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Labour Markets and Supply-Side Policies

Solutions to questions set in the textbook

Please email w.carlin@ucl.ac.uk with any comments about the questions and answers. We would also be pleased to receive suggestions for additional questions (along with outline solutions), which can be added to the website resources.

1 Chapter 4. Labour markets and Supply-side Policies

1.1 Checklist questions

1. What is a wage accord and why might it collapse?

ANSWER: A wage accord is a situation where unions agree with employers' associations (sometimes in conjunction with the government) to exert bargaining discretion, i.e. by refraining from exercising their maximum bargaining power in wage negotiations. It might collapse since individual unions have an incentive to breach the agreement and gain a wage raise for their members, which assuming the other unions comply will produce a real wage gain for their members (prisoners' dilemma). See also the answer to Question 6 below.

2. How should the central bank respond to the collapse of a wage accord? Show the path of real wages, inflation and unemployment over time as the economy adjusts to this shock.

ANSWER: The collapse of a wage accord will shift the WS curve up and therefore increase the equilibrium rate of unemployment. The reaction of the CB committed to the initial target level of inflation is that of increasing interest rates in order to squeeze the increased inflation out of the economy. Diagrammatically, this is the opposite of the scenario pictured in Figure 4.1. Inflation rises suddenly at the beginning and the CB must raise the interest rate sufficiently to reduce output *below* the *new lower* equilibrium level in order to reduce inflation to the target. If we consider a model with a flat PS curve and with firms setting prices immediately after wages have been set, the real wage will not change at all. While unemployment is unchanged at the very beginning it then raises sharply above the new equilibrium as a consequence of the CB's interest rate hike and then falls as the economy moves along the new MR curve to the new equilibrium.

3. Explain what is meant by the tax wedge. Does a change in the tax wedge affect inflation?

ANSWER: It is the difference between the real consumption wage and the real product wage. Firms pay a gross wage inclusive of non labour costs (i.e. social security) and income tax. The price measure firms care about is what they receive (excluding VAT for example). While workers focus on take home pay divided by the price index including indirect taxes. With both firms and households seeking to maintain their respective real incomes, a rise in the tax wedge will be reflected in a downward shift in the PS curve. This will push up inflation in the usual way. Unless (and until), workers are prepared to accept lower wages in line with the higher tax wedge or firms are prepared to accept lower profit margins, a higher tax wedge is associated with lower equilibrium output.

4. Make a scatter-plot using the data on trade union membership density and collective bargaining wage coverage in the Appendix table 1. What does the plot show? Is there any change in the relationship over time? Can you detect any regional patterns?

ANSWER: Left to the reader.

5. How might the observation that the productivity trend since 1820 has been upwards in Europe and that the trend of the unemployment rate has not been downward be reconciled with the *WS-PS* model?

ANSWER: One possible explanation is that while productivity had risen steadily, shifting the *PS* curve upwards in the meantime reservation wages have increased, shifting the *WS* curve up. As we shall see in the analysis of growth (see Chapter 13), real wages rise in line with productivity on a steady state growth path. This highlights the fact that changes in trend productivity growth may be difficult to detect and adjustments in wage expectations and wage claims slow to occur. The result is that over the medium-run horizon, changes in productivity growth can affect equilibrium unemployment.

6. In Section 2, the prisoner's dilemma game is explained. Construct an example to show how this game can be applied to a union wage accord.

ANSWER: In a union wage accord there are few workers' organisations involved. It is a game where 2 unions agree with the employers in the wage accord. The problem arises (in a static context) from the fact that both unions have an incentive to deviate from the agreement and gain

		Union X	
		<i>a</i>	<i>d</i>
Union Y	<i>a</i>	(10,10)	(0,20)
	<i>d</i>	(20,0)	(5,5)

a wage raise for their members. In a simple table, we have
Union X and Y have to reach an agreement; if they do and play (*a, a*) their payoff are (10, 10), however if X breaches the accord while Y does not, X takes the whole pot (20) while Y gets (0). There is a dominant strategy *d* in the sense that for X, whatever strategy Y plays, X is better off choosing *d* (and similarly, for Y) and therefore the only possible equilibrium is (5,5). Since there is a symmetric incentive to breach the agreement and both unions know it, they will play the strategy that does not maximize their joint utility unless there are commitment devices or other sorts of incentives.

7. Explain how the *WS* curves and the labour supply curve are derived in Fig. 4.5.

ANSWER: Explained in the chapter.

8. Why is equilibrium employment lower when wages are set at industry rather than at firm level? How would you expect this relationship to be affected — if at all — if the economy in question is open to international trade?

ANSWER: Industry level wage setting (in a model where the union sets the wage in a monopolistic way) can deliver a higher level of unemployment since the union can set higher wages because it believes that even if the prices for that industry's products go up there is little substitutability between the industry's products and other products and therefore the demand for that particular good will not be much affected. While a firm-level union fears that the substitutability between product within the same industry is high and too high wages/prices could drive the firm out of the market. These contrasting perceptions produce a higher WS curve in the case of industry-level wage-setting than in firm-level wage-setting. Hence in equilibrium when wages and prices have been set, the level of employment consistent with constant inflation is higher in the case of firm-level wage-setting. In an open economy competition happens in the international arena, and therefore the above mentioned mechanism leading industry-level unions to high wage claims will be weakened or eliminated. Hence the employment equilibria will be closer together in an open economy.

9. Compare the role played by outsiders in the insider-outsider model with that played by the long-term unemployed in the unemployment persistence model.

ANSWER: In the stylized model presented in Chapter 4 there is basically no role for the outsiders (the WS curve becomes vertical). The long-term unemployed still play a role in the unemployment persistence model. Following the case discussed in Chapter 4, it can be seen that although the emergence of long term unemployed slows down the disinflation process because they exert a weak influence in the labour market, they can be reactivated. Reactivation occurs endogenously in the model as unemployment falls. It can also be hastened by the use of government programmes such as training programmes (or welfare-to-work) to reduce the detachment of workers from the labour market.

10. Why is the Beveridge curve downward sloping and why is the $WS = PS$ curve upward sloping in the vacancy-unemployment diagram?

ANSWER: The Beveridge curve is downward sloping since with low unemployment and fewer people looking for a job there have to be more vacancies in order for the number of separations (exogenous) to be equal to the number of hirings (matchings) given the matching technology. On the other hand with a large number of people looking for work only few vacancies are needed for

the equilibrium. (Keep in mind that we have here introduced heterogeneity of workers and jobs). The equilibrium condition $WS = PS$ is upward sloping since a larger vacancy rate means a stronger position for unions and workers and therefore the WS curve would shift up (other things equal, wage claims are larger) and hence a higher unemployment rate is required to produce the $WS = PS$ equilibrium by dampening wage claims.

11. How, if at all, would you expect the internet to affect the WS , PS or the Beveridge curve?

ANSWER: There are a number of ways the internet can affect those relations. Here we just mention a few:

- increase in competition in the product market (information is readily available) shifts PS curve upwards;
- reduce bargaining power of the union. Since vacancies can be advertised over the internet, the potential pool of unemployed can be extremely large, which shifts WS curve downwards;
- improves the matching technology, so the Beveridge curve shifts to the left.

1.2 Problems and questions for discussion

QUESTION A: Trace the effects on unemployment and inflation of a sudden and permanent rise in labour productivity due to a technological breakthrough.

QUESTION A: ANSWER: Assuming to begin with that there is no impact of the technological breakthrough on consumption (e.g. upward revision of permanent income) or investment (e.g. increase in Tobin's Q boosts investment), the IS curve remains fixed. The first sign of the rise in productivity is a fall in inflation (the rise in productivity cuts unit labour costs and hence prices; real wages rise above w^{WS} and wage inflation falls). Lower inflation signals to the central bank to cut the interest rate: there are two components to this — the stabilizing interest rate has fallen (since y_e is higher) and once inflation below target has occurred, the CB will have to boost activity above equilibrium in order to bring inflation back up to target so the interest rate will be lowered below the new stabilizing interest rate. Any boost in consumption or investment induced by the breakthrough will shift the IS to the right, reducing the interest rate response needed. The rapid incorporation of the rise in productivity into wage-claims will shift the WS up and reduce the increase in equilibrium employment.

QUESTION B: Through what mechanisms can hysteresis in unemployment operate? What are its

consequences for the time-path of the unemployment rate following (a) a period of disinflation?
(b) an investment boom?

QUESTION B: ANSWER: There are two mechanisms that operate through the labour market: i) the insider-outsider model; ii) long-term unemployment and persistence. The first one considers those who have lost their job as not important for the union anymore, therefore the union will only demand higher wages for the insiders. While the persistence model is focused on the role of skills, knowledge and labour force attachment that are lost in a long period of unemployment making the long-term unemployed only poor substitutes for current workers.

Insider-outsider: (a) a period of disinflation due to a contraction in demand (not balanced by the reaction of the CB) will raise the ERU since the unemployed former insiders become outsiders (this is only a stylized discussion) and the WS becomes vertical. (b) in an investment boom the increase in demand will be only translated in higher wages with no changes in employment (in the simplest model). Persistence: (a) as in Fig. 4.9, (b) Given the boom in investment there is higher demand and if there is an immediate reaction to curb inflation by CB and no rigidities nothing happens to unemployment. If however the standard assumptions are made (rigidities and lagged reaction to interest rate changes), and there is an increase in employment this takes the unemployed off the dole and therefore this can effectively shift the WS curve down because there are fewer long-term unemployed and therefore a lower equilibrium rate of unemployment can be achieved. If the persistence mechanism works in reverse, a less inflationary boom would be observed.

QUESTION C: How may unemployment be affected by (a) barriers to regional mobility; (b) poor information about jobs; (c) stronger employment protection legislation?

QUESTION C: ANSWER: (a) Barriers to mobility have two main effects: i) on the Beveridge curve, the matching technology is worsened since it is not possible to match firms and the unemployed in different regions; ii) it might put unions in a stronger bargaining position by reducing the actual unemployment pool and therefore the WS curve can shift up. (b) Poor information: has basically the same effects as in point (a); (c) There are several routes through which employment protection could have an effect on the PS or WS curves. Since firms have to take into account the costs of hiring, this additional cost may shift the PS curve down. The WS may shift up since workers and unions are now in a stronger position. If the effects go in these ways, the result is higher equilibrium unemployment. However, it might also be that tighter legislation could act as a way for the unions to accept lower wages since more protection is granted to their members and this would therefore lower the $WS(\text{floor})$ as described in Chapter 4.

QUESTION D: ‘Unions and labour market regulation reflect the power of vested interests and create inefficiency.’ ‘Unions and labour market regulation are an efficient response to missing markets.’ Investigate how economic theory can be used to support each of these lines of argument. Do you find either argument persuasive? [Suggested reading: Pissarides (2001), Agell (2002) referred to in the chapter.]

ANSWER: For the first statement, we can directly refer to the explanation given above in case of a stronger employment protection legislation. Tight regulation could create rents for the insiders. The creation of rents is obviously inefficient. Salary demanded will be higher than otherwise since unions are stronger and also insiders (in a limit case) cannot be fired, therefore we might discuss what sort of incentives such a system could generate. In a case where unions are strong we could basically place the WS curve very close to the $WS(\text{ceiling})$.

Agell provide some historical evidence that periods of high unemployment preceded labour market regulation and unions. Labour market institutions can be seen as a response to unemployment and income insecurity when workers are risk-averse. For example, a worker may be willing to exchange a lower expected wage for a wage structure that offers insurance against uncertainty about ‘where one will find oneself’ in the wage distribution, i.e. unions will tend to produce a more compressed wage distribution. This is a form of insurance — as is labour market regulation or welfare state benefits — when markets for such insurance are missing.

QUESTION E: In 1998, Robert Solow reported on a study by McKinsey Global Institute, which analyzed the economic performance of France and Germany in terms of employment and productivity in six industries: automobiles, homebuilding, telecommunications, retail trade, consumer banking, and computer software. Solow argues that the MGI report supports the following conclusion:

The likelihood is that France and Germany have moved to high unemployment regimes by sliding along their Beveridge curves, and not as victims of adverse shifts in their Beveridge curves. The implied weakness in job creation is most likely the result of excessive and anti-competitive product-market regulation, restrictive macroeconomic policy, especially monetary policy, and inadequate discipline from the capital markets.¹

Can you interpret Solow’s conclusion using the models developed in this chapter?

QUESTION E: ANSWER: We can approach this question by taking as a reference point Fig. 4.13. The anti-competitive product market regulation affects the mark-up power of firms and therefore the

¹Robert M Solow (1998) ‘What is Labour-Market Flexibility? What is it Good for?’ The British Academy. <http://www.britac.ac.uk/pubs/src/keynes97/text3.html>

pricing mechanisms (PS), prices can be set at an higher level since markets are not as competitive, this shifts the PS curve down and the $WS = PS$ relation down sliding along the Beveridge curve to the right. As for the tight monetary policy case we also know that a higher real interest rate acts as a price push factor decreasing productivity given a lower level of investment in physical capital and training.

QUESTION F: Declines in union density are often attributed to structural change, globalization and demographic changes. Why might this be so? What would you expect the macroeconomic impact to be? [Suggested reading: D. Checchi and C. Lucifora (2002). ‘Unions and labour market institutions in Europe’. *Economic Policy*. 35: 363-401. H. Lesch (2004). ‘Trade union density in international comparison’ *CESifo Forum* 4/2004: 12-18.]

ANSWER: The decline in union density has been the topic of many articles and books. We give some bullet points for discussion:

- new type of jobs are often decentralized with a large technological component and do not permit unions to form easily;
- several different types of new work contracts (ie. fixed term, external collaboration, home-working...) created a new type of worker;
- higher competition in product market, unions cannot really play a big role in pushing wages up;
- firms can hire people from different geographic regions, other countries, etc. (outsourcing, off-shoring);
- shift in production from heavy industries to services changing the attitudes and the workplace (changes in gender balance — women have typically had lower rates of unionization).