

## **MEASURING THE COMPETITIVENESS OF AN ENTERPRISE**

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### **Abstract**

*The market conditions require a new approach in solving the problem of corporate competitiveness - developing its own strategy for boosting the competitiveness and sustainable economic growth. The well-founded competitive strategy of the company determines the promising directions of its activity, determines the type of competitive advantages and ensures resource availability for its implementation. The advantages held by the industry companies are one of the determining factors essential to achieve higher and long-term competitiveness of the Bulgarian industry and economy as a whole. The purpose of the report is to be made a review of the possibilities for improving the competitiveness of enterprise. The study covers the ways of enhancing the competitiveness of businesses units through their price policy. The main conclusions that can be drawn are that the company is required to conduct targeted pricing policy in order to achieve competitive advantage. The main result achieved in the study is the given example of the ways to achieve competitiveness with price policy.*

*Keywords: Competition, Competitiveness, Competitive Advantage, Production, Enterprise*

### **INTRODUCTION**

Adam Smith's principle of "absolute advantage" and David Ricardo's principle of "comparative advantage", in general, are based on the technological superiority of one country over another country in producing a commodity. Absolute advantage refers to a country having higher (absolute) productivity or lower cost in producing a commodity compared to another country. However, absolute advantage in the production of a commodity is neither necessary nor sufficient for mutually beneficial trade. For example, a country may be experiencing absolute disadvantage in the production of all commodities compared to another country, yet the country

may derive benefits by engaging in international trade with other countries, due to relative (comparative) advantage in the production of some commodities vis-à-vis other countries. Likewise, absolute advantage in the production of a commodity is not sufficient, since the country may not have relative (comparative) advantage in the production of that commodity. David Ricardo's principle of comparative advantage does not require a higher absolute productivity but only a higher relative productivity (a weaker assumption) in producing a commodity. Pre-trade relative productivities/costs determine the pre-trade relative prices. Pre-trade relative prices in each country determine the range of possible terms of trade for the trading partners. Actual terms of trade within this range, in general, depend on demand patterns, which, in turn determines the gains from trade for each trading partner. The Ricardian model assumes constant productivity, as there is only one factor of production (labour), and therefore constant (opportunity) costs that leads to complete comparative advantage. A number of writers on competitive advantage have focused on the determinants/sources of competitive advantage when phrased in terms of comparing opportunity cost or relative prices of goods and services between countries is sufficiently general to encompass a variety of circumstances. Furthermore, although Ricardo's explanation of comparative advantage was in static terms, comparative advantage is a dynamic concept. A country's comparative advantage in a product can change over time due to changes in any of the determinants of comparative advantage including resource endowments, technology, demand patterns, specialization, business practices, and government policies.

What exactly is competitive advantage, and how does it differ from comparative advantage? In a recent article Peer Neary (2003), attempting to advance the theory of comparative advantage in the presence of market imperfections (oligopoly in a general equilibrium framework) had to say the following for a general understanding of competitive advantage in the economics profession.

"Comparative advantage is widely believed by economists to be a key determinant of international production and trade patterns. But non-economists typically think otherwise. In business schools and business circles much greater emphasis is placed on the role of competitive advantage as a predictor of the economic fortunes not just of firms, but nation as a whole.

What exactly is competitive advantage? And how, if at all, does it relate to and interact with comparative advantage? One possible answer is that it is something to do with more competitive markets: lower barriers to entry or simply a large number of firms may give an industry an advantage in competing with foreign rivals. A different answer is that competitive advantage is just a synonym for absolute advantage: some natural or policy-induced superiority

(such as lower taxes or greater labour market flexibility) which reduces costs for all home sectors. A different approach to understanding competitive advantage, exemplified by Porter (1990), is to use a case-study evidence to identify the factors, which encourage a nation's firms to achieve high world market shares in their industries. For the most part, economists have either ignored Porter's approach or dismissed it as merely a restatement of comparative advantage (see Warr, 1994)."

Following Porter's development of the concept of competitive advantage, a voluminous literature has mushroomed on the subject. The interested reader is referred to Nicole Hoffman (2000) and references cited therein for an excellent survey of developments on competitive advantage. However, there is no unanimity on the meaning and/or the sources of competitive advantage.

Porter (1985) emphasised competitiveness at the level of a firm in terms of competitive strategies such as low cost and/or product differentiation. However, his description of competitiveness did not entail a formal conceptual definition. As noted by Cho (1998), "Despite all discussions on competitiveness however, no clear definition or model has yet been developed. There is even ongoing debate about the "entity" of competitiveness." Hoffman (2000) developed a definition of sustainable competitive advantage (SCA) based on Barney (1991) together with dictionary meanings of each term as "An SCA is a prolonged benefit of implementing some unique value-creating strategy not simultaneously implemented by any current or potential competitors along with the inability to duplicate the benefits of this strategy." Obviously, this definition emphasises competitive advantage of a firm based on firm-specific factors and thus ignores macro aspects of potential resources classified as financial, physical, legal, human, organizational, informational, and rational (Hunt and Morgan, 1995); ability in developing superior core competencies in combining their skills and resources (Prahalad and Hamel, 1990); a set of dynamic capabilities—capabilities of possessing and allocating and upgrading distinctive resources. Luo (2000). A number of studies have also analysed the role of individual factors such as intellectual property rights, trade secrets, data bases, the culture of organization, etc. (Hall, 1993), ethics capability (Buller and McEvoy, 1999), corporate reputation (Ljubojevic, 2003), diversity in workplace (Lattimer, 2003) and corporate philanthropy (Porter and Kramer, 2002). The central focus of these contributions is still on firm-specific factors of competitive advantage.

Porter (1990) developed a framework of competitive advantage "A Diamond of National Advantage" based on detailed case studies of firms in 100 industries in 10 industrially advanced nations (USA, Japan, Germany, UK, Switzerland, Italy, Sweden, Denmark, Sweden, Korea and Singapore) that constituted 50% of world exports in 1985. A nation is deemed to have

competitive advantage in the industry “if it possessed competitive advantage relative to the best worldwide competitors” in terms of indicators such as “the presence of substantial exports to a wide array of other nations and/or significant outbound foreign investment based on skills assets created in the home country” (Porter, 1990). The central thesis is that “National prosperity is created, not inherited. It does not grow out of a country’s natural endowments, its labour pool, its interest rates, or its currency’s value as classical economics insists. A nation’s competitiveness depends on the capacity of its industry to innovate and upgrade. Companies gain advantage against the world’s best competitors because of pressure and challenge. ...having strong domestic rivals, aggressive home-based suppliers, and demanding local customers.” (Porter, 1990a). Innovation in every sphere of a firm’s activities plays the central role in awarding competitive advantage to a firm and therefore the industry. Why some firms are more capable of successful innovations depends on four attributes of a nation: factor conditions, demand conditions, related and supporting industries, and firm strategy, structure, and rivalry (Comparative Advantage and Competitive Advantage: An Economics Perspective and a Synthesis Satya Dev Gupta St. Thomas University, Fredericton, N.B., Canada).

Over the last decade or so, the term competitiveness has been widely used – and sometimes abused. In essence the questions and issues that are the heart of the concept of competitiveness are basically those that policy makers and economic theorists have been trying to address for hundreds of years: a better understanding of the issues that are central to improving economic well-being and to the distribution of wealth. In the context of the EU, the challenge is to live up to the ultimate objective of the Lisbon European Council, that the EU becomes the most competitive and dynamic knowledge-based economy in the world over the decade, capable of sustainable economic growth with more and better jobs and greater social cohesion. Within this context, the real challenge here is to seek a more proper understanding of the term regional competitiveness and to gain insight into the driving factors behind it. Before delving into regional competitiveness, it is important first to introduce the broader notion of competitiveness, as it has been used both at the micro-economic and the macro-economic level. At the firm, *or micro-economic*, level there exists a reasonably clear and straightforward understanding of the notion of competitiveness based on the capacity of firms to compete, to grow, and to be profitable. At this level, competitiveness resides in the ability of firms to consistently and profitably produce products that meet the requirements of an open market in terms of price, quality, etc. Any firm must meet these requirements if it is to remain in business, and the more competitive a firm relative to its rivals the greater will be its ability to gain market share. Conversely, uncompetitive firms will find their market share decline, and ultimately any firm that remains uncompetitive – unless it is provided by some “artificial” support or protection –

will go out of business. By comparison, at the *macro-economic* level the concept of competitiveness is much more poorly defined and more strongly contested. Despite the fact that improving a nation's or region's competitiveness is frequently presented as a central goal of economic policy, arguments abound as to precisely what this means and whether it is even sensible to talk of competitiveness at a macro-economic level at all. The lack of a commonly accepted definition is in itself one source of opposition to the concept of macro-economic competitiveness; essentially the argument is that it is dangerous to base economic policy around such an amorphous concept which admits of diverse interpretations and understanding.

A more stringent line of criticism argues that the concept national competitiveness is essentially "meaningless". Krugman (1994), who goes so far as to describe the concept of national competitiveness as a dangerous obsession, raises three key points of opposition:

1. It is misleading and incorrect to make an analogy between a nation and a firm; for example, whereas an unsuccessful firm will ultimately go out of business there is no equivalent "bottom-line" for a nation.
2. Whereas firms can be seen to compete for market share and one firm's success will be at the expense of another's, the success of one country or region creates rather than destroys opportunities for others and trade between nations is well known not to be a "zero-sum game".
3. If competitiveness has any meaning then it is simply another way of saying productivity; growth in national living standards is essentially determined by the growth rate of productivity – this theme will be discussed later. By and large, these points are well recognised by proponents of the concept of macroeconomic competitiveness. Within what may be termed the "consensus view" of macro-economic competitiveness there is a general recognition that improvements in one nation's economic performance need not be at the expense of another's (i.e. we are not necessarily in a win/lose situation), and productivity is one of the central concerns of competitiveness. This "consensus view" can be illustrated by the following definitions: "A nation's competitiveness is the degree to which it can, under free and fairmarket conditions, produce goods and services that meet the test of international markets while simultaneously expanding the real incomes of its citizens."

Competitiveness at the national level is based on superior productivity performance and the economy's ability to shift output to high productivity activities which in turn can generate high levels of real wages. Competitiveness is associated with rising living standards, expanding employment opportunities, and the ability of a nation to maintain its international obligations. It is not just a measure of the nation's ability to sell abroad, and to maintain a trade equilibrium." *The*

*Report of the President's Commission on Competitiveness (1984)* "[Competitiveness] may be defined as the degree to which, under open market conditions, a country can produce goods and services that meet the test of foreign competition while simultaneously maintaining and expanding domestic real income" *OECD Programme on technology and the Economy (1992)* "An economy is competitive if its population can enjoy high and rising standards of living and high employment on a sustainable basis. More precisely, the level of economic activity should not cause an unsustainable external balance of the economy nor should it compromise the welfare of future generations." *European Competitiveness Report (2000)* From the above, we can discern the following elements of macro-economic competitiveness:

1. A successful (economic) performance, typically judged in terms of rising living standards or real incomes.
2. Open market conditions for the goods and services produced by the nation in question (i.e. there is actual or potential competition from foreign producers).
3. Short-term 'competitiveness' should not create imbalances that result in a successful performance becoming unsustainable.

At the same time there exist some clear limitations to the above definitions:

1. The competitiveness of a nation is to all intents to be judged by its ability to generate high (and rising) *living standards/real incomes*. A much broader view of well-being would lead, for example, to an assessment of competitiveness that includes not only incomes (consumption) but also social and environmental goals.
2. Competitiveness is defined in terms of the *outcome* (living standards/incomes) rather than the factors that determine competitiveness. The real question for analysis of competitiveness remains, however, to identify those factors that explain competitiveness rather than to describe its outcome.

## REGIONAL COMPETITIVENESS

At this stage, it is important to shift attention to *regional competitiveness*, a term which has been used more rarely, and that has been defined more poorly. As a starting point, a definition for regional competitiveness comes from the Sixth Periodical Report on the Regions:

"[Competitiveness is defined as] the ability to produce goods and services which meet the test of international markets, while at the same time maintaining high and sustainable levels of income or, more generally, the ability of (regions) to generate, while being exposed to external competition, relatively high income and employment levels". And "In other words, for a region to be competitive, it is important to ensure both quality and quantity of jobs". *The Sixth Periodic Report on the Regions (1999)* In approaching regional competitiveness, broadly two

angles exist. The existence of firms in a region that are able to consistently and profitably produce products that meet the requirements of an open market in terms of price, quality, etc.

The underlying assumption is that the interests of firms and the region in which they reside are always parallel. This notion is difficult to sustain, as firms will strive for productivity and profits, while regional competitiveness also needs to include employment levels, as put forward in the definition from the Sixth Periodic Report.

The European Commission, in setting out the challenge to define a concept of regional competitiveness, states that “[The definition] should capture the notion that, despite the fact that there are strongly competitive and uncompetitive firms in every region, there are common features within a region which affect the competitiveness of all firms located there”. Furthermore, though productivity is clearly important, and improving the understanding of what factors raise productivity is an essential input for developing strategies for regional competitiveness, the focus on productivity should not obscure the issue of translating productivity gains into higher wages and profits and, in turn, the analysis of institutional arrangements and market structures. An alternative definition of regional competitiveness that reflects these notions is:

“A regional economy's ability to optimise its indigenous assets in order to compete and prosper in national and global markets and to adapt to change in these markets” (team analysis).

Yet, there appear to be limits to this angle as well. Some laws governing the economics of international trade do not operate at the sub-national level. Unlike nations, exchange rate movements and price-wage flexibility either do not work properly or do not exist at the regional level. To the contrary, interregional migration of mobile factors, capital and labour, can be a real threat to regions. In the absence of such macro-economic adjustment mechanisms, the concept of macro-economic competitiveness cannot be fully applied to the regional level either.

Regional competitiveness, therefore, seems to be a concept that is “stuck in the middle”. This literature survey will search for useful concepts and elements that help to define and understand regional competitiveness, including its driving factors. To this end, a brief overview of the theoretical literature will be provided, both from the macro- and from the micro - perspective. The theoretical section will be supplemented by a spatial view, as provided by economic geographers and regional economists. The following section will then shed some light on the empirical literature, as derived from benchmark and scoreboard approaches at both national and regional levels. In addition, in order to pinpoint the driving factors of regional competitiveness, it will be necessary to go beyond this literature will attempt to formulate a

distinct conceptual position on this essential topic that can serve as a basis for further – empirical - research.

## THEORETICAL LITERATURE

Each of the following major schools of economic theory carries implications – explicit or implicit – for the notion of “competitiveness” as it relates to nations and in some cases firms, and which therefore are of direct relevance to any discussion of “competitiveness”:

- A. Classical theory
- B. Neoclassical theory
- C. Keynesian economic theory
- D. Development economics
- E. New economic growth theory - endogenous growth theory
- F. New trade theory

### Classical Theory

Under classical economic theory, specialisation in the form of Adam Smith’s “division of labour” provides for economies of scale and differences in productivity across nations. For Smith, investment in capital (improved machinery) and trade (increasing the size of the market) facilitates this specialisation and raises productivity and output growth. Moreover, growth itself could be reinforcing, since increasing output permits further division of labour and hence further growth.

With respect to trade, Adam Smith (1776) demonstrated the gains from trade to be made when moving from a situation of autarky to free trade when countries have an *absolute advantage* in the production of different goods. If one country can produce goods using less inputs (labour) in production then it will have an absolute advantage and should export the good; or alternatively countries should import goods that others can produce using fewer inputs (i.e. where they are produced most cheaply). Thus trade is attributed to (absolute) differences in productivity.

Moving beyond Smith’s concept of absolute advantage, David Ricardo (1817) demonstrated that gains from trade could be made when two countries specialise in the production of goods for which they have a *comparative advantage*. In the Ricardian model, production technology differences across industries and across countries give rise to differences in comparative labour productivity (i.e. output per worker). In Ricardo’s “two countries two goods representation”, even though workers in one country are more productive in the production of both goods (i.e. have an absolute advantage in both goods), provided that they are relatively

more productive in one of these goods (i.e. have a comparative advantage) then they should specialise in its production, while withdrawing from production of the other good. There are some important implications that follow from the Ricardian framework:

- Differences in technology between nations and across industries provide the motivation for international trade.
- Technological superiority (i.e. higher labour productivity) is not a guarantee that an industry will be able to “compete” successfully. Although technologically superior to foreign producers, a domestic industry will nonetheless disappear if it does not also have a comparative advantage.
- Although wages may be lower in the foreign industry, this does not imply the demise of domestic production under free trade. Higher wages can be maintained in the technologically superior country’s comparative advantage industry. This result is possible because labour is (assumed to be) not internationally mobile and consequently the labour theory of value does not hold across countries.

### Neoclassical Theory

The core assumptions of neoclassical theory - perfect information, constant returns to scale and full divisibility of all factors - provide the necessary conditions for the neoclassical world of perfect competition. With respect to trade, the *Heckscher-Ohlin (HO) model*, also referred to as the “factor-proportions model” builds on Ricardo’s model by incorporating two factors of production: labour (as with Ricardo) and capital. Whereas the Ricardian model assumes that technological differences exist across countries, the H-O model assumes that technologies are the same across countries and that comparative advantages are due to differences in the relative abundance of factors of production (factor endowments). When different industries use factors in different proportions then countries will specialise in the production of goods that use more intensively the factor with which they are more abundantly endowed. In a “two country, two good representation”, the capital-abundant country will export the more capital-intensive good while the labour abundant country will export the labour intensive good. There are a number of further implications following from the H-O model:

- An increase in the price of a good will raise the price of the factor used intensively in its production while lowering that of the non-intensively used factor. Thus, a movement to free trade will raise the real return of a country’s abundant factor, while reducing that of the relatively scarce factor.
- Free trade will equalise the prices of output goods and, in turn, the prices of factors of production (capital and labour) will also be equalised between countries (factor price

equalisation theorem). Or, put less strongly, there will be a tendency for factor prices to move together if trade between countries is at least in part based on differences in factor endowments.

- A change in a country's endowment of factors will cause a corresponding change in production towards the good that intensively uses the factor whose proportion has increased. Thus an increase in capital (relative to labour) will cause an increase in output of the capital-intensive good (Rybczynski theorem).

### **Keynesian Economic Theory**

Keynesian theory differs on very essential points from classical economic theory, most importantly the functioning of markets (Keynes, 1936). Contrary to his predecessors, Keynes did not believe that prices cleared markets at all time. This price stickiness can lead to adjustments in quantity (production) instead. Another important divergence is the view on capital and labour. Where classic economists treated capital and labour as two independent production factors, Keynesian theory presumes capital and labour to be complementary demand and employment in the economy, based on expectations, as these influence investment and consumption behaviour. Aggregate output is taken as the sum of consumption, investment, government spending, plus exports minus imports. The drivers of the system are the consumption function and the investment accelerator, together with export demand. The latter gives rise to an export multiplier, in which aggregate output can be expressed as a derived function of export demand. The export base of a national economy – the extent to which it competes in and earns income from exports, and the derived impact of that export income on the domestic sectors and on overall consumption and investment – thus plays a key element in the basic Keynesian model. While Keynesian theory and policy are essentially macro-economic, they nevertheless have important repercussions for regional analysis as well; interventionist policy served as a basis for traditional regional policy that came into being in the 1950s and 1960s. It tried to achieve more equity between regions, e.g. by promoting public investments, by subsidizing firms and promoting transfers to poorer regions.

### **Development Economics**

The field of development economics has been the battleground for a number of heated discussions. Most important topics are the effectiveness of aid, free trade and foreign direct investment. Nevertheless, some very important concepts have their origin in development economics; some of them of particular relevance for regional competitiveness.

The *stage theory of development by Rostow* (Rostow, 1960) classifies societies according to five different stages: traditional, transitional, take-off, maturity and high mass consumption. Each stage of development has its own characteristics and specific conditions have to be met before an economy can reach a higher stage. In other words: just letting market forces do their work, won't get the job done. Although highly criticised, this theory has made a major contribution to development economics in emphasising the importance of agriculture and the role of investment in raising the growth rate, as well as setting certain political and sociological preconditions for development. Where classical economic theory presumes convergence in due time, *centre-periphery models* provide an explanation for the fact that international and interregional differences in development may persist and even widen over time. Probably most famous is Myrdal's hypothesis of *circular and cumulative causation* (Myrdal, 1957).

In this theory increasing returns in faster developing regions set in motion a process where production factors (mainly human capital) move away from the slower developing regions. This is indeed a process that can be observed often in developing countries. In Myrdal's opinion state intervention is necessary to ensure that the positive "spread effects" emanating from expanding regions – such as technological progress – are stronger than the negative "backwash effects" as described above.

### **New Economic Growth Theory – Endogenous Growth Theory**

For a long time, technological progress was assumed to be exogenous. Of course this assumption is counter-intuitive: the accumulation of knowledge and human capital is the result of actions in the past, not "manna from heaven". The incorporation of "technology" into economic models as an endogenous variable is the terrain of the so-called endogenous growth theory (or new growth theory), which has given rise to a wide range of new growth models (Martin and Sunley, 1998). Endogenous growth theory purports to provide a theory of economic history, in the sense that it tries to explain why some economies have succeeded and others have failed.

The key assumption of endogenous growth theory is that accumulation of knowledge generates increasing returns. Knowledge and know-how are not disseminated instantly – not between nations, regions, sectors or companies – but need to be acquired. This means markets do not necessarily yield an optimal result: companies have an incentive to keep knowledge to themselves in order to gain monopoly rents. Therefore governments need to balance between spreading knowledge on the one hand and protecting intellectual property rights on the other in order to keep investments in R&D profitable.

Another important contribution of endogenous growth theory is the formalisation of the importance of human capital. Highly skilled workers tend to be more productive and innovative and are therefore of crucial importance to both companies and economies. It therefore follows that companies and governments have an incentive to invest in training for employees and schooling for the entire population respectively.

### **New Trade Theory**

Traditional trade theory (classical and neo-classical) implies that trade will occur between countries with different technology/factor endowments. It is unable to explain why trade will take place between similar countries (or regions) and, by extension, why different production structures should occur in similar regions. However, one of the main features of the post-World War II period has been the growth of trade between similarly endowed industrialised countries and the predominance of intra-industry trade within this trade. Since production structures and factor endowments are to be expected to be relatively similar across industrialised countries, theories based on comparative advantage are insufficient to explain the pattern of intra-industry trade (differentiated goods in the same product categories) between industrialised countries.

To attempt to explain trade between industrialised countries, new trade theories have focused on scale economies, product differentiation and imperfect competition as explanations of trade patterns between industrialised countries. A number of categories of such models can be identified:

- Models incorporating *Marshallian economies of scale*. Although individual firms are assumed to exhibit constant returns of scale, external (scale) economies are effective at the industry/branch level such that the larger the size of the local industry the lower will be its costs. Hence, external economies of scale provide the basis for the regional concentration of industries.
- Models incorporating *monopolistic competition*. Such models allow for economies of scale that are internal to firms themselves. Krugman (1979) introduced monopolistic competition in a framework in which consumers derive utility from product variety and where production of each variety is subject to internal economies of scale and trade is a means of exploiting these economies by extending the market. Greater demand in the home market (“home market effect” or “home market bias in exports”), particularly in combination with transport costs, can provide a basis for explaining the pattern of trade. Models incorporating *monopolistic competition*. Another approach is to consider economies of scale and product differentiation in the production of intermediate inputs. Here, the production of final (manufactured) goods is assumed to display constant returns for a given number of varieties

of intermediate inputs, but increasing returns in the number of inputs. Thus, a greater number of varieties of inputs has the effect of lowering production costs. Trade enables countries to access a larger variety of components/inputs thus generating external economies of scale that are international in scope. Intra-industry trade in intermediate inputs is shown to be complementary to international factor movements, such that intraindustry trade will increase as factor endowments become more similar.

In new trade theory, increasing returns are a motive for specialisation and trade over and above conventional comparative advantage and can indeed cause trade even where comparative advantage is of negligible importance. New trade theories can also be seen in terms of a switch in emphasis from exchange efficiency to productive efficiency, where the latter is influenced by, for example: labour force skills, level of technology, increasing returns to scale, agglomeration economies, strategic actions of economic agents in technological and institutional innovations. We can see therefore that new trade theories suggest that a comparative advantage can be acquired as opposed to being “natural” or “endowed” as assumed by traditional theory. Moreover, the speed at which economies of scale can be achieved can influence comparative advantage – first-mover type advantage - so that factors that enable the quick realisation of economies of scale can be important: skilled labour, specialised infrastructure, networks of suppliers, and localised technology that support industry (A Study on the Factors of Regional Competitiveness A draft final report for The European Commission, Directorate-General Regional Policy CAMBRIDGE ECONOMETRICS ECORYS-NEI Covent Garden P.O. Box 4175 Cambridge NL 3006 AD Rotterdam CB1 2HS UNIVERSITY OF CAMBRIDGE Prof. Ronald L. Martin).

In recent years, citizens, the business community, and governments have become more cognizant of the impacts that the economic growth model of the past decades may have on the natural environment and the development of cohesive societies. Data on economic growth and employment show that, in the period after World War II in Western economies, economic growth went hand in hand with improving living conditions, access to more and better goods and services for a growing portion of the population, and an overall enhancement of well-being. More recently the sharp rises in economic growth in developing and emerging markets have pulled hundreds of millions of people out of poverty, dramatically improving their living conditions. However, aggregate statistics may not fully reflect the potential negative effects that these patterns of economic development might have had either on those portions of the population who find themselves unable to benefit from the overall improving economic conditions, or on the natural environment. A number of events and trends have raised concerns

about the social sustainability of the existing development model. These include the events that led to what became known as “Arab Spring”; the rise of unemployment in many Western economies, particularly in segments of the population such as the young and the less skilled; and increasing inequalities of income and socioeconomic opportunities in both Western countries and fast-growing Asian economies. Moreover, in terms of environmental sustainability, the existing (consumption-driven) economic model coupled with a rising population has brought about increasing pressure on natural resources such as water, energy, and mineral resources, which are becoming scarcer in the face of rising demand. The undesirable environmental consequences of human activity, such as pollution, are leading to a less habitable world. The unpredictable consequences of climate change are also raising the costs of environmental management. Together, these alterations call into question the feasibility of an economic model that does not fully take them into account. As a result, social and environmental sustainability have become increasingly significant components of, and complements to, economic performance. Consequently they need to be properly understood and measured in order to inform policies that will set and achieve the desired objectives, and to better track progress toward higher levels of sustainable prosperity.

## PROFIT MAXIMIZATION

We have learned that  $\pi = R - C$

And the cost is economic cost which includes all opportunity cost.

A firm considers two decisions:

Stay in business or not? -- (YES)

How much to produce?

Shut down-- (NO)

• [Suppose stay in business]

How much should it produce?

Let's see the condition for maximizing profit:

Marginal profit,  $MP = 0$  (Rule 1)

The reason is that if

$MP > 0$ , you want to increase output;

$MP < 0$ , you want to decrease output.

Only when  $MP = 0$ , you have no room to increase profit. (The profit curve has an inverse U-shape.)

Also,  $MP = \Delta(R - C)/\Delta q$

$= \Delta R/\Delta q - \Delta C/\Delta q$

$$= MR - MC$$

So, a firm wants to produce at  $MR = MC$  (Rule 2)

• [Shut down or not?]

1. In the Long-Run If the maximum profit  $\pi^* = R^* - C^* < 0$ , shut down;

$> 0$ , stay in business;

$= 0$ , doesn't matter.

### In the Short-Run

After figuring out the maximum profit when it stays in business, which

is  $\pi^* = R^* - C^* = R^* - VC^* - FC$ ,

a firm will compare the Revenue and the Variable Cost.

Option 1: shut down

Earn 0 and pay FC:  $\pi = -FC$ .

Option 2: in business

Earn  $R^*$  and pay  $FC + VC^*$ :  $\pi = pq^* - FC - VC(q^*)$ .

\*The Fixed Cost is sunk cost (not avoidable) in the short-run; it is already paid and cannot be recovered.

Option 1 is more profitable if and only if

$$pq - FC - VC(q) < -FC$$

$$pq < VC(q)$$

So, it is better to

Stay in if  $pq > VC(q)$ ; this means the revenue is enough to cover the Variable Cost.

Shut down if  $pq < VC(q)$ ; this means the revenue is not enough to cover the Variable Cost

If  $R^* = VC^*$ , it does not matter.

So, Stay in business or not?

YES (LR:  $\pi^* > 0$ ; SR:  $pq > VC(q)$ )

How much to produce? - at  $MR = MC$

NO (LR:  $\pi^* < 0$ ; SR:  $pq < VC(q)$ ) Shut down

### Competition in the Short-Run

#### Profit Maximization

##### 1. Optimal Output Level

We have seen the MC curve (see Figure 1). Let's figure out MR. A competitive firm faces a horizontal demand curve; this means it can sell its product at a constant price "p" and the revenue is "p\*q".

So,  $AR = R/q = p$ ;

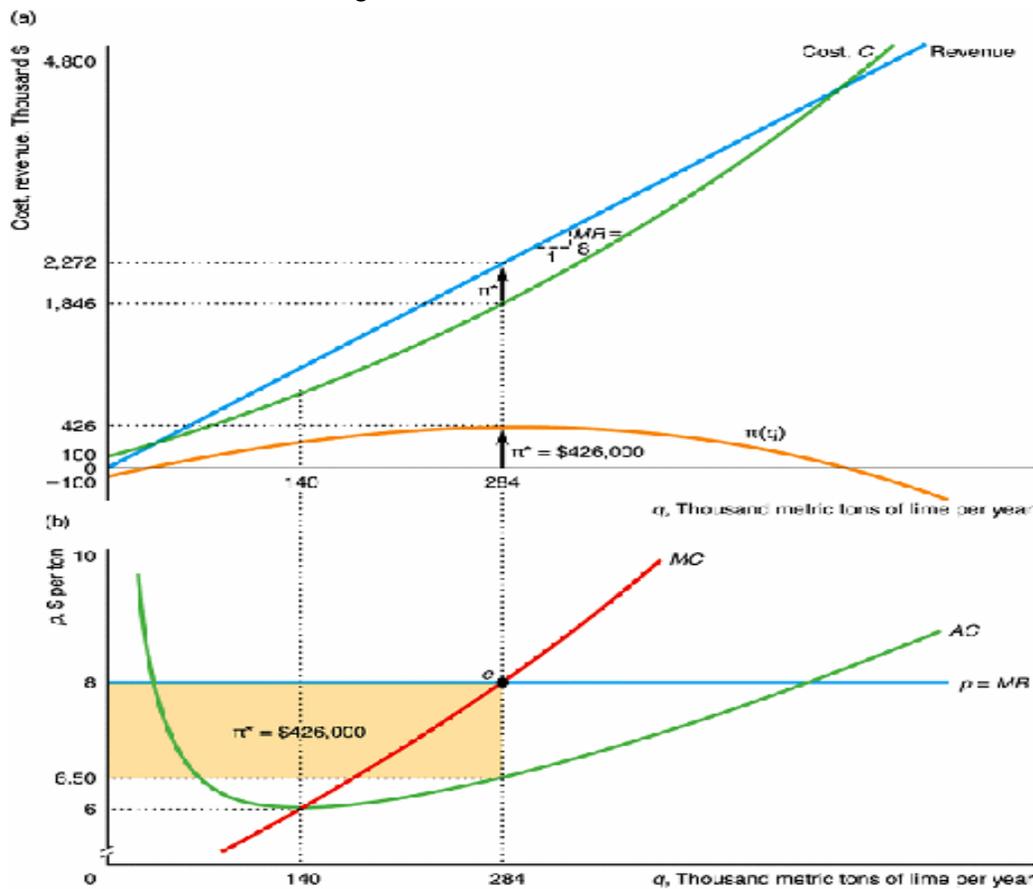
$MR = p$ .

These will be helpful. Moreover, the average profit

$$A\pi = \pi/q = (R - C)/q = AR - AC = p - AC$$

The profit-maximizing condition (in the short-run) is  $MC = p$

Figure 1: Profit maximization



The firm maximizes profit at point e (where MC equals “p”). We will call this firm’s equilibrium since it does not want to change.

2. The Total Revenue is the big rectangle ( $8 \cdot 284$ );  $p \cdot q$ .

3. The Total Cost is the low rectangle ( $6.50 \cdot 284$ );  $AC \cdot q$ .

4. The Total Profit is the yellow rectangle (the big one minus the white one)  $((8 - 6.50) \cdot 284)$ ;  $A\pi \cdot q$ .

5. The distance between “p” and AC at “e” is the average profit

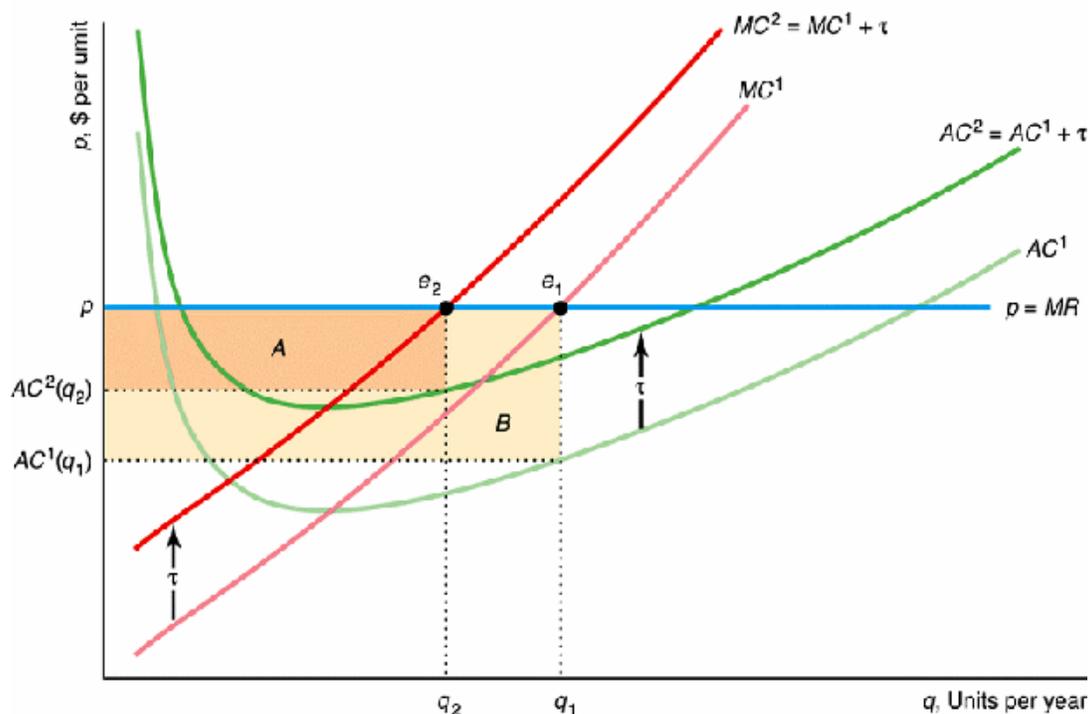
$p > AC$ : positive profit

$p < AC$ : loss

## Costs

From the following (Figure 2), we can see that firm chooses its output level to maximize its total profit rather than the average profit per ton. By producing 140 thousand tons, where average cost is minimized, firm could maximize its average profit. If firm produces 284 thousand tons of lime, although firm loses \$0.50 (\$6.50-\$6) in profit per ton, it gains by selling more output. And the gain is bigger than the loss, so firm is maximizing its profit at 284 thousand tons.

Figure 2: Costs



$$1. \text{ Total cost } a = \text{Total cost } b + \tau q$$

$$\Rightarrow MCa = MCb + \tau$$

and

$$\Rightarrow ACa = ACb + \tau$$

2. Originally, the firm has  $MC^1$  and  $AC^1$  and its equilibrium is  $e_1$ . The tax will shift both the  $MC$  and  $AC$  up by  $\tau$ . And the new equilibrium is  $e_2$ . In response to tax, firm produces  $q_1 - q_2$  fewer units of output.

3. Since firm sells less output, and average cost has been increased, the profit it earns now drops. Firms sell less and make less profit per unit.

$$4. \text{ After-tax profit is } A = \pi_2 = [p - AC(q_2)] \times q_2$$

$$\text{Before-tax profit is } A+B = \pi_1 = [p - AC(q)] \times q$$

Profit falls by area B due to the tax.

5. Short-run shut-down decision

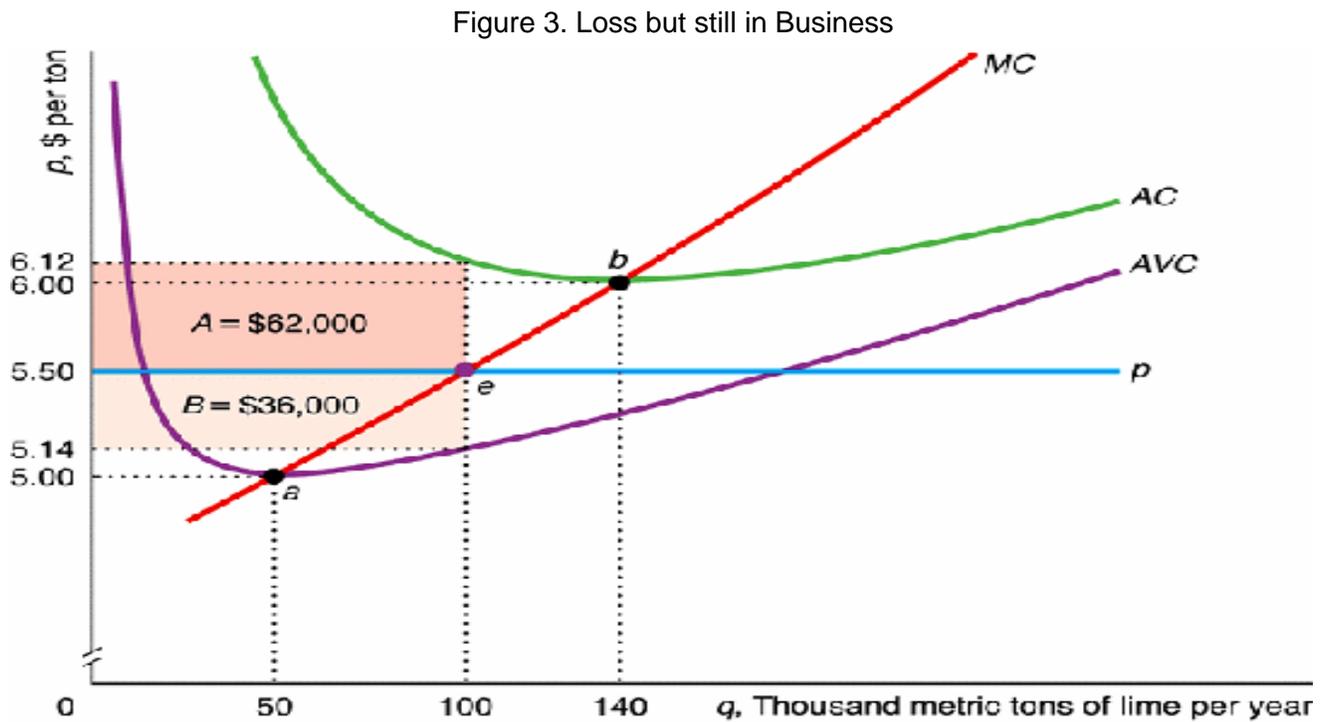
We have shown previously that the firm will shut down if

$$pq = R^* < VC^* = AVC^*q$$

$$p < AVC \text{ (at equilibrium } e\text{)}$$

**Loss but still in Business**

See it in the Figure 3: make a loss but still in business



1. The rectangle between AC and "p" at "e": loss (A).
2. Where is the FC: the rectangle between AC and AVC at "e" (A+B)
3. The rectangle between AVC and "p" at "e": the part of revenue goes to cover FC (B). Note that VC is totally covered. Let's check the shut-down rule again.

Shut down: lose A + B (fixed cost)

Stay in: lose A (part of fixed cost)

To sum up:

- If  $p > AC$ , positive profit.
- If  $AVC < p < AC$ , loss but stay in business.
- If  $p < AVC$ , shut down.

Note that there are three criteria for three things:

- Optimal output:  $P = MC$
- Profit:  $P - AC > 0$
- Shut-down:  $P < AVC$

Basically on the above mentioned in the Table 1 is shown the summarary of firms' business behaviour to compete in the short-run.

Table 1. Summary of Business Behaviour

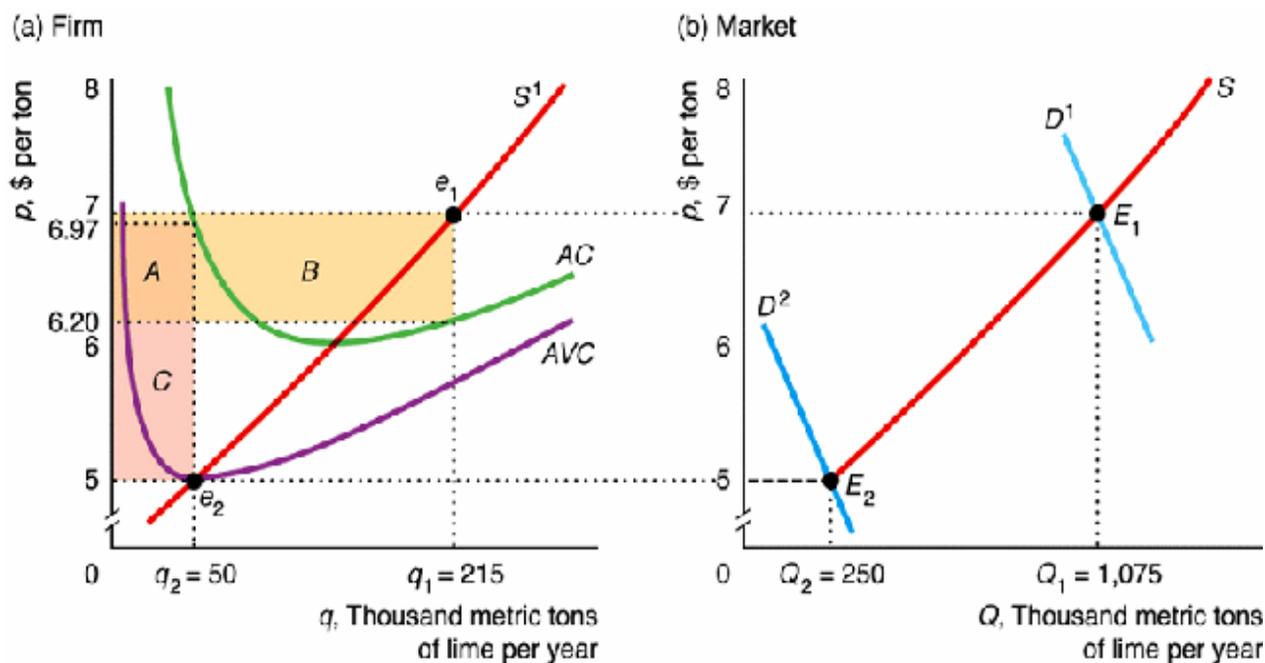
	Optimal output	Profit	Shut-down
Variable cost (Specific tax)	MC up / "q" down	AC up/ "π" down	AVC up may shut down
Fixed cost (Franchise fee)	MC same	AC up/ "π" down	AVC same

### Market Equilibrium and Firms' Behavior

Now keep in mind that there are numerous firms. We can assume that they are all identical.

In the Figure 4, Panel (a) shows one firm's cost curves and panel (b) shows the market S-D curves.

Figure 4. A demand shock

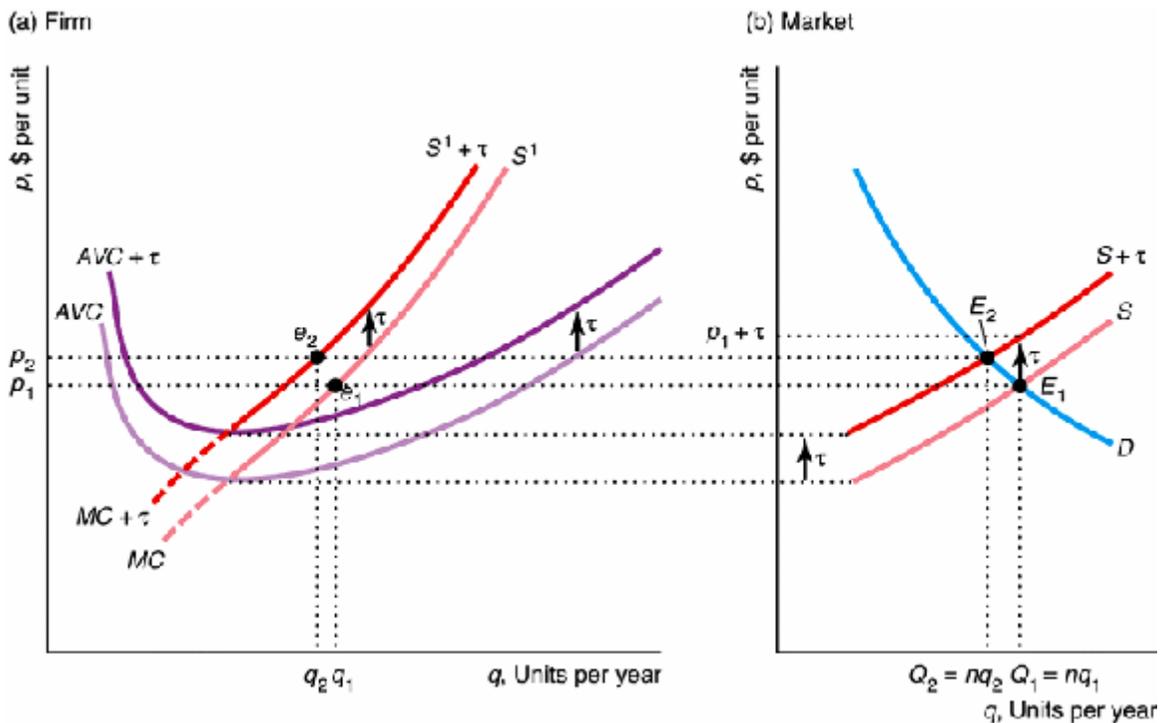


1. A Demand Shock (Figure 4)

Original equilibrium: The market equilibrium is at  $E_1$ . Market equilibrium price is \$7, while the market equilibrium quantity is 1,075. At price \$7, each firm produces at  $q_1=215$ . We can see that market equilibrium quantity is equal to individual's quantity multiplied by the number of firms in the market ( $1,075=215*5$ ). In this case, each firm is earning profit= $(\$7-\$6.20)*215=172$ . After the shock: demand shifts to left. New market equilibrium is the intersection of new demand curve and supply curve, i.e.,  $E_2$ . The new market equilibrium price is \$5, while the market equilibrium quantity is 250. When price is \$5, each firm will produce 50 units of output. So, again, we have  $250=5*50$ . But for this case, firm doesn't have a positive profit. Each firm loses  $5*50-6.97*50=-1.97*50=-98.5$ . However, if firm chooses to shut down, he also loses  $-98.5$ . Firm is indifferent in shutting down or producing. We assume firm will produce if he is indifferent.

2. Effect of a specific tax (Figure 5)

Figure 5. Effect of a specific tax



Originally, all firms produce at  $e_1$  and the market equilibrium is  $E_1$  with price  $p_1$ . Each firm is producing  $q_1$  and market equilibrium quantity is  $Q_1 = nq_1$ . If a specific tax is imposed, the  $MC$  and  $AVC$  will both move up (shifts to the left). This shifts the market supply to the left:  $S + \tau$  and a new equilibrium price is determined ( $E_2$  and  $p_2$ ). When the price rises, because  $p_2 >$

$\min\{AVC\}$ , each firm will produce and produce less output:  $q_2$  and market equilibrium quantity also falls to  $Q_2 = nq_2$ .

## CONCLUSION

When a firm sustains profits that exceed the average for its industry, the firm is said to possess a competitive advantage over its rivals. The goal of much of business strategy is to achieve a sustainable competitive advantage. Competitive advantage is a property that a business can have over its competitors. This can be gained by offering clients better and greater value. Advertising products or services with lower prices or higher quality interests consumers. Target markets recognise these unique products or services. This is the reason behind brand loyalty, why customers prefer that particular product or service (Competitive advantage).

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