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| The Labour Market (by Ling) | |
| ***Overview*** | |
| The Production Function | * Showing the relationship between input and output through a function |
| The Demand for Labour | * Profit maximising firm determine the demand for labour when benefit (marginal product of labour) equals to cost (wage) |
| The Supply of Labour | * Utility maximising consumer/worker determine the supply for labour when benefit (wage, therefor consumption) equals to the cost (leisure time) |
| Labour Market Equilibrium | * Equilibrium is reached when labour demand equals to supply |
| Employment Status and Unemployment | * Consist of employed, unemployed and out of labour force |

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| ***Definitions*** | | ***Formula*** |
| The Production Function | | |
| Production Function | An equation showing the relationship between input and output |  |
| Total factor productivity | Measures the effectiveness with which capital and labour are used | Includes all inputs, except for capital and labour, including technology/management and others like raw materials, land, energy |
| Marginal Product | The increment in output with an additional unit of input | Marginal Product is positive, meaning additional input creates additional output. However, Production Function exhibits diminishing marginal product, meaning marginal product increase at an decreasing rate |
| Supply Shocks/ Productivity Shock | Affect the amount of output that can be produced for a given amount of input  Affecting Total factor productivity | Either a negative/adverse or positive/beneficial shock |
| Return to Scale | The change in output after scaling all the inputs by the same factor | |  |  |  | | --- | --- | --- | | Decreasing RTS | Constant RTS | Increasing RTS | |  |  |  | |
| Labour Market | | |
| Demand for Labour | Determine by profit maximising firm |  |
| Supply of Labour | Determine by utility maximising consumer/worker |  |
| Time constraint | Constraint faced by any consumer/worker |  |
| Consumer Preference | An indifference curve shows all combinations of leisure and consumption that make the consumer equally happy |  |
| Marginal rate of substitution | The amount of consumption the consumer would be willing to substitute for one unit of leisure |  |
| Aggregate Labour Supply | Although there is a conflicting outcome in leisure, empirical evidence suggest an upward trend between increased wage and labour supply |  |
| Labour Market Equilibrium | Equilibrium is reached when labour supply equals to demand, at full-employment level with market-clearing real wage | In the classical model, real wage adjusts quickly and there cannot be involuntary unemployment. However, in new Keynesian model, labour market might not adjust real wage quickly |
| Employment Status and Unemployment | | |
| Full-Employment/ Potential Output | The level of output that firms supply when wages and prices have fully adjusted |  |
| Employment Status | Consist of three categories: Employed, Unemployed, Not in labour force | |  |  | | --- | --- | | Labour force | Employed + Unemployed | | Unemployment rate | unemployed/labour force | | Participation rate | labour force/adult population | |
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| ***Graphs & max/min problems*** | | | |
| Production Function | | | |
| Solve for | * Showing relationship between capital/labour and output | | |
| Parameters | * Production Function | | |
| Intuition | * Output increase at an decreasing rate as input increases | | |
| Math | Solve through first order derivative | | Diminishing marginal returns |
| Graphs | |  |  |  |  | | --- | --- | --- | --- | |  | slope | y-intercept | x-intercept | | Production Function | Marginal Product | 0 | 0 | | |  |  |  |  | | --- | --- | --- | --- | |  | Increase | Decrease | | | Productivity Shock  A | Marginal Product | | Marginal Product | | |
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| ***Graphs & max/min problems*** | | | |
| Demand for Labour | | | |
| Solve for | * Determinants of optimal demand of labour by a profit-maximizing firm | | |
| Parameters | * Profit maximising condition | | |
| Intuition | * A rational firm chooses the optimal level of input to maximise profit, considering the cost involved | | |
| Math | considering  Solve through first order derivatives | | common identity: |
| Graphs | |  |  |  |  | | --- | --- | --- | --- | |  | slope | y-intercept | x-intercept | | MPN |  |  |  | | |  |  |  | | --- | --- | --- | |  | Increase | Decrease | | Productivity shocks  A | MPN  N | MPN  N | | Size of capital  K | MPN  N | MPN  N | | |
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| ***Graphs & max/min problems*** | | | |
| Supply of Labour | | | |
| Solve for | * Determine optimal labour supply by rational utility maximising consumer/worker | | |
| Parameters | * Utility maximising condition * s.t. | | |
| Intuition | * A rational utility maximising consumer chooses to balance consumption and leisure, two things that can increase the utility for that individual, given the time constraint | | |
| Math | Solve through first order derivatives and Lagrange method | | Common identity |
| consumption vs leisure  Graphs | |  |  |  |  | | --- | --- | --- | --- | |  | slope | y-intercept | x-intercept | | Indifference Curve |  |  |  | | Budget Line | -w | wh | h | | |  |  |  | | --- | --- | --- | |  | Increase | Decrease | | Wealth |  |  | | Expected future real wage |  |  | | Size of working age population |  |  | | Labour force participation rate |  |  | | |
| Substitution Effect vs Income Effect | |  |  |  | | --- | --- | --- | | Increase wage | Consumption | Leisure | | Substitution Effect |  |  | | Income  Effect |  |  | | Net Effect |  | uncertain | | |  |  |  | | --- | --- | --- | | Decrease wage | Consumption | Leisure | | Substitution Effect |  |  | | Income  Effect |  |  | | Net Effect |  | uncertain | | |
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