objects with value by the creation of utility of some sort, can not expect such a value to be appreciated and paid for, unless where other men have the means of purchasing it. Now, of what do these means consist? Of other values of other products, likewise the fruits of industry, capital, and land. Which leads us to a conclusion that may at first sight appear paradoxical, namely, that it is production which opens a demand for products.

The last sentence above is clearly getting close to Keynes' version of Say's Law, when we move from the individual to the aggregate. The first sentence in this excerpt actually seems to be coming close to a Keynesian view of the world.

Say sees no problems associated with moving from a barter to a money economy, since money is demanded only because it will be spent on other commodities – even when it is hoarded, he seems to say, it winds up being spent by the miser's heirs. Say seems at one point (in the 1855 English translation, so it's not clear whether the problem is with the original or the translation) to confuse money with income, or possibly to go into a cash-in-advance framework, saying:

²² Jean Baptiste Say *A Treatise on Political Economy* 1855 English edition, Philadelphia: Lippincott, Grambo & Co. Book 1, Chapter XV: "Of The Demand Or Market For Products"

Thus, to say that sales are dull, owing to the scarcity of money, is to mistake the means for the cause; an error that proceeds from the circumstance, that almost all produce is in the first instance exchanged for money, before it is ultimately converted into other produce: and the commodity, which recurs so repeatedly in use, appears to vulgar apprehensions the most important of commodities, and the end and object of all transactions, whereas it is only the medium. Sales cannot be said to be dull because money is scarce, but because other products are so. There is always money enough to conduct the circulation and mutual interchange of other values, when those values really exist. Should the increase of traffic require more money to facilitate it, the want is easily supplied, and is a strong indication of prosperity—a proof that a great abundance of values has been created, which it is wished to exchange for other values. In such cases, merchants know well enough how to find substitutes for the product serving as the medium of exchange or money: and money itself soon pours in, for this reason, that all produce naturally gravitates to that place where it is most in demand. It is a good sign when the business is too great for the money; just in the same way as it is a good sign when the goods are too plentiful for the warehouses.

The clearest statement of what Keynes termed Say's Law is probably to be found in Say's *Letters to M. Malthus*²³ in which, interestingly enough, Say says (in Letter 1):

In the first place my attention is fixed by the inquiry, so important to the present interests of society: What is the cause of the general glut of all the markets in the world, to which merchandize is incessantly carried to be sold at a loss? What is the reason that in the interior of every state, notwithstanding a desire of action adapted to all the developments of industry, there exists universally a difficulty of finding lucrative employments? And when the cause of this chronic disease is found, by what means is it to be remedied? On these questions depend the tranquillity and happiness of nations. A discussion therefore which tends to their illustration, I have not thought unworthy of your attention, or that of the enlightened public.

So Say didn't deny the existence of serious unemployment. Then:

I had said, "As each of us can only purchase the productions of others with his own productions—as the value we can buy is equal to the value we can produce, the more men can produce, the more they will purchase." Thence follows the other conclusion, which you refuse to admit: "that if certain goods remain unsold, it is because other goods are not produced; and that it is production alone which opens markets to produce."

That, I think one would have to say, tends to vindicate Keynes' characterization of Say's Law.

²³ Jean Baptiste Say *Letters to Mr. Malthus, on Several Subjects of Political Economy, and on the Cause of the Stagnation of Commerce. To Which is added, A Catechism of Political Economy, or Familiar Conversations on the Manner in which Wealth is Produced, Distributed, and Consumed in Society*, trans. John Richter (London: Sherwood, Neely, and Jones, 1821).

In Letter 2 to Malthus, Say sounds positively Keynesian:

Experience, as well as reasoning, demonstrates that a production, *an article necessary or agreeable* to man, is only rejected when people have not the means of paying for it. These means of purchasing are precisely those which establish the demand for a production, and give it a price. Not to want a useful thing is not to be able to pay for it. And what occasions this inability to pay for it? The being deprived of that which constitutes wealth: the being deprived of industry, land, or capital.

This sounds remarkably close to a description of an unemployment equilibrium. In fact, Say's general explanation for unemployment just misses being a demand deficiency explanation: goods which are offered on the market remain unsold and labour (and other factors) find themselves unemployed, because there isn't sufficient demand for the products being offered for sale. But Say's explanation for the deficiency of demand is that some people aren't producing enough.

From Letter 2:

What do I say? That things are only sold to those who produce. Why are objects of luxury not sold to a farmer who chooses to lead a homely life? Because he prefers ease to the trouble of producing the means of purchasing objects of luxury. Whatever be the cause which limits production, whether the want of capital or of population, of diligence or liberty, the effect is, in my opinion, the same; the productions which are offered on one side are not sold, because sufficient commodities are not produced on the other.

In other words, if only people who weren't producing, or who weren't producing very much, would start to produce, they would be able to buy the unsold output of those people who are currently producing. How does he know that the new producers would be able to find a market for their output? It would come from the income which the current producers would earn if they were only able to sell everything they were producing. Say has no concerns about people producing goods for which there is no demand – price signals would lead to a reallocation of their efforts, shifting them away from the production of output which is in excess supply towards the production of output for which there is excess demand. In other words, once they start to produce something, anything at all, market signals will direct them to produce products for which there is an excess demand. (It would seem to be implicit in Say's argument that the thing unemployed labour is doing wrong is continuing to offer labour services for sale rather than following price signals and beginning to produce some kind of output.) Reading Say, you can see why Keynes taxed him with being hopelessly optimistic. You can also see why, when Keynes expressed Say's Law in terms of profit maximizing firms rather than, as Say had, in

terms of individuals, he concluded that in Say's world output and employment would inevitably rise until it hit a ceiling determined by full employment of the labour force.

Say in his irrepressible optimism doesn't seem to have given much consideration to the possibility that the system would settle into an unemployment equilibrium, but it doesn't seem impossible in his system. Suppose you are in a situation where there is deficient demand because some people aren't producing. Say assumes that if they start producing, their products will find buyers and they will buy the currently unsold output of current producers. If, however, the non-producers wait too long to begin to produce, it doesn't seem impossible that the first group of producers will have gone bankrupt, so there won't be a market for the output of the new producers. On the whole, though, in Say's model an unemployment equilibrium would probably be dynamically unstable. After all, we know that the first group of producers was willing and able to produce: it is likely that as soon as they saw that the second group had set up in production, they (the first group) would resume production and the economy would grow.

Reading Say's *Treatise* and his *Letters to Malthus*, while giving one an appreciation of Keynes' interpretation of Say (although whether Keynes was right in assuming that Say was still influential at the time when Keynes was writing is not at all clear), also makes one wonder about Keynes' adoption of Malthus as a proto-Keynesian. As Say points out, Malthus was concerned about a general glut. This might be defined formally as a state in which there wasn't sufficient demand for all output to be sold, but Malthus' causal mechanism wasn't one of demand falling short of output, it was one of output running far ahead of demand. A general glut arose, in Malthus' sense, when too much of everything was produced. Malthus' take on investment was that too much of it was a bad thing, because eventually the increase in productive capacity would lead to much more being produced than could be consumed. It was this excess output which could not be sold, even when everyone was fully employed. Malthus recommended increased spending by unproductive consumers not because it would increase demand but because, being unproductive, they would not increase aggregate supply along with their demand.

The real importance of Say's Law to Keynes' discussion, though, is in relation to the saving-investment issue, which is key to the argument of the *General Theory*. As Keynes puts it:

As a corollary of the same doctrine, it has been supposed that any individual act of abstaining from consumption necessarily leads to, and amounts to the same thing as, causing the labour and commodities thus released from supplying consumption to be invested in the production of capital wealth.

Keynes quotes Marshall to support the view that saving generates investment, but Marshall in turn was basically quoting Adam Smith who said,²⁴ on the same topic:

What is annually saved is as regularly consumed as what is annually spent, and nearly in the same time too; but it is consumed by a different set of people. That portion of his revenue which a rich man annually spends is in most cases consumed by idle guests and menial servants, who leave nothing behind them in return for their consumption. That portion which he annually saves, as for the sake of the profit it is immediately employed as a capital, is consumed in the same manner, and nearly in the same time too, but by a different set of people, by labourers, manufacturers, and artificers, who reproduce with a profit the value of their annual consumption. His revenue, we shall suppose, is paid him in money. Had he spent the whole, the food, clothing, and lodging, which the whole could have purchased, would have been distributed among the former set of people. By saving a part of it, as that part is for the sake of the profit immediately employed as a capital either by himself or by some other person, the food, clothing, and lodging, which may be purchased with it, are necessarily reserved for the latter. The consumption is the same, but the consumers are different.

In Smith's day while there were share markets – you could invest in shares in the East India Company, for example or, a bit earlier on (and less happily) the South Seas Company, and for that matter in government debt – much investment was done directly by savers. They would be merchants who invested in their own or others' businesses, or they would be improving landlords, and sometimes in a sense both – merchants who retired to country estates often invested in improving the productivity of their estates. Smith's assumption that savings were spent, almost immediately, was empirically not an unreasonable one.

By the time Keynes was writing, the assumption that an increase in saving would translate into increased investment spending was part of the standard economic model, although the mechanism linking the two was different, as we shall see when we discuss the relevant chapters in *General Theory*. The classical model recognized that saving and investment were done by

²⁴ Adam Smith (1776): *An Inquiry into the Nature and Causes of the Wealth of Nations* Book 2, Chapter 3, Paragraph 18 "Of the Accumulation of Capital, or of Productive and Unproductive Labour"

different people but assumed that the equilibrating mechanism was such that an increase in saving would translate into an increase in investment. Keynes' position was that saving did equal investment but that the mechanism was quite different from that assumed by the standard model. He argued that the motivations of savers and investors were different, but that even when they were aligned, the signaling mechanism didn't work the way Say or the classical economists of Keynes' period assumed.

In Say's model, the act of saving is a device for increasing consumption in the future. The consumer is an intertemporal utility maximizer who trades present consumption against future consumption but who consumes all of his income over his lifetime. Keynes' argument is that, while this might well be a correct view of consumer motivation, there is no signaling mechanism which marks a reduction in current consumption, resulting from an increase in saving, as a desire for increased future consumption. In an intertemporal general equilibrium model in which commodities are indexed not only by their nature but also by the time and place at which they are to be consumed, a saver could save by buying contracts which would entitle him to delivery of certain specific goods at a certain specified date in the future. The purchase of these contracts would signal to producers how much productive capacity they would need at various dates in the future, in order to meet pre-contracted demand, and they could invest accordingly, using the revenue they received from the contracts for future delivery of output to finance the investment. In that model, increased saving done by consumers who intended to consume more in the future would translate into increased investment spending by firms, and Smith's assertion about saving being spent would continue to hold. Keynes' point is that no such set of complete securities exists, and that this has crucial implications for the working of the macro-economy.

Cyclicity of Real Wages

Another element of Chapter 2 of the *General Theory* which has spawned a lasting, unresolved debate is the issue of the cyclicity of real wages. Keynes remarks²⁵, almost in passing, that:

²⁵ Chapter 2, page 9

It would be interesting to see the results of a statistical enquiry into the actual relationship between changes in money-wages and changes in real wages. In the case of a change peculiar to a particular industry one would expect the change in real wages to be in the same direction as the change in money-wages. But in the case of changes in the general level of wages, it will be found, I think, that the change in real wages associated with a change in money-wages, so far from being usually in the same direction, is almost always in the opposite direction. When money-wages are rising, that is to say, it will be found that real wages are falling; and when money-wages are falling, real wages are rising. This is because, in the short period, falling money-wages and rising real wages are each, for independent reasons, likely to accompany decreasing employment; labour being readier to accept wage-cuts when employment is falling off, yet real wages inevitably rising in the same circumstances on account of the increasing marginal return to a given capital equipment when output is diminished.

Keynes suggestion was taken up almost immediately in papers by Dunlop²⁶ and Tarshis²⁷ with a reply by Keynes²⁸ in 1939 which is included as Appendix 3 in the Collected Writings edition of the *General Theory*. It has provided fodder for empirical research ever since.

There are two propositions here, the first of which, pertaining to the individual industry, seems non-controversial. When the demand facing an individual industry rises, the industry will want to increase output. This will require it to increase employment and that, in general, will require it to increase the wages it is offering in order to attract labour away from other sectors. Hence the nominal wage paid by the industry will rise. The increase in demand for its product will translate into an increase in the industry price level, and the real wage paid by the industry when measured in product terms (i.e. w/P_i where P_i is the price of the industry's product) will tend to fall²⁹, but when we look at the real wage from labour's point of view, as w/P_C where P_C is the price of the basket of consumer goods which workers are buying, real wages paid to workers in that industry will have risen because, even if good "i" is a consumer good which happens to make up a large part of the consumer's basket, the prices of other consumer goods haven't risen (this was an industry-specific demand shock), meaning that P_C will rise proportionately less than P_i with the difference being large enough that real wages for workers in that industry, measured in terms of the CPI, will rise.

²⁶ Dunlop, John T. (1938): "The Movement of Real and Money Wage Rates" *The Economic Journal* 48, September, pp. 413-434.

²⁷ Tarshis, Lorie (1939): "Changes in Real and Money Wages", *Economic Journal*, 49, March, pp. 150-4.

²⁸ Keynes, J. M. (1939): "Relative Movements of Real Wages and Output" *Economic Journal* 49, March, 34-51

²⁹ Because the Value of the Marginal Product of Labour curve is negatively sloped.

The other part of the proposition is the one which spawned a literature. Keynes argues that in general while nominal wages will rise during an upswing, real wages will tend to fall. He is more explicit in the 1939 article than in the *General Theory* that what he is concerned with is the effect of swings in aggregate demand on the relation between real and nominal wages, and not simply in a long term descriptive relation between real and nominal wages, so the proposition is that nominal wages will move pro-cyclically and real wages counter-cyclically. He is assuming that the level of the capital stock is constant and that there is no technological change going on, so he is discussing the cyclicity of wages in pure short term business cycle terms.

The Dunlop and Tarshis articles provided evidence that in the UK (Dunlop) and the US (Tarshis) real and money wages tended to rise and fall together (or at least, as Keynes puts it, that “when money wages are falling, real wages are no more likely to rise than fall”). Keynes offered a number of observations in response to Dunlop’s and Tarshis’s results.

The first part of his response is simply to acknowledge that he hadn’t checked the available data when he made the comment in the *General Theory* but rather was accepting what he took to be the conventional wisdom, following from some writings by Marshall³⁰. He then makes the frustrating statement that

If, however, it proves right to adopt the contrary generalization, it would be possible to simplify considerably the more complicated version of my fundamental explanation which I have expounded in my *General Theory*. My practical considerations would have, in that case, *a fortiori* force.

The frustrating part of this statement is actually the footnote which is attached to it, which says:

“Particularly in Chapter 2, which is the portion of my book which most needs to be revised.”

Instead of then sketching out a revision of chapter 2, however, Keynes cites some work by James Meade for the League of Nations³¹, in which Meade concludes that in most countries, since 1929, as the demand for labour fell, nominal hourly wages fell but that in all cases since the price

³⁰ Specifically, Marshall’s evidence to the 1887 Gold and Silver Commission and to the 1899 India Currency Committee

³¹ In the League of Nations *World Economic Survey 1937-38*

level fell by more than the fall in nominal wages, real wages rose. Keynes adds the observation that Meade also found that “the same was not true of weekly wages”. More recent studies for both the US and the UK suggest much the same thing; that during the Depression nominal hourly wages fell, real hourly wages rose and weekly earnings fell³². If Meade’s numbers are right, chapter 2 presumably doesn’t require revision³³.

Keynes also presents evidence on labour’s share of income in the UK and the US, showing that through the 1920s and early 1930s, the relative share of manual labour was relatively constant, fluctuating between 41 and 44% in Great Britain and between 35% and 40% in the US. Figure 18 below³⁴ shows the share of British labour more broadly defined, from 1856 – 1939, which also shows a considerable degree of constancy, apart from the jump in labour’s share through the First World War³⁵.

The issue of the cyclicity of real wages speaks to the nature of Keynes’ theoretical apparatus. He is, as we have said before, working with Marshallian profit maximizing firms which are operating in the Marshallian short run. That means that the wage is equal to the value of the marginal product and that the capital stock is held constant. Fluctuations in employment, then, involve movements along the VMPL curve, but since the VMPL curve is based on the Marginal

³² An interesting piece of evidence in support of Keynes’ argument about real-wage cyclicity comes from an article in an Australian newspaper, *The Sydney Morning Herald*, dated Wednesday, 6 March 1935 (i.e. in the year before the publication of the *General Theory*) and headlined **REAL WAGES INCREASE DURING DEPRESSION Despite Nominal Decline. Federal Statistician’s Figures**. The article (on pg. 13 of that day’s *SMH*) reports on figures prepared by E. T. McPhee, the Australian Commonwealth Statistician, which “disclose the remarkable fact that during the last few years of the depression there was an increase, and not a decrease in real wages. Although nominal wage rates have declined, the fall in the prices of commodities has made their purchasing power greater than during the peak year, 1929.” It goes on to say that “Comparison with 1911 shows that the “real” wage for full-time work in 1933 was 17.8 per cent higher, but if allowance is made for unemployment, it was 7.4% lower.” That last observation isn’t explained in the article, but may relate to Meade’s observation that while hourly real wages rose, weekly real wages fell because fewer hours were being worked in each week.

³³ Tarshis, who had been a student of Keynes, seems not to have been convinced by Keynes’ response. In Chapter 38 of his 1947 introductory textbook of economics, (generally considered to be the first introductory level Keynesian textbook) he reviewed the arguments and the American data and concluded “Hence we should expect generally to find the money wage and the real wage changing in the same direction. There is considerable statistical data from the United States from 1933 to 1945 to support this conclusion.” Lorie Tarshis (1947) *The Elements of Economics: An Introduction to the Theory of Price and Employment* pub. Houghton Mifflin Company, page 564.

³⁴ Drawn from the on-line data appendix to Sally Hills, Ryland Thomas, and Nicholas Dimsdale (2010): *The UK recession in context — what do three centuries of data tell us?* Pub. Bank of England Quarterly Bulletin, Q4.

³⁵ The issue of the behavior of labour’s share of national income during the business cycle reappears in Chapter 10 of the *General Theory*.

Physical Product of Labour (MPPL) curve, with the capital stock and the state of technology held fixed, an increase in employment also requires a reduction in the MPPL. Keynes makes the point, in his discussion of Meade's results, that the relevant wage is the hourly wage, on the assumption that the unit of labour in the production function is actually an hour of labour. Given this, Meade's finding that in a downturn real wages rose but weekly earnings fell is consistent with a movement to the left along the MPPL curve – the real hourly wage of labour rose but sufficiently fewer hours of labour were hired that the weekly wage bill fell. This is an important point for our understanding of Keynes' model, since it emphasizes the fundamentally Marshallian nature of his micro-foundations. In a general downturn, the same thing will be happening in a whole range of industries, so we would expect to see the same counter-cyclical relation between real wages broadly measured and output in general.

It is also important to note what Keynes is holding constant, since this speaks to the way the question has to be investigated empirically. His use of the Marshallian short term means that his theoretical prediction is conditional on the input of capital into production being held constant. We typically assume that this is satisfied in the sense that the stock of capital equipment is constant over time, but just as the labour hour is the appropriate measure of the labour input in production, we should really be looking at some measure of capital services. If the number of weekly hours of labour input is reduced because a shift is eliminated, the capital equipment will still be present, but it will only be supplying capital services when the remaining shifts are at work. Arguably in that case the capital and labour inputs have both been reduced in the same proportion, which would be consistent with the relative stability of labour's share. We should also note that throughout the *General Theory* Keynes assumed away changes in the distribution of aggregate demand across industries. Clearly distributional effects have to be taken account of in any empirical investigation of the cyclicity of real wages³⁶. Perhaps the most important point to make here, though, is that if we reject the counter-cyclicity of the real wage we are, in as far as testing Keynes' model is concerned, rejecting the Marshallian labour demand model. If we reject the theoretical logic of the Keynesian determination of real wages, we need to look to alternative theoretical models to replace it.

³⁶ These factors have been allowed for in many empirical studies over the years, of course. Our focus here is on Keynes' discussion of the issue and its relation to Chapter 2 of the *General Theory*.

Summary of the argument in Chapter 2:

It is probably worth winding up with a summary of the evolution of Keynes' thought as it relates to Chapter 2 of the *General Theory*. In his private evidence to the Macmillan Committee, Keynes was still to large degree working in the world of the *Tract on Monetary Reform* and *The Economic Consequences of Mr. Churchill*. Unemployment in Great Britain was a consequence of the return to Gold at the pre-War parity, which raised the prices of British exports relative to their international competitors and threw large parts of British industry into a downturn. By 1930 Keynes had accepted that the Gold Standard set the stage for British policy-making so his policy recommendations did not include going off Gold. The theoretical question was why unemployment had persisted as long as it did after the return to Gold – unemployment should have driven the nominal wage down, which in turn should have pulled prices down, which should have restored the competitiveness of the British export sector. Some of this might have been due to downward wage stickiness associated with the strengthening of the Trades Unions and the spread of Unemployment Benefits, but Keynes was becoming increasingly unhappy with these ad hoc explanations.

By the *General Theory* he had decided that Britain's problems had to be analysed in a closed economy framework, since the rest of the world was not in a position to pull Britain out of the Slump. Further, between the Macmillan Committee evidence and the writing of the *General Theory*, Britain had once again gone off the Gold Standard. Those factors made Keynes go back and reconsider the basic assumptions of his Macmillan Committee era model. The most important re-think dealt with the working of the labour market. Whereas before he had simply accepted that a drop in nominal wages would not cause real wages to fall (but would improve Britain's export competitiveness), and whereas this had been a pretty widely accepted conclusion, when he looked at the same theoretical proposition from the closed economy perspective he realized that it cast serious doubt on the argument that industry-level negotiations over nominal wages could bring about the real wage changes necessary to restore full employment. As we noted earlier, Keynes had not changed his view on the wage-price mechanism, what had changed was his thinking about the implications of this relation for the aggregate economy. Having come to doubt the tendency of the labour market to equilibrate through the mechanism of changes in the price of labour, and having come to the conclusion that

the empirical evidence did not support the proposition that at any observed level of employment the wage was generally on the labour supply curve as well as on the labour demand curve, he proposed a model in which firms, being profit maximizers, always operated on their VMPL curves but in which employment was determined by aggregate demand, not by the labour demand-supply interaction. This meant that when there was involuntary unemployment wages would be above the equilibrium level, but that the unemployment was not caused by labour refusing to take wage cuts. This also meant that as employment fell, since industries would stay on their VMPL curves, real wages would rise even as nominal wages fell, meaning that prices would fall by more than nominal wages fell. This was supported by Meade's findings for the League of Nations report, and it is consistent with evidence gathered since Keynes' time to the effect that people who managed to keep their jobs during the Depression saw, at the very least, their real hourly wages rising although cutbacks on hours might have meant that their real weekly earnings fell.

If Keynes' argument at this point seems strained, it is because his model is underdetermined. He is talking about changes in real wages, but changes in real wages depend on changes in nominal wages and in the price level, and the chapters on those subjects are deferred until much later in the *General Theory*. We have, therefore, an equation explaining the real wage but we do not have equations explaining the two nominal components of the real wage. Basically, the story is that in a downturn, firms cut back on output and employment, and also cut their prices to a degree which depends on their marginal cost curves. They will also cut nominal wages, but only to the point where the new nominal wage and the new product price give a product wage which is equal to the marginal physical productivity of labour at the new, lower level of employment. Since the MPPL curve will not have shifted – it is an engineering relation, derived from the nature of the firm's production function – the real product wage associated with the new, lower level of employment will be higher than the real product wage which was associated with the firm's old level of employment. Because this happens all across the economy, when there is a general downturn nominal wages will tend to fall by less than the price of wage goods in general and the real wage in terms of wage goods in general (i.e. the real wage found by deflating the nominal wage by the CPI) will rise.

Contrary to the argument that the Keynesian model lacks microfoundations, Keynes was working in a very well conceptualized Marshallian world. Indeed, one of his primary criticisms of the classical model dealt with the lack of solid microfoundations for its explanations of the observed behavior of the labour market. Keynes main objection to Pigou's model was, as we have suggested above, the very ad hoc way in which unemployment was explained – with wage stickiness tacked on almost as an afterthought to the labour clearing model. In many ways, then, Chapter 2 of the *General Theory* is the most important theoretical chapter in the book.

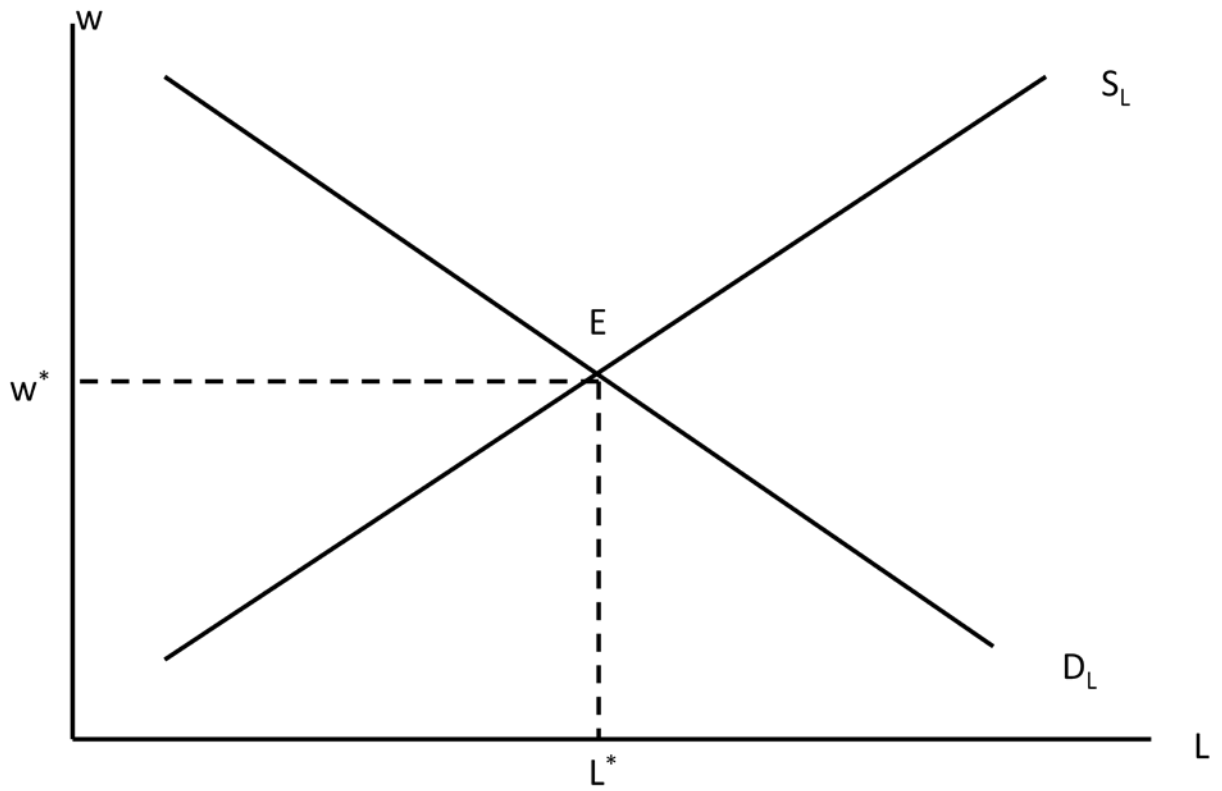


Figure 1: Labour Demand and Supply

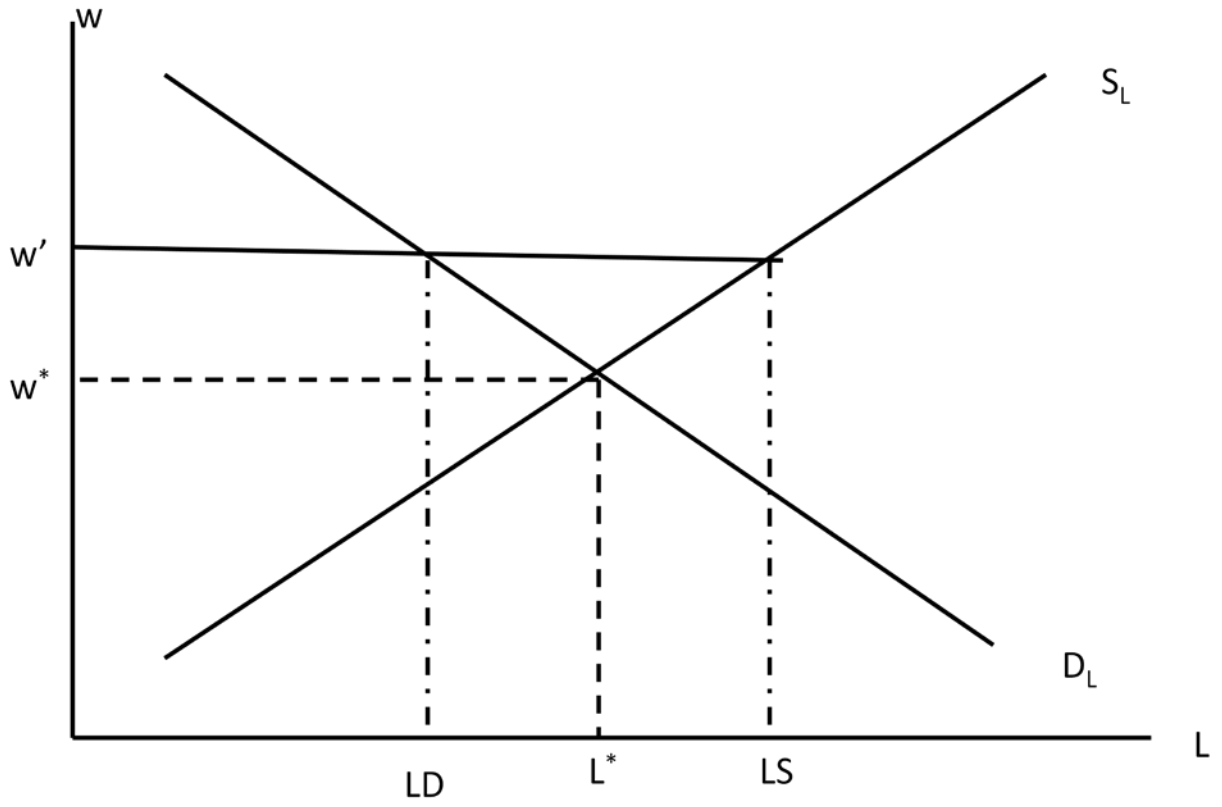


Figure 2

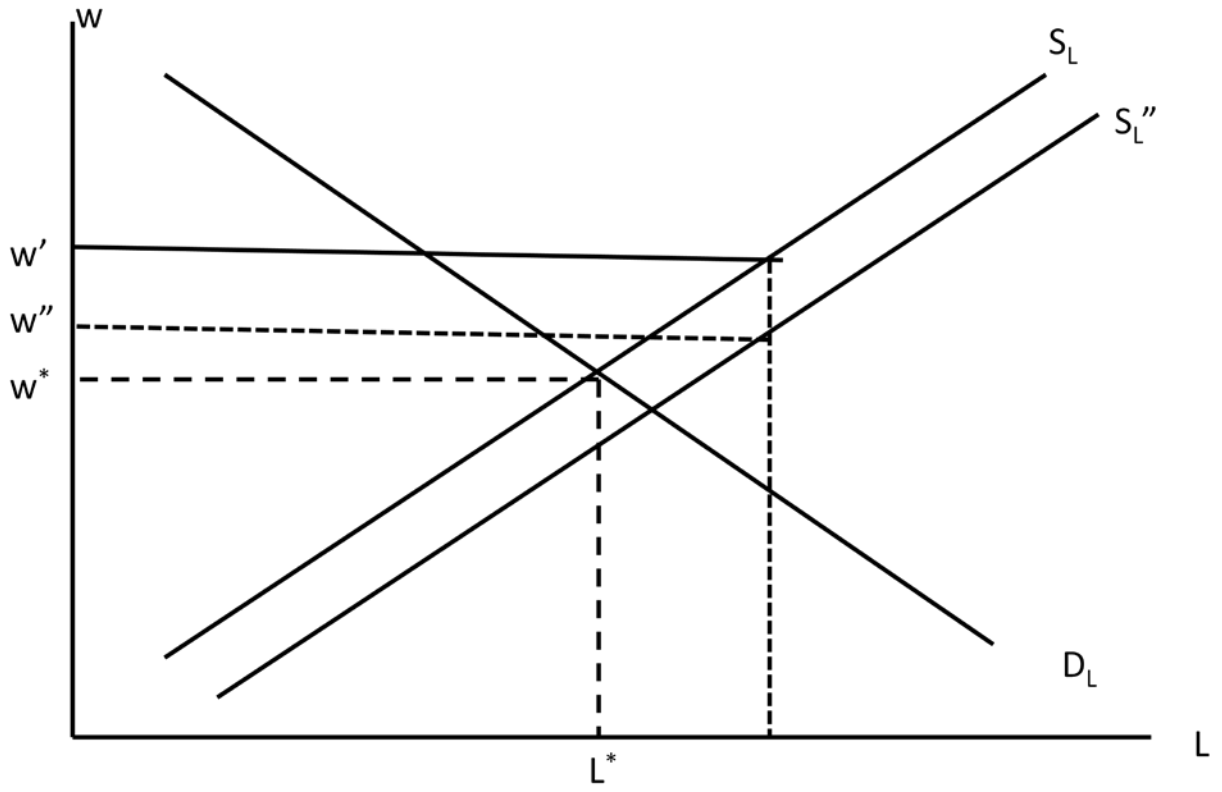


Figure 3

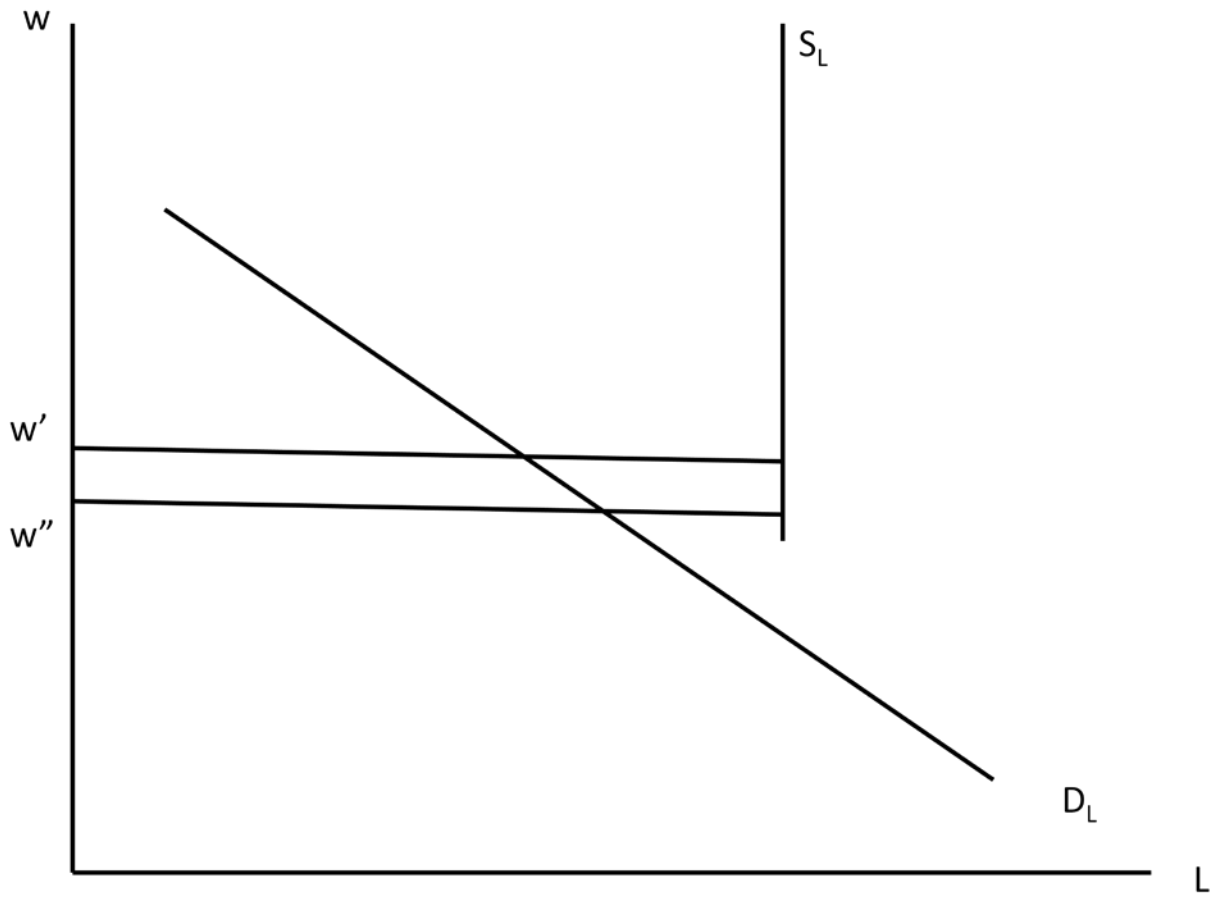


Figure 4: Pigou's Labour Supply-Demand Diagram

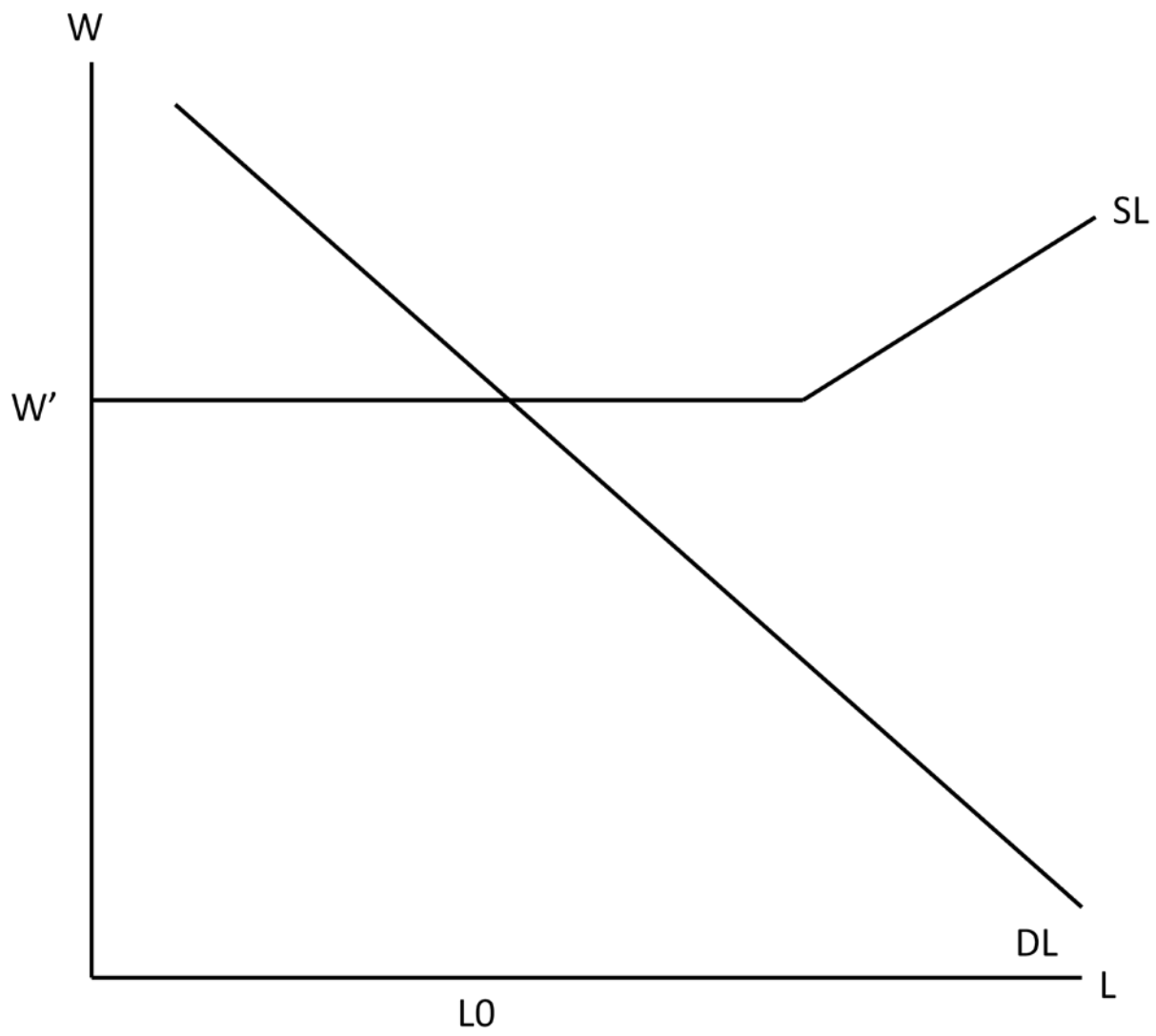


Figure 5

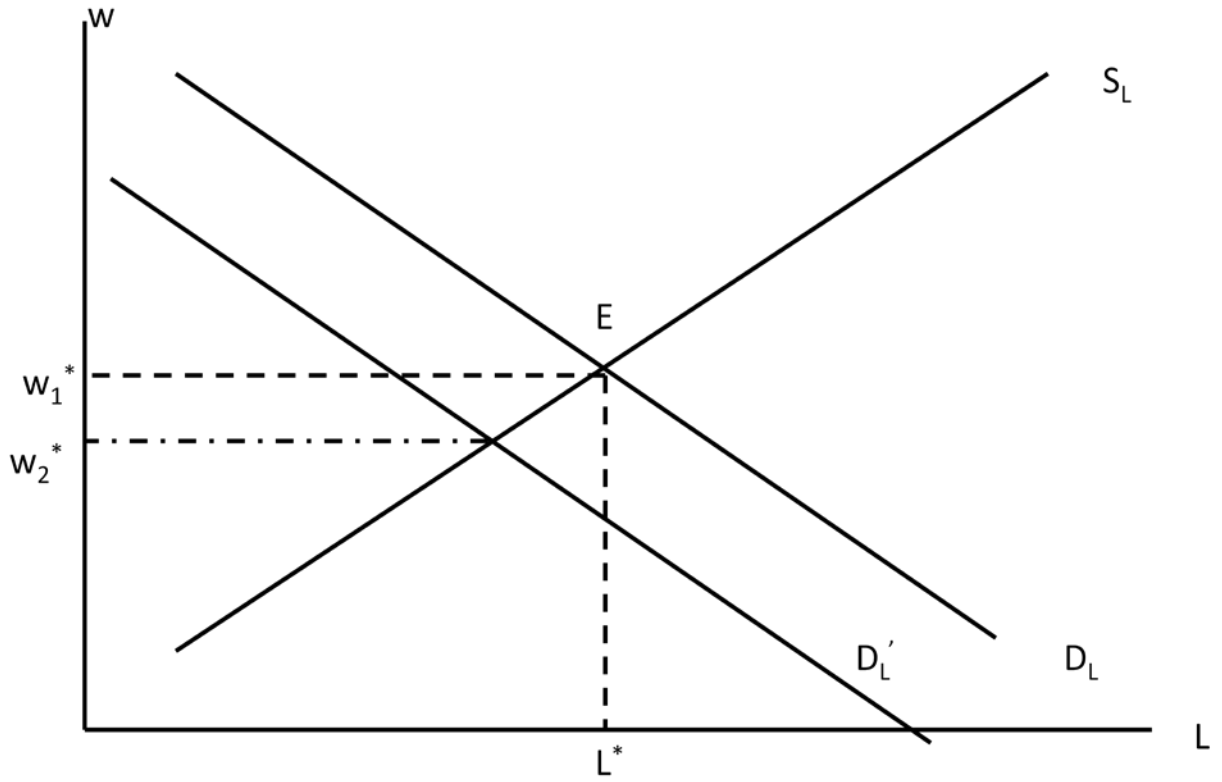


Figure 6

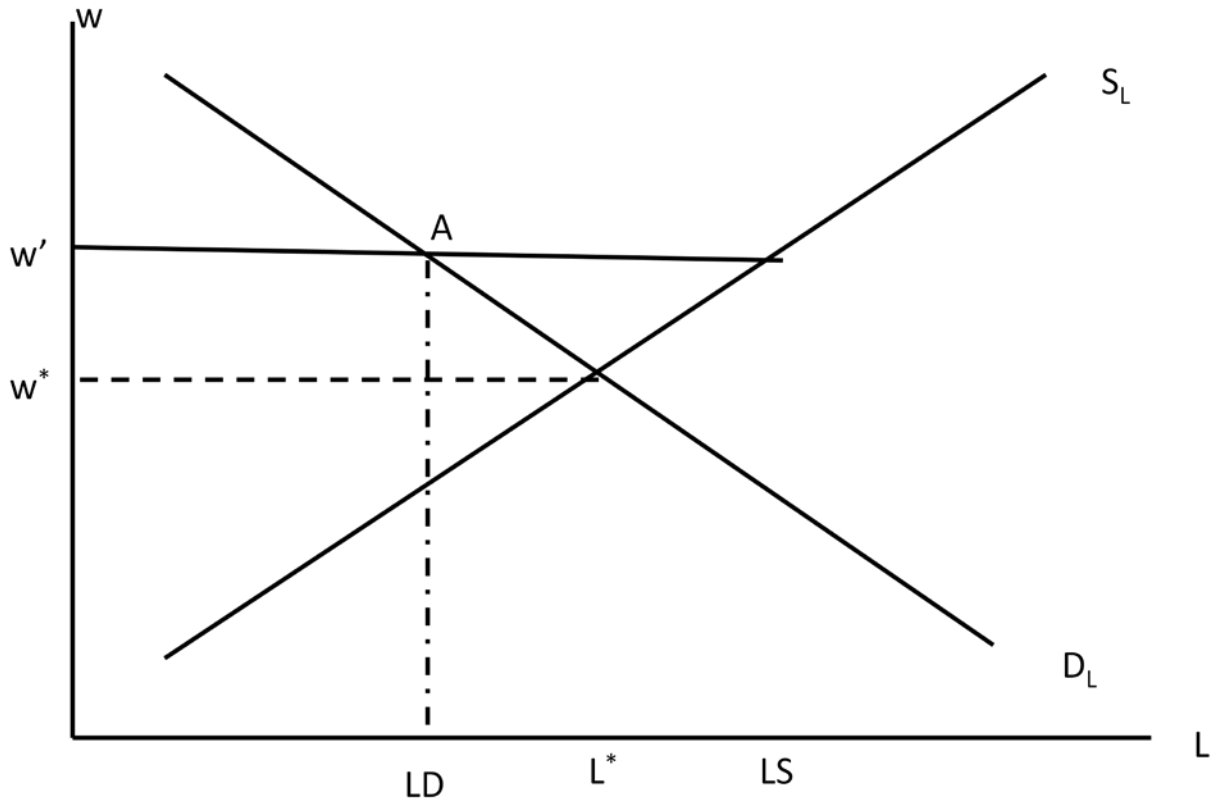


Figure 7

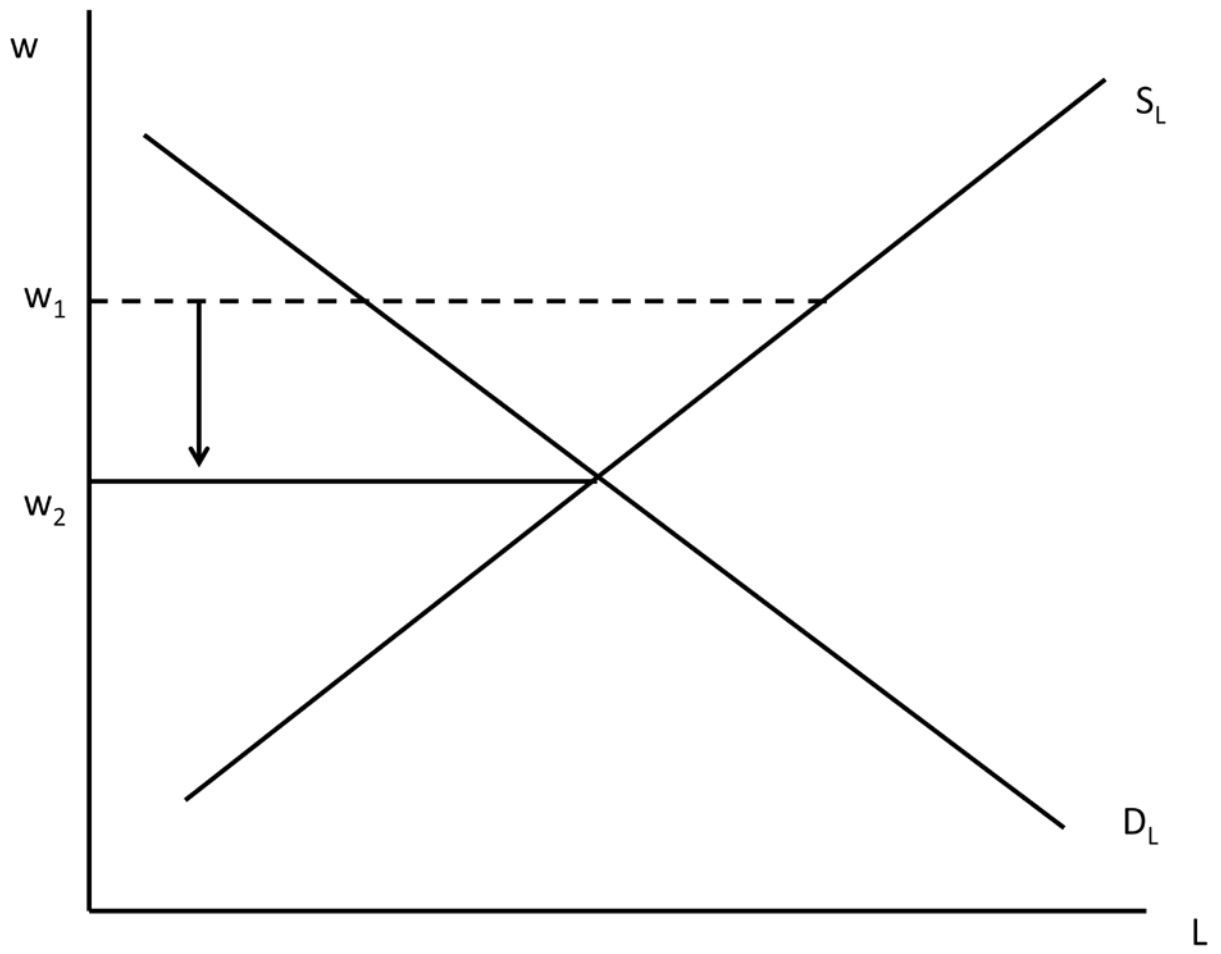


Figure 8

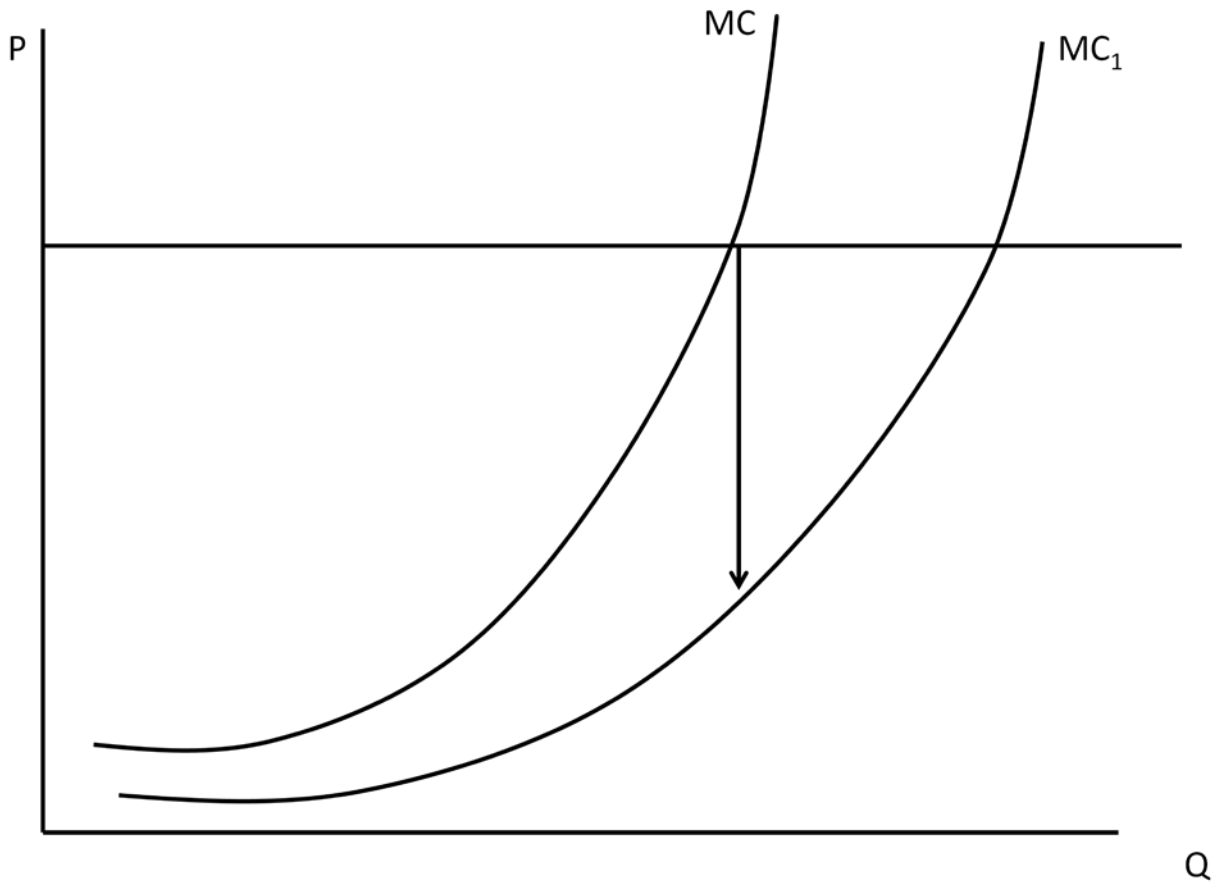


Figure 9

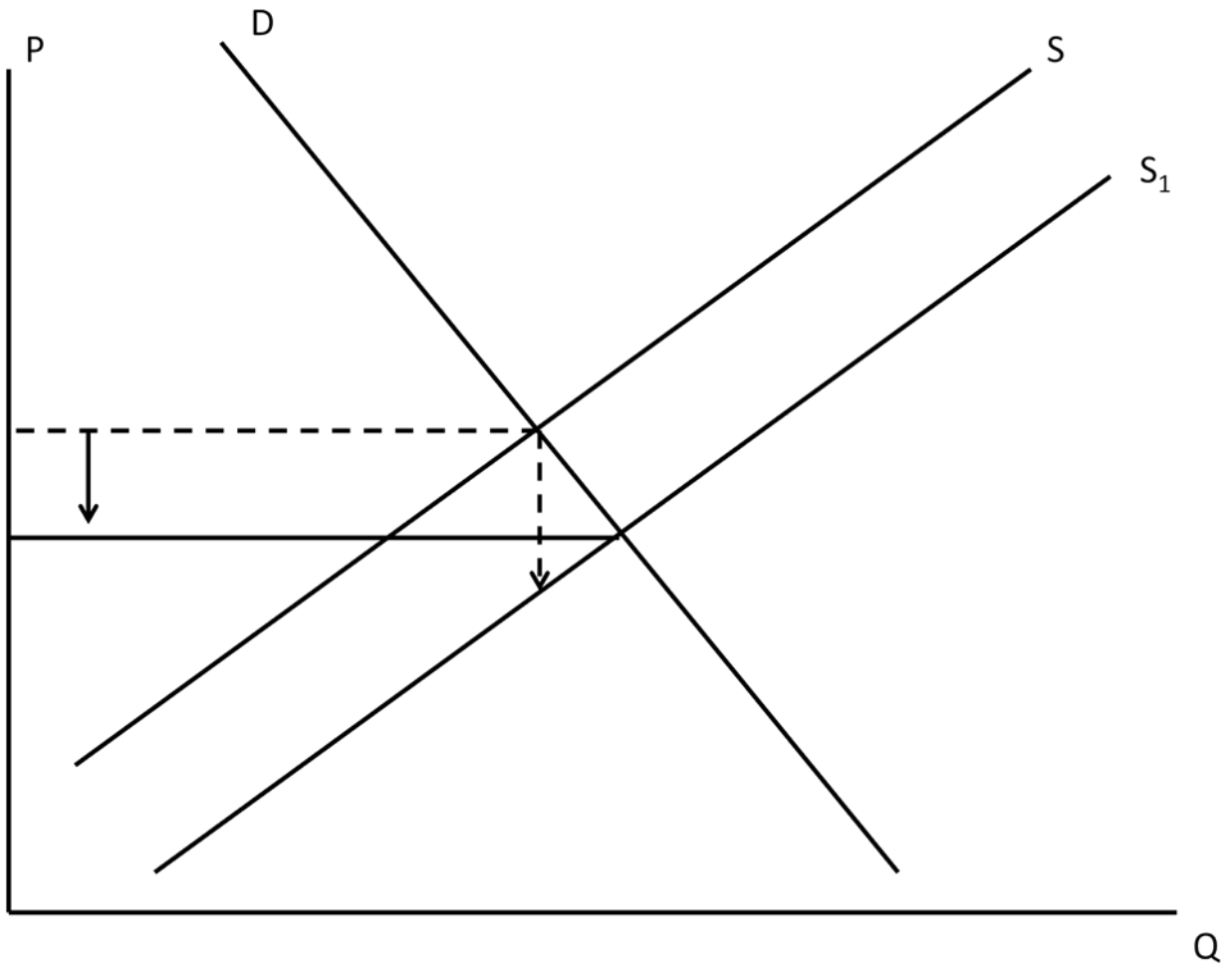


Figure 10

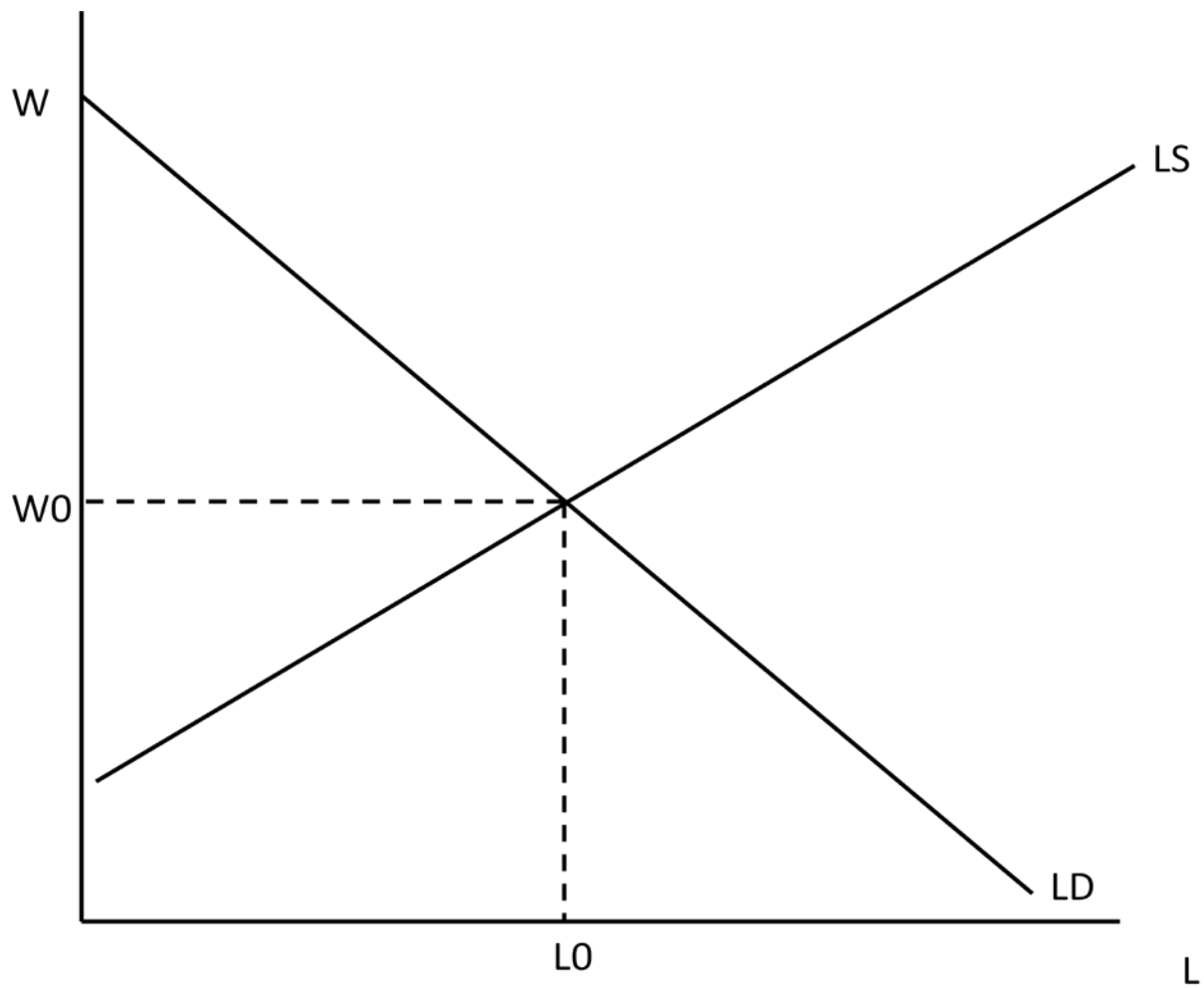


Figure 11

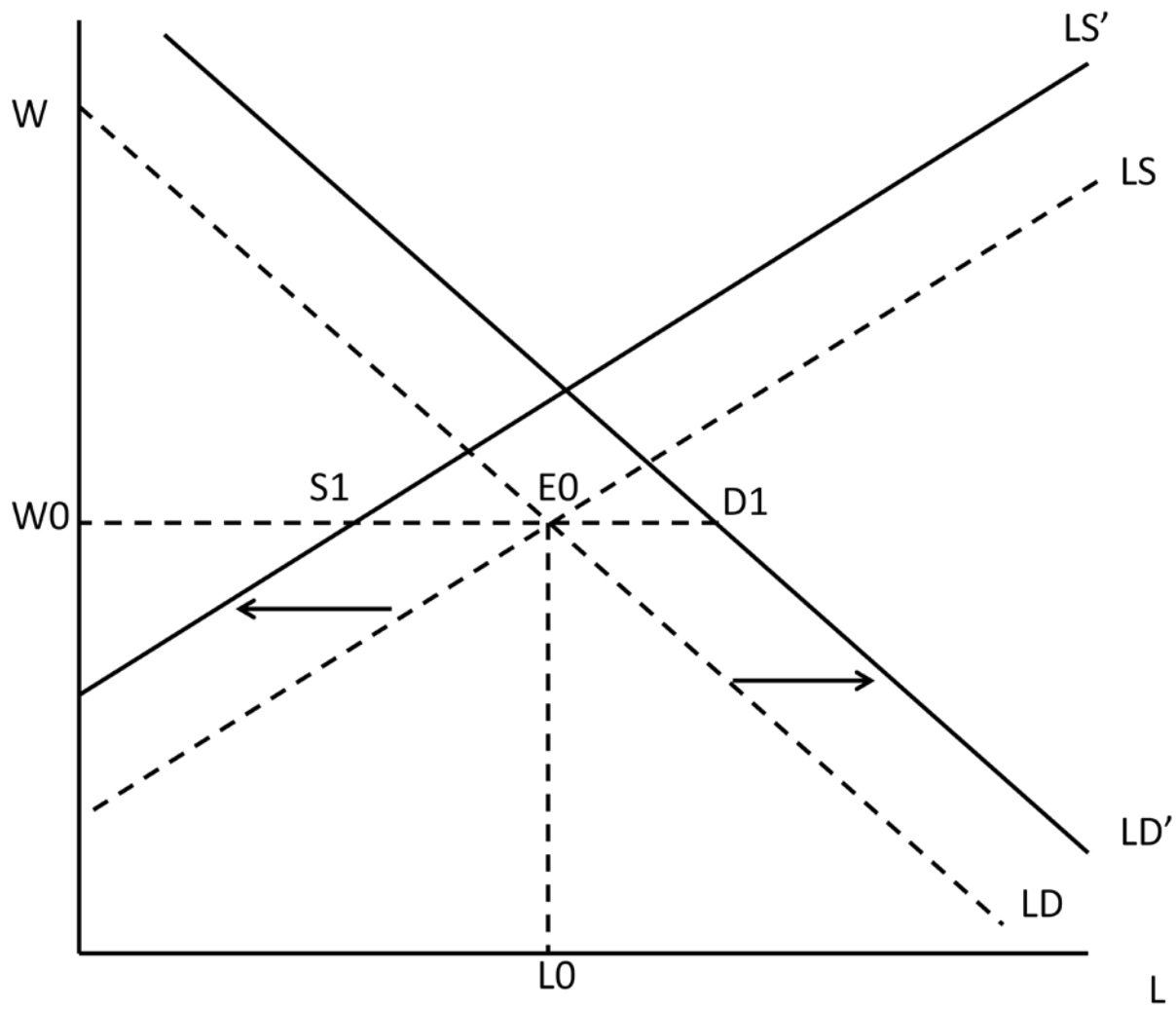


Figure 12

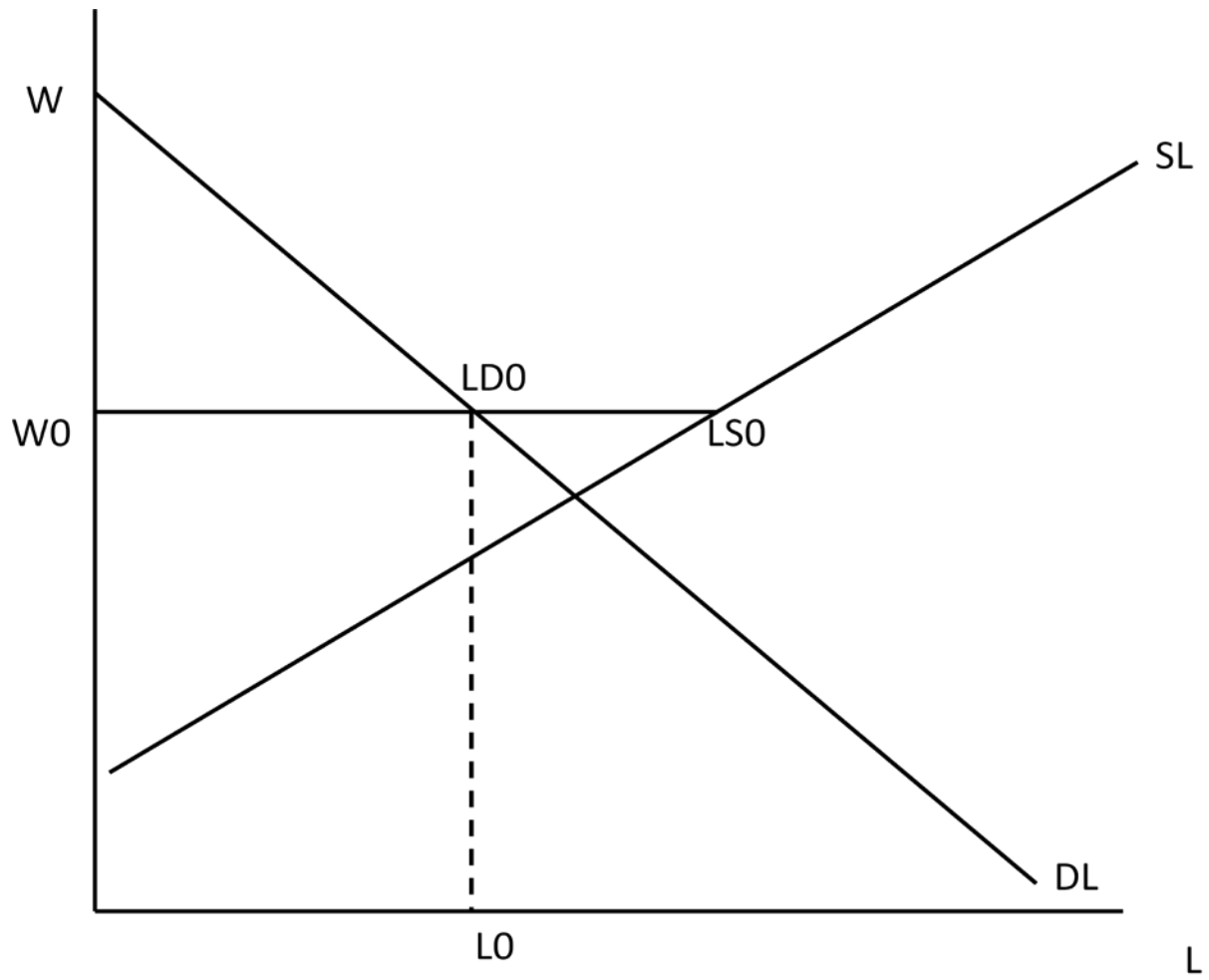


Figure 13

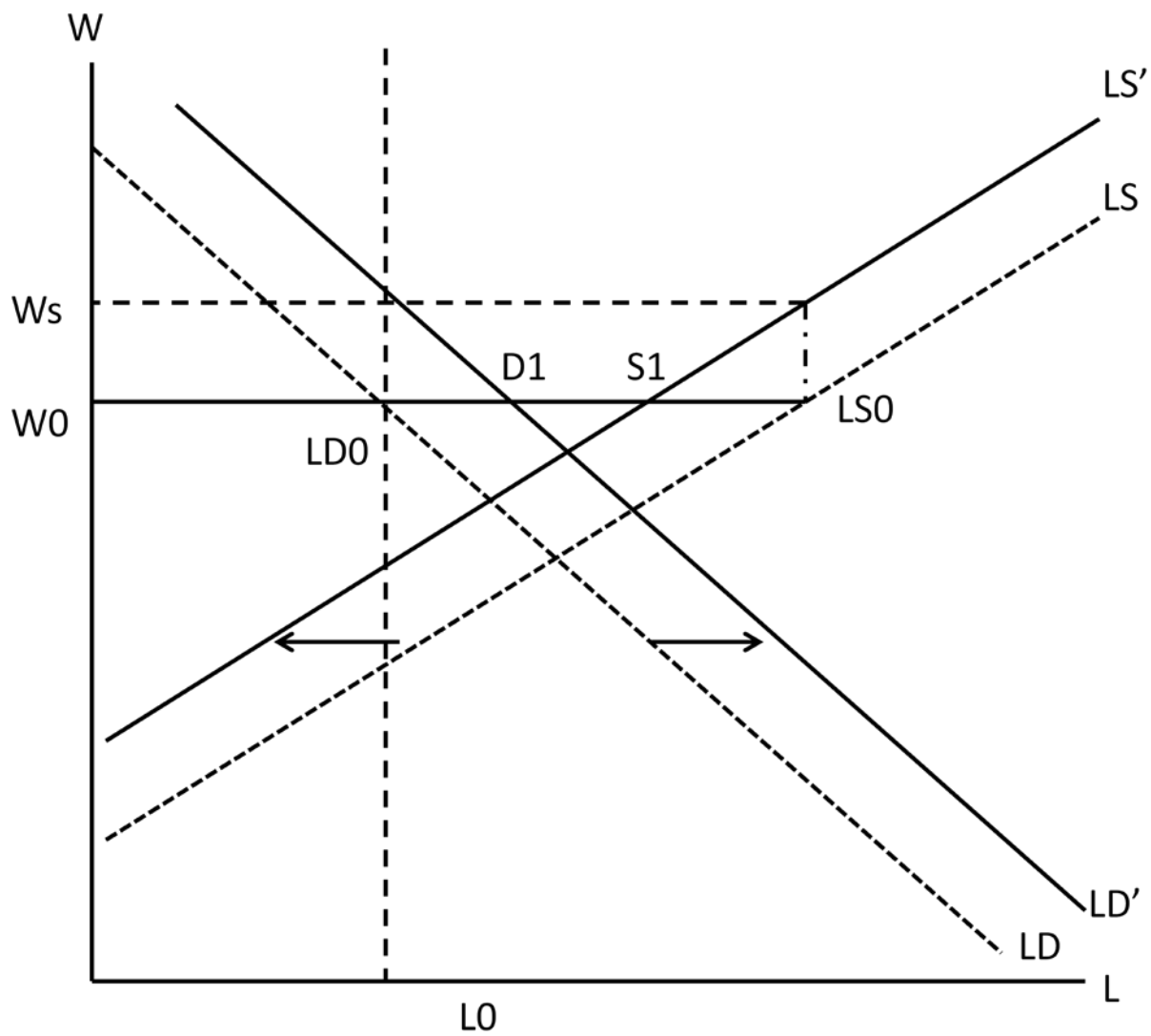


Figure 14

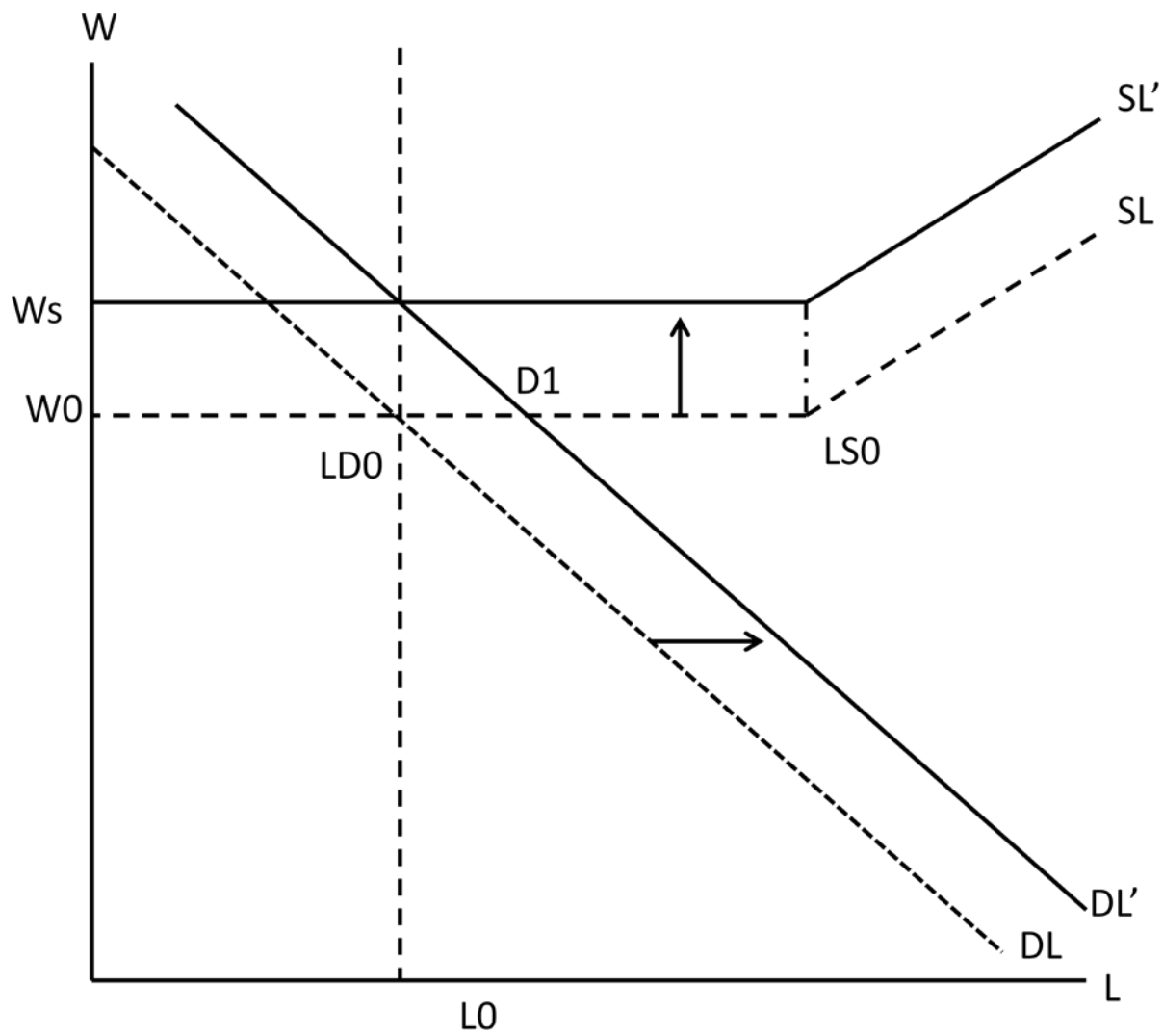


Figure 15

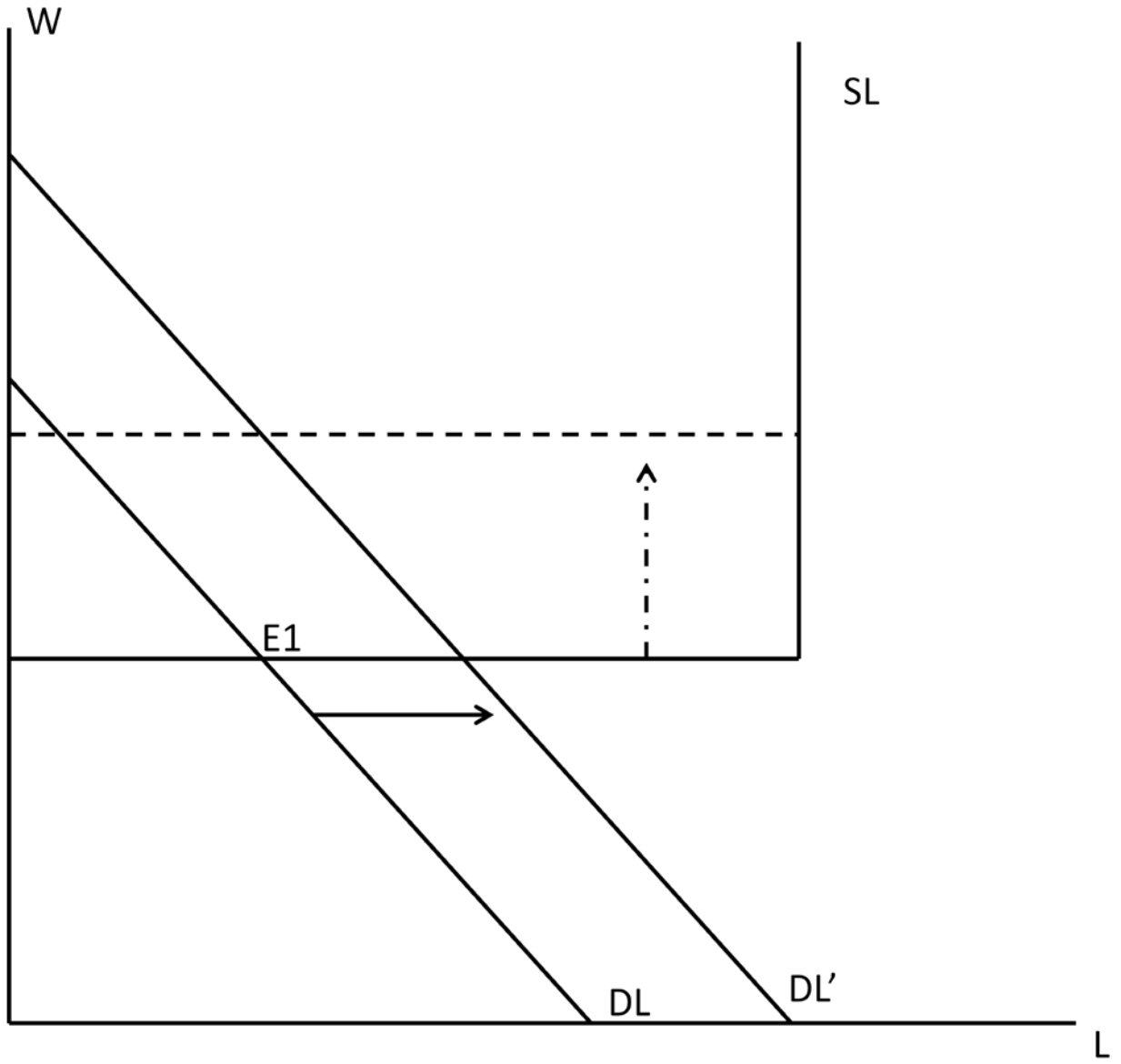


Figure 16

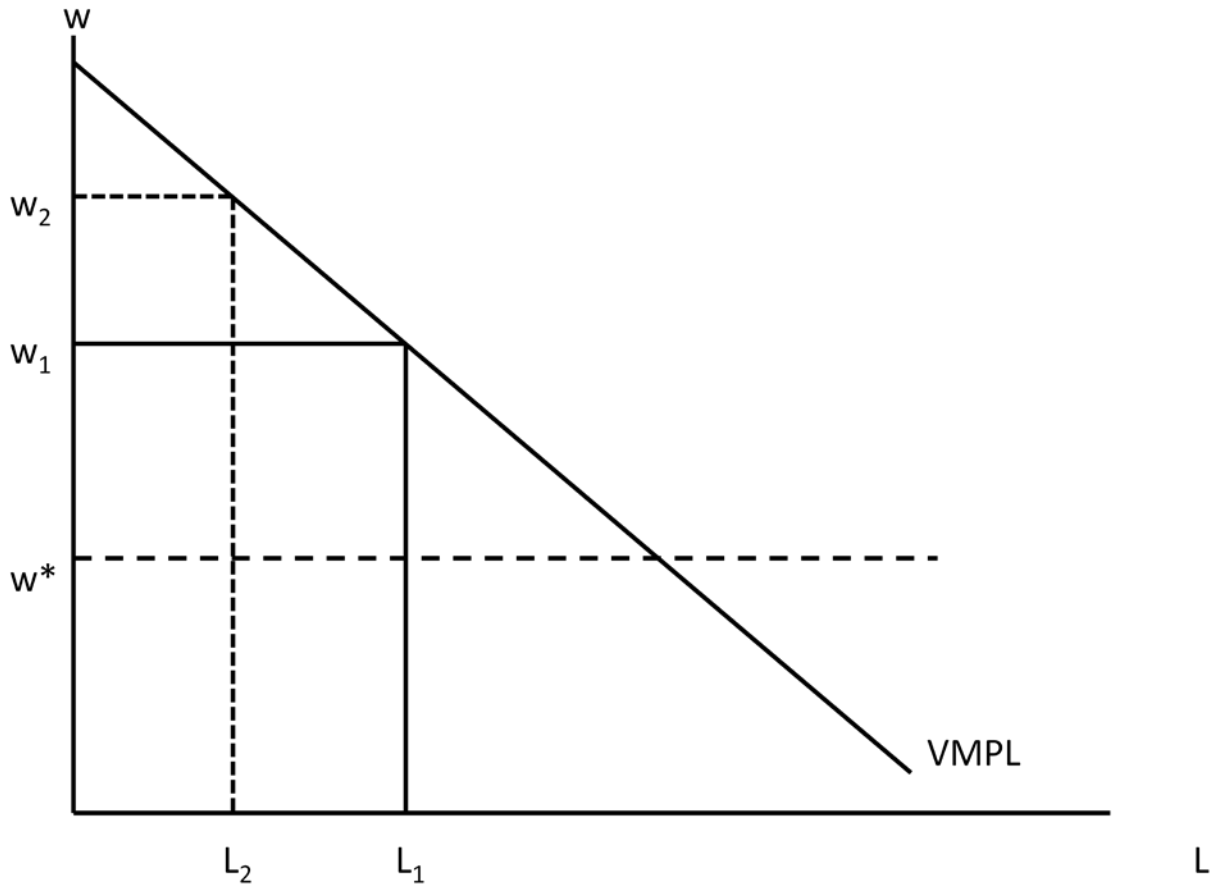


Figure 17

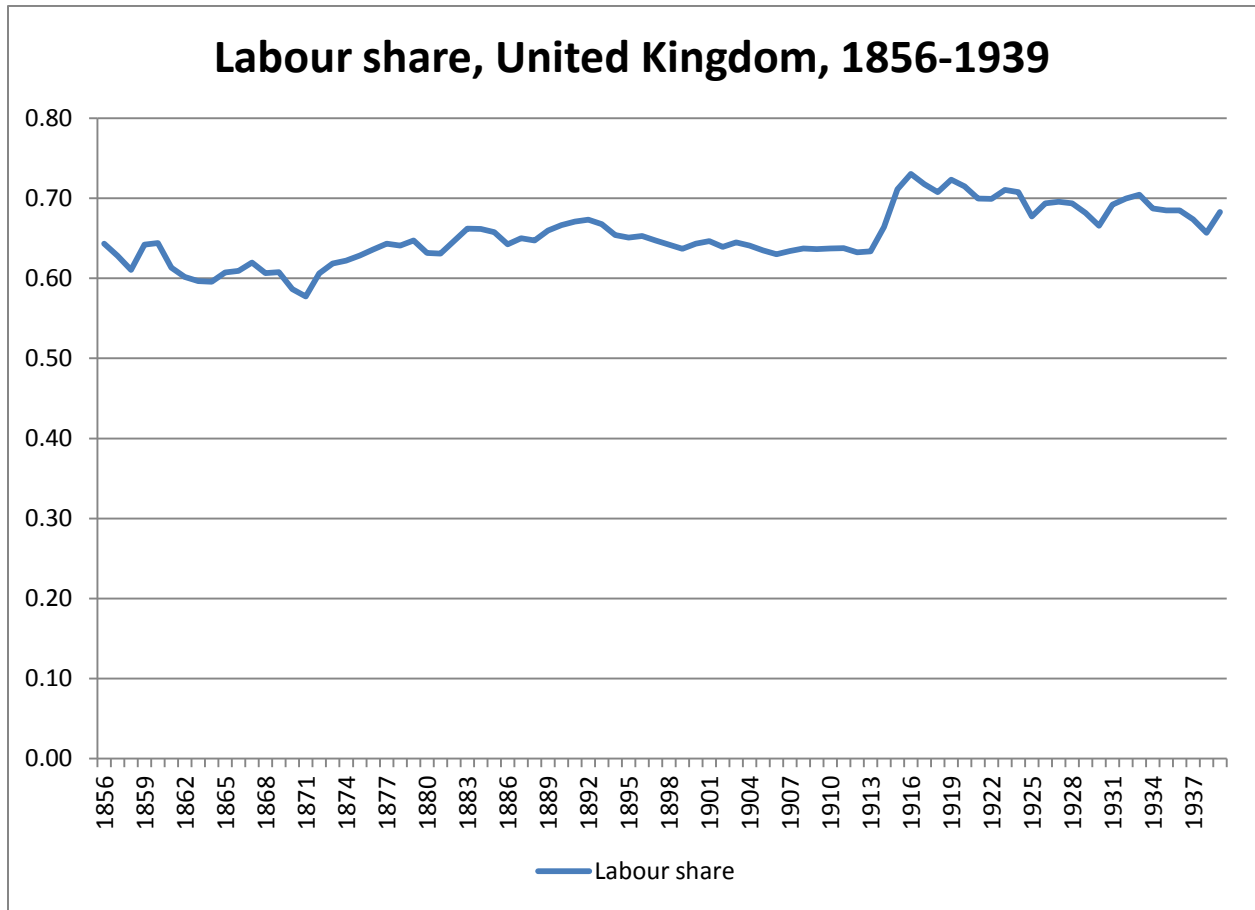


Figure 18

From: Sally Hills, Ryland Thomas, and Nicholas Dimsdale (2010): *The UK recession in context — what do three centuries of data tell us?* Bank of England Quarterly Bulletin, Q4.