Exercise 2

(1)two concepts: factor abundance and factor intensity

1. Factor abundance/scarcity: 要素丰裕/要素短缺度
The abundance or scarcity of a primary factor of production. Because, in the short run at least, the supplies of primary factors are more or less fixed, this can be taken as given for determining much about a country's trade and other economic variables. Fundamental to the H–O Model.

2. Relative factor abundance: 相对要素丰裕度
Factor abundance, in ratio form, compared across countries. Thus country A is abundant in capital relative to labor, compared to country B, if KAIL^ > KB/LB", where K', L', ,1=A,B are capital and labor endowments. But see also the price definition.

3. Abundant factor: 充裕要素
The factor in a country's endowment with which it is best endowed, relative to other factors, compared to other countries. May be defined by quantity or by price.

4. Scarce factor: 稀缺要素
The factor in a country's endowment with which it is least well endowed, relative to other factors, compared to other countries. May be defined by quantity. or by price.

5. Capital abundant: 资本充足
A country is capital abundant if its endowment of capital relative to other factors is large compared to other countries. Relative capital abundance can be defined by either the quantity definition or the price definition.

6. Capital scarce: 资本稀缺
A country is capital scarce if its endowment of capital relative to another factor, usually labor, is small compared to other countries. Relative capital scarcity can be defined by either the quantity definition or the price definition.

7. Labour abundant: 劳动充足
A country is labor abundant if its relative endowment of labor is large compared to other countries.Relative labor abundance can be defined by either the quantity definition or the price definition.

8. Labour scarce: 劳动短缺
A country is labor scarce if its relative endowment of labor is small compared to other countries. Relative labor scarcity can be defined by either the quantity definition or the price definition.

9. Intensive: 密集的

Of production, using a relatively large amount of a specified input, such as labor intensive or capital intensive. See factor intensity.

10. Capital intensive: 资本密集型
Describing an industry or sector of the economy that relies relatively heavily on inputs of capital, usually relative to labor, compared to other industries or sectors. See factor intensity.

11. Labor intensive: 劳动密集型
Describing an industry or sector of the economy that relies relatively heavily on inputs of labor, usually relative to capital but sometimes relative to human capital or skilled labor, compared to other industries or sectors. See factor intensity.

12. Skill intensive: 技术密集型
Describing an industry or sector of the economy that relies relatively heavily on inputs of skilled labor, usually relative to unskilled labor, compared to other industries or sectors. See factor intensity.

13. Technology intensive: 技术密集型
Referring to an industry in which technology is advancing rapidly, and thus where successful operation requires heavy expenditure on R&D.

14. Intensity: 密集度
The amount that something is used, as compared to something else. See factor intensity.

15. Capital intensity: 资本密集度
A measure of the relative use of capital, compared to other factors such as labor, in a production process. Often measured by the ratio of capital to labor, or by the share of capital in factor payments.

16. Factor intensity: 要素密集度
The relative importance of one factor versus others in production in an industry, usually compared across industries. Most commonly defined by ratios of factor quantities employed at common factor prices, but sometimes by factor shares or by marginal rates of substitution between factors.

17. Factor intensity reversal: 要素密集度逆转
A property of the technologies for two industries whose ordering of relative factor intensities differs at different factor prices. One may be relatively capital intensive at high relative wages and labor intensive at low relative wages. Some propositions of the Heckscher–Ohlin Model require the absence of FIRs.

18. Relative factor intensity: 相对要素密集度
Factor intensity, in ratio form, compared across industries. Thus industry X is intensive in capital relative to labor, compared to industry Y, if Ky/Ly> Ky/Ly, where K/， L1, I=X,Y are capital and labor employed in industries X and Y when they face the same factor prices.

19. Factor proportion: 要素禀赋
1. The ratios of factors employed in different industries. See factor intensities.
2. The ratios of factors with which different countries are endowed. See factor endowments.

(2)four theorem of the HO model

1. Heckscher–Ohlin Model: 赫克歇尔–俄林模型（资源禀赋理论）
A model of international trade in which comparative advantage derives from differences in relative factor endowments across countries and differences in relative factor intensities across industries. Sometimes refers only to the textbook or 2x2x2 model, but more generally includes models with any numbers of factors, goods, and countries. Model was originally formulated by Heckscher (1919), fleshed out by Ohlin (1933), and refined by Samuelson (1948, 1949, 1953).

2. Heckscher–Ohlin–Samuelson Model:赫克歇尔–俄林–萨缪尔森（HOS）模型
Usually synonymous with the Heckscher–Ohlin Model, although sometimes the term is used to distinguish the more formalized, mathematical version that Samuelson developed from the more general but less well–defined conceptual treatment of Heckscher and Ohlin.

3. Factor proportions model: 要素禀赋模型
The Heckscher–Ohlin Model of trade.

4. Core propositions: 核心命题
The core propositions of the HO Model are the factor price equalization theorem, the Heckscher–Ohlin Theorem, the Stolper–Samuelson Theorem, and the Rybezynski Theorem, according to Ethier (1974).

5. Stolper–Samuelson Theorem: SS定理
(1.) The proposition of the H–O Model that a rise in the relative price of a good raises the real wage of the factor used intensively in that industry and lowers the real wage of the other factor.
(2.) The further proposition (requiring additional assumptions) that protection raises the real wage of a country's scarce factor and lowers the real wage of its abundant factor. Due to Stolper and Samuelson (1941).

6. Rybczynski Theorem: 莱布津斯基定理
The property of the H–O Model that, at constant prices, an increase in the endowment of one factor increases the output of the industry that uses that factor intensively and reduces the output of the other (or some other) industry. Due to Rybczynski (1955). Illustrated with Edgeworth production box. See figure.

7. Factor price equalization: 要素价格均等化
The tendency for trade to cause factor prices in different countries to become identical. Ohlin (1933) argued that trade would bring factor prices closer together. Samuelson (1948, 1949) showed formally the circumstances under which they would actually become equal.

8. Factor price equalization theorem: 要素价格均等化定理
One of the major theoretical results of the Heckscher–Ohlin Model with at least as many goods as factors: free and frictionless trade will cause FPE between two countries if they have identical, linearly. homogeneous technologies and their factor endowments are in the same diversification cone.

9. Heckscher–Ohlin Theorem: 赫克歇尔–俄林定理
The proposition of the Heckscher–Ohlin Model that countries will have comparative advantage in, and therefore export, the goods that use relatively intensively their relatively abundant factors.

(3)several important lines

1. Isoquant: 等产量线
A curve representing the combinations of factor inputs that yield a given level of output in a production function.

2. Isocost line: 等成本线
A line along which the cost of something –– usually a combination of two factors of production – is constant. Since these are usually drawn for given prices, which are therefore constant along the line, an isocost line is usually a straight line, with slope equal to the ratio of the (factor) prices.

3. Iso–price curve: 等价曲线
A curve along which price is (or prices are) constant, most commonly in factor–price space where it shows the combinations of prices of factors consistent with zero profit in producing a good at a specified price of the good.

4. Isovalue line: 等价线

5. Unit isocost line: 单位等成本线
An isocost line along which cost is equal to one unit of the numeraire, such as one dollar.

6.unit isoquant: 单位等产量线
The isoquant for a quantity equal to one unit of a good. The unit isoquant is useful for relating the price of a good to the prices of factors employed in its production.

7. Unit value isoquant: 单位价值等产量线
The isoquant for a quantity of a good worth one unit of value. This is meaningful only if the nominal price of the good is given, for some specified currency or numeraire. Unit–value isoquants are central to the Lerner diagram for analyzing the H–O Model.

(4)others

1.factor content: 要素含量

The amounts of primary factors used in the production of a good or service, or in a vector of quantities of goods and services, such as the factor content of trade or the factor content of consumption. Can be either direct or direct–plus–indirect. With F factors, G goods, and A={afg} the FxG matrix of factor f per unit output of good g, the factor content of a G–vector X of trade or consumption is AX.

2. Factor content pattern of trade: 要素含量贸易模式

The trade pattern of a country or the world, focusing on factor content of the goods and services that are traded, as opposed to the commodity_pattern of trade.

3. Leontief paradox: 里昂惕夫之谜

The finding of Leontief (1954) that U.S. imports embodied a higher ratio of capital to labor than U.S. exports. This was surprising because it was presumed that the U.S. was capital abundant, and the Heckscher–Ohlin Theorem would then predict that U.S. exports would be relatively capital intensive.