The Synergy between Subsector Competitiveness and Regional Development: The Case of Turkey and the Tomato Subsector

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Abstract

This study develops a conceptual model of the institutions and key factors that facilitate competitiveness on the national and subsector level and then determines how linkages between the factors that enhance competitiveness and regional development can be created. Turkey and the Turkish tomato subsector provided the case to test this model.

Keywords: Regional development, sustainable competitiveness, tomato processing industry, Turkey, industry clusters.

Introduction

Much of the current literature on subsector competitiveness focuses on how industries in advanced industrialized nations can extend market share, innovate, and enhance productivity. Institutions (norms, rules and conventions) and organizations that enhance these indicators of competitiveness such as clusters, market networks and learning regions have been the subject of many studies in industrial sectors and industrialized economies. Emerging economies contend with a different set of issues than industrialized economies. This study addresses the specific case of an emerging economy and a vertical slice of a horticultural sector.

In an emerging economy, the environment in which the subsector must operate may be compromised (dampened) by missing markets, insufficient public infrastructure, and a lack of confidence in the judiciary system, inflation and volatile exchange rates. Processed agricultural sectors within emerging economies also face the challenges of volatile international prices, barriers to entry in the more valued added markets and declining terms of trade. Turkey's processed tomato subsector must contend with these challenges as well as a

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serious external challenge from China, which, through sheer economies of scale may under price the entire European market.

Turkey and the tomato subsector provide an important case study of a large export oriented subsector that is largely owned and controlled by domestic interests. This is in contrast to many emerging economies where the horticultural industry is dominated by multinationals. This study examines the factors, which contribute to and detract from the sustainable competitiveness of the tomato subsector. The connections between sustainable competitiveness and enhanced regional development are also explored.

Competitiveness in a subsector is the long run ability to adapt to change through innovation, a willingness and ability to embrace and seek new knowledge, technology, operational procedures, and opportunities to develop cooperative and collaborative networks. To be competitive, the subsector must include institutions, rules and norms and relationships that enhance positive spillovers emanating from interdependence, cooperation and competition.

An element of subsector competitiveness, which is directly linked to regional growth, is sustainability. In order to be sustainable, a subsector must develop the institutions, which enhance the development of backward and forward linkages. If these linkages are not created within a subsector, economic activity in a region may be held hostage to decisions made in another country by a firm with no long run commitment to the community nor the communities' ability to provide an adequate standard of living for the next generation.

Regions play an important role in creating and sustaining competitive advantage in the global political economy. The rising interest in regions as a source of comparative advantage is due to the renewed attention in endogenous growth theory specifically the idea that improvements in productivity enhance the pace of innovation and improvements in human capital (Romer, 1990). The theory predicts positive externalities and spillover effects from development of knowledge based economy and stresses the need for institutions that nurture innovation and hence economic growth.

The Tomato Subsector

Processed tomato subsector in Turkey is a highly localized industry that makes an interesting case study in analyzing policy implications for regional development and subsector sustainability. The tomato is the world's leading vegetable for processing with increasing popularity in food consumption. The processed sector has a considerable industrial and international dimension due to the large global volume of product and the level of technology incorporated into the production. California is the world's largest tomato processing region

followed by Italy and Spain. Turkey has produced about 1.3 million tons per year 2000-2003, being one of the largest producers of processed tomatoes in the world (Pritchard B and Burch, D., 2003).

Tomato production is a major activity for the rural population in Turkey and a raw industry began in the 1960's as early investments by the firm, TAT. From this initial establishment other Turkish investors entered the industry. Foreign direct investment (FDI) is minor and makes up 7% of Turkish processing capacity. There are currently about 40 processors in Turkey but only about 4-5 of them are capable of producing paste to European quality standards. Processing capacity is estimated at close to 500,000 tonnes of paste with a 60-day season and with factories operating at full capacity.

Turkey accounts for 15% of the tonnage produced within the AMITOM, with an average of 1,562,000 tones over the 1999-2001 period. Tomato production for processing is mainly situated in the region around Bursa, on the Marmara coast, and the region of Balıkesir and İzmir (AMITOM, 2002).

China's entry into the world market in the early 2000 had its most severe impact on Greece and Turkey. Beginning in 2000 the Chinese price for paste was $350/tonne compared with $721/tonne in 1999. China's ability to offer this price to the re-processing industry in Italy effectively shut down Turkey's major buyer of paste for several years. China will likely be permanently a major and growing supplier of paste on the international market due to low cost of production. However, Turkey does have a high quality niche in the market in that Turkey is known for its hand harvesting of ripe red tomatoes and the superior paste they produce.

Turkey and the tomato subsector provide an important case study of a large export oriented subsector that is largely owned and controlled by domestic interests. This is in contrast to many emerging economies where the horticultural industry is dominated by multinationals. The focus of the paper is twofold; to assess the current 'state' of subsector's sustainable competitiveness and to determine if there are links between subsector competitiveness and regional development in the Turkish processed tomato subsector.

Bursa-Karacabey region, which constitutes the case study of the paper, accounts for 40% of Turkey's total production of tomatoes for industrial use. In 2001, out of 1,300,000 tonnes, 425,000 tonnes were produced in that region. In 2001, 400,000 out of a country total of 950,000 tonnes are produced in Bursa-Karacabey region. 20% of the region's 420,000 decars of irrigated land and 32% of land for vegetable production is tomatoes for industrial use (data compiled from Karacabey Department of Agriculture in 2004). The region therefore makes an

interesting case study to lead a discussion on clustering opportunities in creating a high performing and sustainable industry region and elaborate on links with rural development.

Research Question

The following research questions are posed in this study;

1. What elements of the structure and conduct of the processed tomato subsector in Turkey contributes to subsector competitiveness?
2. What factors hinder competitiveness for Turkey's tomato growers and tomato processors?
3. Are there links between subsector competitiveness and regional development?
4. How can the State and the regional planning process contribute to regional development?

Conceptual Framework

The framework which is used to examine how key variables exert pressure on the long run competitiveness and sustainability of the subsector is eclectic and draws from institutional and evolutionary economic theory (Dunning, 2001, Hakansson and Johanson 1993, and Perez, 1997). Key informant interviews were conducted with processors and growers to determine long run networking opportunities. Consultations with the National Planning Office—the government agency most involved in regional planning provided insights on the potential links between regional development, and the growth of clusters and networks.

Cluster Competitiveness

Success in economic development is closely related to development of localized concentrations of industries and related institutions. This idea dates back to Alfred Marshall's notion of industrial regions where he contends that industries tend to cluster in distinct geographical districts and that knowledge is the most powerful engine of production (Marshall, 1949). The most important part of the Marshallian theory is that long term competitiveness is based on the evolution of localized skills and competencies, which depends on cooperation as well as competence (Andersen, 1996). Marshallian theory marks groundwork for further analytical framework that highlights the changing perspective from resource based to knowledge based strategy which includes industry clusters.

Clusters are interconnected firms and institutions in a particular field that encompasses an array of linked industries. Feser and Bergman (2000), define industrial clusters as groups

of related firms with one or more than one of the following dimensions: formal input-output or buyer-supplier linkages, geographic co-locations, shared business-related local institutions, evidence of informal cooperative competitions. Interactions between the firms occur both locally and over distances.

Agglomeration of industries creates scale economies, increased specialization, division of labor and greater access to information that creates opportunities for innovation. Schumpeter further elaborates the significance of clusters in creating revolutionary technology through shared knowledge where he emphasizes that the main stimulus for fundamental economic change is innovation (Schumpeter, 1934). Schumpeter discusses the potential of innovations in creating basis for a whole series of adaptive decisions and points that the main stimulus for fundamental economic change is innovation.

Post Schumpeterian researchers further complement to the discussion of geographic dispersion of industrial activity (Dahmen, 1988; Myrdal, 1957; Hirschman, 1958). Dahman's idea of development blocks, Hirschman's discussion on inducement of investment decisions through backward and forward linkages and Perrox's growth pole theories emphasize the importance of interfirm linkages in the development process. The theories are further complemented by recent evolutionary economics pioneered by Nelson and Winter (1989) and literature on industrial dynamics that focus on dynamic models that demonstrate the role of linkages between suppliers and users of products in promoting innovation (Andersen, 1994).

Porter emphasizes the importance of clusters and stresses the fact that the clusters represent the material basis for an innovation-based economy. Inter firm networks encourage mutual trust, collaboration and information sharing through which willingness and ability to innovate is enhanced. Innovation is a complex sequence of events that involve all the activities of developing or creating new products, services or processes to the market. The significance of industry clusters with respect to innovations and learning is that they foster indirect learning. Indirect learning does not occur in an intended manner and is a by-product of normal economic activities. Industry clusters are therefore form a foundation for indirect learning process to occur (Gregersen and Johnson, 1997).

The rationale for cluster development in a subsector is the need for an emergence of flexible specialization that gives firms and organizations the ability to combine the advantages of smaller scale and flexible production associated with inter-firm linkages and cooperation. Such conditions increase the capabilities of the firms in generating new ideas, products, technologies within the region (Green and O'Neill, 1999).

Interfirm linkages are considered to play a major role in the development of local, regional, and national economies. Cumulative effects of industrialization are realized through backward and forward linkages. Interfirm networks within the same geographical regions encourage mutual trust, collaboration and information sharing through which willingness and ability to innovate is enhanced. Such collective learning process among firms within the same geographic regions plays a key role to create interfirm learning networks and increased capacity to innovate.

Camagni (1991) points out that learning is not simply the acquisition of information. Instead, learning involves a process through which available information becomes useful knowledge. Within such framework, creation of knowledge base becomes a crucial issue for increased innovational capacity.

Localized knowledge base is created both through formal (conscious, direct) and informal (unconscious, indirect) mechanisms. The former involves, research collaboration between local Smews or between a SME and university. Within the context of formal mechanisms, learning is considered as an organized process. The latter considers learning as an unorganized process which is an unintended by product of economic activities. Knowledge is the most fundamental resource and learning is the most important process for innovativeness and competitiveness (Asheim, 1996).

Those supporting industries that the firm interacts contribute to provide insight into the market needs, technological developments and a foundation to form a climate for change and improvement. The interacting firms eventually become partners or allies in the innovation process (Porter, 1990). A major issue regarding presence of supporting industries (i.e. backward linkages) is their potential to contribute to regional development through local purchases and financial interactions. This is particularly important for agro industrial clusters such as purchase of seeds, fertilizers and pesticides in the production of raw materials as well as purchases by the processors of machinery and major processing inputs.

One requirement of a successful and high performance cluster lies in the formation of skills within the subsector. Developing and sustaining the skills and knowledge of the workforce is largely shaped by the environment (subsector structure and conduct) within which the firms operate. This implies that the subsector structure and conduct should allow for possibilities of networking across the firms and developing backward linkages within the local economy which facilitate knowledge sharing and innovations. Creating an environment which allows for direct and indirect learning helps to enhance formation of work force skills for product and process innovations (Green and O'Neill, 1999).

Another requirement for successful clustering is the presence of an institutional fabric that facilitates formal and informal alliances within geographical proximity. The importance of geographical proximity in facilitating, creating and maintaining competitive clusters is largely due to localization of economic activity through variables such as tacit knowledge, face to face exchange and local institutions.

Subsector Structure and Conduct for Cluster Competitiveness

The model assumes that subsector structure and conduct enhances conditions that facilitate formation of successful and high performance industry cluster in the subsector. A competitive cluster enhances the subsector's likelihood for adoptability to respond to changing market conditions.

At the subsector level, *structure* concerns the number and market power of different stages, as well as different marketing channels. The key focal point is identifying where market power resides in the subsystem. Certain participants, such as large wholesale traders, processors or exporters typically exercise considerable market control. A large proportion of a commodity may pass through a handful of firms at a particular stage of subsystem (Holtzman, 2002).

Conduct includes specific coordination activities of subsector participants, the extent to which there is cooperation or conflict between stages, and the flow and distribution of information across stages. In developing countries, information is asymmetrically distributed across stages of a subsector, with larger participants possessing superior information to dispersed producers and first handles as well as consumers.

Structure and conduct of the subsector determines how efficient and effective the commodity subsystems are in developing competitive industries and clusters of industries. The question is how subsector structure and conduct allow for networking and backward and forward linkages as well as facilitate formation of institutions for knowledge creation and innovativeness.

Performance of the subsector is determined by several variables, such as matching supply and demand, stability of output, technical and operational efficiency, equity, accuracy and equity of information, subsector adaptability and responsiveness. The study concentrates on subsector adaptability and responsiveness. Subsector's ability to adapt and respond to changing conditions is largely enhanced by possibilities of networking across the firms, developing backward linkages within the local economy and the presence of institutions that facilitate knowledge sharing and innovations. Ability to adapt means subsector's ability to be flexible which is possible through knowledge creation and increasing learning capabilities.

Contribution of Competitive Clusters to Rural Development

Clustered groups of linked firms may create external economies. The term is related to the concept of agglomeration economies (Bergman and Feser, 1999) and Marshallian industrial districts (Marshall, 1949) which is based on the idea that clustered groups of firms create external economies that allow for cost savings due to the size or growth of the output of the industry in general. Recent empirical evidence suggests that industry clusters raise local productivity and wage levels which created higher rural incomes, due to division of labor and job specialization (SRDC, 2002). Another major influence of clusters on rural development is that they demand materials, equipment, real estate and personnel. Such expenditures goes back to the rural economy, causing local spillovers that foster economic growth, increase rural incomes and employment.

An important question to explore is how clustering contributes to sustainable rural development and provides long run benefits to the rural economy through interplay among the macro/global and subsector institutions and organizations. There are several indicators of sustainable rural development, namely; economic growth, equitable distribution of income, meeting basic human needs, and environmental and economic sustainability. Progress should be made on all these fronts to state with confidence that a community is creating sustainable development. In this analysis, we examine a slice of sustainable rural development and focus on economic sustainability, specifically on endogenous productive capacity[3]. According to Gallagher and Zarsky, endogenous productive capacity is the synergy of knowledge, skills and technology, which allows domestic firms and workers to design, produce, and sell goods and services in domestic and international markets. It is not only the ability to do what others does, but endogenous productive capacity includes the ability to innovate. The foundation of endogenous capacity is the ability of the industry(s) to develop backward and forward linkages.

The above argument is consistent with sharp transformations radical about-face of theories and polices on regional development over that last decade and rediscovery of the region as an important source of competitive advantage (Amin and Thrift, 1994). The rediscovery has drawn in part on renewed interest in endogenous growth theory. The theory acknowledges externalities and increasing returns to scale associated with clustering, specialization and localization of economic activity through variables such as tacit knowledge, face to face exchange and local institutions. Parallel to modern regional

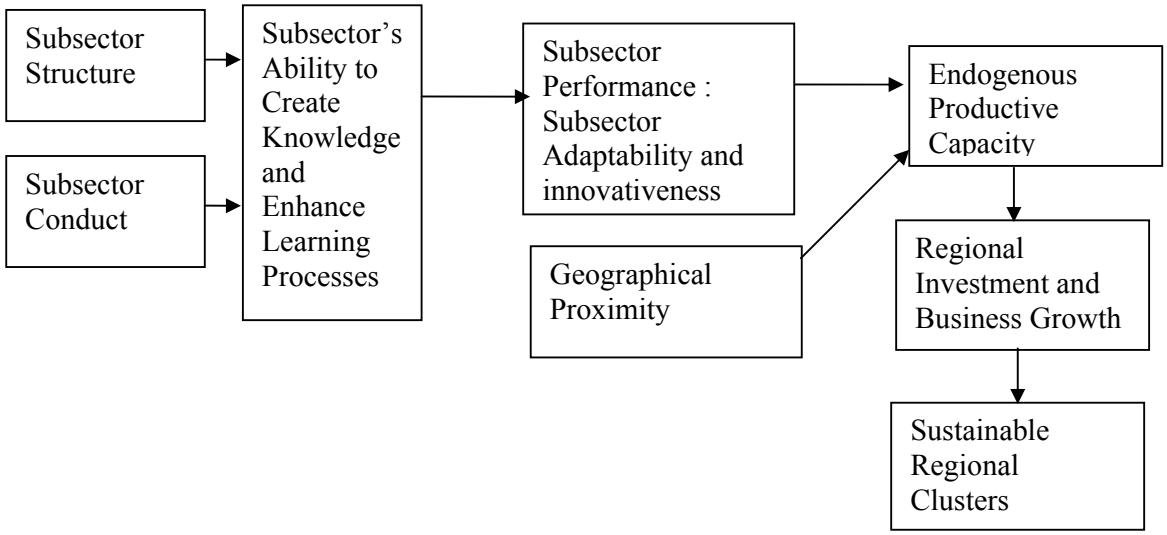
[3] This term was first used by E. Lim (2001) and by Gallager and Zarsky (2004)

development theories, endogenous productive capacity is achieved through interaction of firms and institutions and sharing knowledge. This knowledge may be codified knowledge that is created through direct learning processes (R&D SOPs, training courses, universities) or it could be non-codified knowledge created through indirect learning processes (informal ties across firms and SMEs, shared workplace skills and practical conventions).

New regional theory suggests new theoretical approaches to development that emphasize learning in creating local areas that are able to stand up for themselves and adapt to the new competitive conditions imposed by globalization (Storper, 1997; Cooke 1996 and 1998). From this perspective, sustainability in rural development lies in viewing rural development through networks of inter-firm cooperation and innovativeness. This is achieved through creation of knowledge and building learning capacity (Dies, 2002). Regional policies that emphasize sustainable regional development are aimed at innovation in companies, in clusters, in institutions and in organizations.

This conceptual framework predicts that subsector structure and conduct has a direct influence on the subsector's ability to create knowledge and increase its learning capacity. Conditions that enhance the subsector's adaptability increases subsector's endogenous productive capacity which allows firms to use the synergy of knowledge of skills and technology to innovate. Endogenous productive capacity attracts new firms to the regional economy as economic growth indicators such as value of new investments, employment, incomes and exports improve and contribute to sustainable regional development.

Figure 1: Conceptual Model



Discussion

This section demonstrates how the structure and conduct of a subsector influence performance.[4] The following queries guide this analysis:

a) Do backward and forward linkages exist? Are they extensive enough to establish networks within the subsector?
b) Is there an institutional fabric for the transfer of knowledge and innovation?

We then explore the possibilities on possibilities for regional investment and growth and the creation of a more advanced cluster in the Bursa region.

Elements of the structure and conduct of the processed tomato subsector in Turkey that contribute to subsector competitiveness:

The four decades of domestic ownership in the tomato sector has facilitated the development of backward linkages and an embryonic cluster. Contracts have further reinforced the development of linkages for both the growers and processors. Raw material is produced by a large number of small producers (approximately 4000-5000 producers) mainly located in Bursa and Balıkesir (Marmara) region.

Backward linkages in the production of raw tomatoes are mainly with domestic suppliers of seeds, fertilizers, tractors, pesticides, irrigation, equipment and labor. In the supply of inputs for raw tomatoes, manufacturers and distributors have considerable market power with respect to price. The price level is also largely influenced by exchange rate. Reliance on imported inputs such as fertilizers, pesticides, tractors constitute a missed opportunity for economic activity, and may result in negative terms of trade for the peripheral economy, in this case Turkey.

Backward linkages in production inputs of raw tomatoes:

Seed

The Turkish tomato industry relies exclusively on domestic seed producers. There is also a strong research/extension link between the agricultural universities and the Turkish seed producers (SPO, 2001).

Fertilizer

In Turkey private fertilizer production began 1986. There are currently 7 domestic firms in the industry. These firms import several of the basic chemicals that make up the tomato fertilizers and then manufacture the final product. Fertilizer demand is expected to increase 3% in the next year but there will likely be no new investment in manufacturing capacity

[4] As defined in the conceptual model, subsector performance is the subsector's ability to create knowledge and enhance learning processes.

because of high interest rates. Excess demand is expected to be fulfilled by imports. In fertilizer production, the Turkish domestic industry adds value to the product and imports much of the raw material. As demand increases, the fertilizer industry will likely import the final product unless the macroeconomic environment changes. The uncertainty around EU accession may also elicit a wait and see attitude among investors (SPO, 2001).

Pesticides

The value of imported pesticides in Turkey from the early to late 90's increased less than 40 percent. The Turkish industry is very competitive with 119 firms, 65 of these are producers of pesticides, 45 are importers and 5 are affiliates with foreign parent companies. There are 2000 registered pesticides in Turkey, out of the 416 technical ingredients, 16 are domestically produced, the remainder being imported (http://www.zmo.org.tr/etkinlikler/5tk02/40.pdf).

Agricultural Machinery

The other input supply that was examined was tractors. Tractors are considered to be the responsibility of the producers to provide. The processing firms do not contribute to the purchase or maintenance of this machinery. Tractors are produced almost wholly domestically. In the early 2000s only 1-2% of domestic consumption was imported it is likely that foreign affiliates are producing tractors in Turkey (SPO, 2001).

Tomato production for processing has traditionally been contracted between processors and producers. Contracting with the producer for raw materials began in 1970--the first attempt of contract farming in Turkey. These firms act as monopsonists when acquiring fresh tomatoes. In the fresh industry there are many medium sized producers (40-50 decars) who contract with a handful of processors on a season-by-season basis. Before planting, the processing firm negotiates a price with the producer. Frequently the processing firm provides seed, fertilizer and pesticides or fumigants as necessary. The processing firm may also provide technical assistance in the field. The costs of these services and a finance charge are deducted from the income the producer receives from delivery to the processor.

These contracts between processors and producers fill missing markets--the most constraining of these markets being credit. The processors also act as conduits of new technology as they provide the latest seed, and pesticide products. Processors have also introduced drip irrigation technology into the tomato-producing region.

In Bursa-Karacabey region where the majority of processed tomato production is located, producers are able to purchase the production inputs from the processor as well as from other suppliers. The processor does not impose interest rate on the value of input and

provides input before planting time. The costs are deducted from the output revenues after the sale of the product. Ninety percent of the farmers purchase seed and seedlings from the processors while the rest is from the market. The percentage of farmers who purchase fertilizer from the processors is 50% while 25% purchase from the market while the rest is purchased from the Credit Cooperative. Thirty of the farmers receive pesticides from the processors and 25% of the farmers purchase pesticides from the market. The rest is supplied from the Credit Cooperative, where interest rates are around 2 points higher that the market interest rate. In addition to not charging interest on the costs of the inputs, the processor provides cash advances for the grower's use throughout the production period.

The processor/grower contracts have a positive impact on innovation and knowledge transfer. For example, technical assistance provided by the firms allows producers to increase their skills and enhance productivity through new production and management methods such as integrated pest management (Kartal, 2004). Drip irrigation was also introduced to the region via the processing firms. Around 25% of the farmers invested in this system.

Forward linkages in processing

The processing industry does not have significant forward linkages. The processing machinery to prepare the paste, packaging, and food chemicals are imported. The tomato processing industry was not able to develop further processing of paste into other more highly value added foods. The reasons for this lack of valued added production will be discussed in the following section.

The subsector structure and conduct allows participants to develop backward and forward linkages with the local economy. The linkages are through supply of production inputs for raw tomatoes as well as through contract farming for the processors. Contract farming in particular has allowed the subsector to develop an institutional fabric that facilitates information and knowledge transfer with respect to technology and innovation across the subsector participants.

Elements of the structure and conduct of the processed tomato subsector in Turkey that hinder subsector competitiveness:

The distribution of power is a major issue that influences subsector's performance. Power across subsector participants is asymmetrically distributed where processors have significant power over price, purchasing conditions and input provision. Similarly, processors and other input providers impose high input prices on the farmers where there are limited opportunities for credit provision. The farmers are therefore squeezed between two powerful groups of subsector participants: the processors and input suppliers.

Ultimately the contract protects processors rather than producers. It is usually one sided and there are no explicitly stated right of objection on the farmer's side. Additionally, producers are not well educated which restricts their full comprehension of the contract and their bargaining powers. All risks are born by the producer. Recently several of the processors have defaulted on their contracts with the producers leaving the producers without any payment for their product and with limited access to the resources to prepare for the next season.

Key informant interviews reveal that there is another factor that hinder subsector competitiveness for the producers: lower yields over time due to degradation of the soil fertility. and increases in the costs of imported inputs. Interviews helped us to demonstrate that while the yield of 3 tons of tomato production per decar was sufficient to make profit in 1984, the break even production have increased to 4 tons of production per decar in 1988 and 6 tons of production per decar in 1999. Table 1 demonstrates comparison between production costs and revenue per decar.

Table 1: Comparing Cost of Production and Revenue (TL per decar)

Years	Cost of Production	Revenue*	Net Revenue
2002	362,000,000	400,000,000	38,000,000
2003	534,000,000	500,000,000	-34,000,000
2004	584,000,000	400,000,000	-184,000,000
* Average yield: 5 tons per decar. Average producer price: 80,000 TL/kg in 2002; 100,000 TL/kg in 2003; 80,000 TL/kg (expected price) in 2004.			

Source: Data compiled by the authors from the Official Records of the Department of Agriculture Karacabey Branch and Karacabey Chamber of Agriculture, Bursa, 2004.

The rising cost of production coupled with low prices for raw tomatoes explains the reasons shy farmers pursue exit strategy rather than remaining in the subsector. Table 2 shows area for tomato production in Bursa Karacabey region.

Table 2: Planted Area for Tomato Production in Bursa Karacabey Region (decars)

2000	2001	2002	2003	2004
85,000	80,000	77,000	75,000	70,000

Source: Karacabey Chamber of Agriculture.

Low and variable prices for tomato paste as an industrial input has been the main challenge for the processors. The processors are stuck with high competition in the

international market for high value added products where there are limited chances for the Turkish processed tomatoes in international market due to problems with branding. The domestic demand for high value added processed tomatoes are limited to large metropolis due to effective demand that is determined by disposable income as well as tastes. The interviews reveal that out of the 9 processing firms in the region, 3 factories have stopped production and the rest operate with reduced capacity.

What can be said about the subsector performance, defined as subsector adaptability and innovativeness? The producers are flexible and adaptive that they are able to shift to other crops. However, this flexibility does not contribute to create and maintain a high performing tomato subsector, nor it does contribute to create and sustain a regional cluster of "processed tomato".

Links between subsector competitiveness and regional development

The above discussion reveals that subsector does not nurture the conditions that allow a competitive regional cluster for processed tomatoes to develop beyond an embryonic stage.

The structure and conduct of the subsector suggest that factors that hinder subsector performance are stronger than factors that enhance subsector performance in creating adaptive and innovative subsector. There is, however, evidence of success in creating limited endogenous productive capacity which if supported could lead to developing a stronger tomato paste cluster (which is at the embryonic stage and needs to be developed and nurtured to increase in maturity). Endogenous productive capacity implies set of skills and resources in a community that not only enhance the production and marketing of a particular commodity but also the flexibility to change product, technical, management style in response to international or regional markets. The ability to collaborate with civic, government and other organizations to increase positive spillovers or synergies would be evidence of a more advanced cluster. As discussed in the above sections, the tomato subsector, due to backward linkages to the local economy, missing markets filled by processors and the willingness of the farmers to exit and produce other crops suggests endogenous productive capacity in the region.

The role of State and the regional planning process in regional development:

The paper provides evidence that the tomato subsector has fostered endogenous productive capacity. This should be taken as a starting point in the subsector for the development of a high performing industry cluster in the region. Endogenous productive capacity in the region, if supported by state and local institutions, could stimulate a cluster in

the region. The cluster is at the embroyonic stage and it still needs to be developed and nurtured for increased effectiveness.

The emphasis on local and rural institutions as facililators of regional development and the local-global interface has been focus of interest for many years to regional planners. Turkey's vision on regional organization and sustainability has increased the importance of sustainable competition. Turkey's regional planning efforts began with first solid contributions in the 4th and 5th year planning period under the guidance of State Planning Organization. Regional planning is a focus of interest and has a special section in Turkey's 8th Five Year Development Plan that is in effect since 2001 (SPO, 2001).

As new approaches to regional development go well beyond centrally planned, top-down approach, there are several issues that the policy makers in Turkey should consider. The approach definitely requires a change in the culture of planning where diverse groups and agencies get together to exchange information and explore on common grounds rather than planning led by the planning authority and technocrats. One recent example related to change of culture in planning is the "Ege Region Development Project" led by regional organizations, and the State Planning Organization. The emphasis of the Ege plan is on exploring on the possibilities for cluster formation to nurture and develop existing embroyonic clusters.

Due to the geographical location (geographical proximity of the producers, suppliers, processors), Bursa Karacabey region demonstrates potential for formation of an industry cluster. Backward and forward linkages to and from the local economy provide setting for enhancing endogenous productive capacity in the region. However, such encouraging features are offset by the factors that hinder competitiveness of the subsector as demonstrated in the above sections. The aim should be to improve the competitiveness of the Turkish processed tomatoes in international market and attract domestic and foreign investments to the region to produce a high value added processed product.

Conclusion and Policy Implications

Institutions in Turkey's processed tomato subsector contribute to or hinder subsector's ability to create knowledge and increase its learning capacity. Conditions that enhance the subsector's adaptability increases subsector's endogenous productive capacity which is defined as set of skills and resources in a community that not only enhance the production and marketing of a particular commodity but also the flexibility to change product, technical, management style in response to international or regional market. This paper demonstrates that the Turkish tomato subsector, due to backward linkages to the local economy, missing

markets filled by processors and willingness of the farmers to exit and produce other crops presents evidence for endogenous productive capacity in the region.

The evidence of endogenous productive capacity is a necessary but not a sufficient condition for regional development. However, encouraging evidence in the subsector, such as backward and forward linkages to the local economy, are offset by the factors that hinder competitiveness of the subsector such as high cost of production and declining yields in raw material production. Another factor that hinders subsector competitiveness is strong competition in the international market for high value added products. There are limited opportunities for Turkish processed tomatoes in international market due to problems with branding. The domestic demand for high value added processed tomatoes are limited to large metropols due to effective demand that is determined by disposable income as well as tastes. The Turkish processed tomato subsector is therefore stuck in between price competition with low cost producers of tomato paste and well known, high value added international brands.

The state through public investment in human and physical capital, and as creator of many of the institutions that set the rules of interaction within an economy, plays a complementary role to firms and workers in the creation of endogenous productive capacity. Government policies, which support basic research and extension and facilitate learning across the sector, can be an integral part of this endogenous capacity. By fostering conditions that nurture endogenous productive capacity, the aim of the government should be to encourage the region to develop a well-functioning processed tomato cluster linked to the global economy with high value added products.

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