



## Barick Chung

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2012-2014 Lecturer, School of Economics and Finance, University of Hong Kong.  
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2003-2007 Ph.D. (Business) Indiana University – Bloomington.  
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Research paper:  
Chung, Barick, "Two Level Price Discrimination and Vertical Relationship" (March 05, 2012). Available at SSRN: <http://ssrn.com/abstract=1997070>.

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## ECO 2011 (Sections L07-10) Basic Microeconomics

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Pindyck and Rubinfeld, p.203:

Firms offer a **means of coordination** that is extremely important and would be sorely missing if workers operated independently. Firms eliminate the need for every worker to negotiate every task that he or she will perform, and bargain over the fees that will be paid for those tasks. ...

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Pindyck and Rubinfeld, pp.204–5:

**Factors of production:** inputs into the production process (e.g., labor, capital, and materials).

Labor – skilled workers and unskilled workers

Capital – land, building, machinery and equipment

Materials – electricity, water, metal and plastic

## Input factors

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Pindyck and Rubinfeld, p.205:

**Variable input:** Production factor that can be varied.

**Fixed input:** Production factor that cannot be varied.

## Definitions

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**Labor (L)** – variable input factor.

**Capital (K)** – fixed input factor.

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Pindyck and Rubinfeld, p.205:

**Short run:** Period of time in which quantities of one or more production factors cannot be changed.

**Long run:** Amount of time needed to make all production inputs variable.

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Pindyck and Rubinfeld, p.233:

**Total cost (TC ( /or C ) ):** Total economic cost of production, consisting of fixed and variable costs.

**Fixed cost (FC):** Cost that does not vary with the level of output and that can be eliminated only by shutting down.

**Variable cost (VC):** Cost that varies as output varies.

## Costs

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Mankiw, Gregory, Essentials of Economics, 2012, p.242:

Output	Total cost	Fixed cost	Variable cost	Average fixed cost	Average variable cost	Average total cost	Marginal cost
0	\$3	\$3	\$0				—
1	3.3	3	0.3	\$3	\$0.3	\$3.3	\$0.3
2	3.8	3	0.8	1.5	0.4	1.9	0.5
3	4.5	3	1.5	1	0.5	1.5	0.7
4	5.4	3	2.4	0.75	0.6	1.35	0.9
5	6.5	3	3.5	0.6	0.7	1.3	1.1
6	7.8	3	4.8	0.5	0.8	1.3	1.3
7	9.3	3	6.3	0.43	0.9	1.33	1.5
8	11	3	8.0	0.38	1	1.38	1.7
9	12	3	9.9	0.33	1.1	1.43	1.9
10	15	3	12.0	0.3	1.2	1.5	2.1

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Pindyck and Rubinfeld, p. 204:

**Production function:** function showing the highest output that a firm can produce for every specified combination of inputs.

An example of production function:

$$Q = F(L, K)$$

## Production function

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Pindyck and Rubinfeld, pp.206–7:

Labor L	Capital K	Output q
0	10	0
1	10	10
2	10	30
4	10	60
5	10	80
6	10	95
7	10	108
8	10	112
9	10	112
10	10	100

## Production function

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Pindyck and Rubinfeld, pp.216–7:

**Isocuant:** Curve showing all possible combinations of inputs that yield the same output.

## Definition

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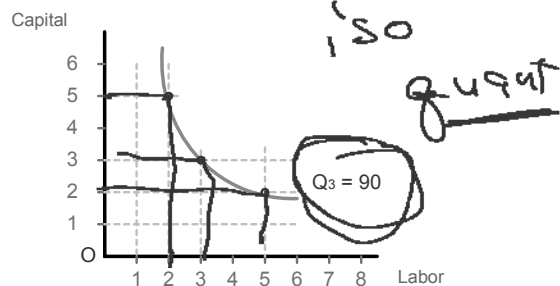
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Isoquant: Curve showing all possible combinations of inputs that yield the same output.



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Pindyck and Rubinfeld, pp.216-7:

**Isoquant:** Curve showing all possible combinations of inputs that yield the same output.

**Isoquant map:** Graph combining a number of isoquants, used to describe a production function.

## Definitions

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Pindyck and Rubinfeld, p.218:

**Marginal rate of technical substitution (MRTS):** Amount by which the quantity of one input can be reduced when one extra unit of another input is used, so that output remains constant.

$MRTS_{LK} = - \text{Change in capital input} / \text{change in labor input}$

$$= - \Delta K / \Delta L$$

## Definition

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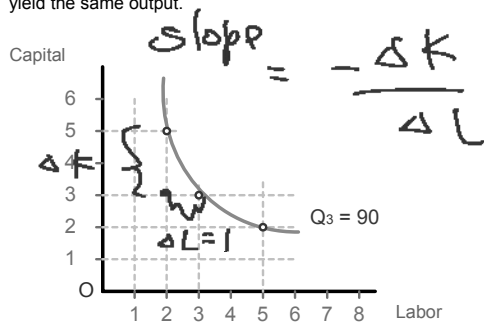
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**Isoquant:** Curve showing all possible combinations of inputs that yield the same output.



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Pindyck and Rubinfeld, p. 219:

**Diminishing MRTS:** The MRTS falls as we move down along an isoquant. In other words, isoquants are convex.

Assumption

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