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Is it Possible to Increase the Ratio of Production and Exportation of High-tech Products in Turkey? Defining and Analysing the Problem by Instutional Approach

Turkey's had trade deficit for years. One of the key reason for this situation is the proportion of high value added commodities in total merchandise exports composition which is relatively low. Although her merchandise export level has increased in years; high tech exports have had a declining trend, even it is expressed as absoulte value instead of proportion of total exports. Main reasons for low rate high tech commodities production in a country are property rights, uncertainity of return of investments and bare of coordination between public and private sectors. In this work, the answers of this problem will be tried to find out through institutional approach. The institutions are simply defined as habit of thought or behavior rules in the case of increasing uncertainty in a community. According to Veblen, the main driver of evolution of economy is technology. Conventional institutions are slowing down the technological progress while productivity driving institutions accelerate it. In this work, Turkey's high tech production and exportation will be analysed by using tools of Traditional and New Institutional Approaches. First, Turkey's institutions related to technological progress will be sought. Second, the determinants of behavior rules for investing to high-tech sectors will be analysed. Third, applications and other countries data will be compared. And as a last, whether Turkey can increase the production and exports of high tech commodities will be discussed.

Introduction

Some countries specialized on production of high tech products, and the some other countries try to make transformation in their economies from conventional sectors to high value added ones. But we rarely encounter an achievement; in developing world, creative destruction process doesn't dominate over economy. Either developed or developing one, economies differ from each other due to their institutions. There is a consensus on that institutional economics was founded by Veblen (Şenalp, 2007: 49), and its theoretical framework has been developed by economists such as Commons, Ayres, Mitchell and Hodgson, also another school with its members including Coase, Williamson, North and Schotter pursued a different way, and it is called "new institutional economics". Altough both

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of these schools analyses economies from institutional view and evolutional process, they are different from each other with their tools they used. While institutional school use the frameworks of sociology, psychology, political science and even biology; new institutional framework is close to orthodoxy. Yet tools of both schools are helpful to our struggle to understand to evolutional dynamics of economies.

Republic of Turkey, since it was founded, tried to internalize the motto "reaching the level of contemporary nations". For this, country enter in the process of industrialisation by lead of government, and this aim has been achieved in a degree. Yet, Turkey is still far from producing high tech products (if we don't count on defense industry), and we will try to find the reasons by using the institutitonal framework of both schools.

1. Analysing with Institutional Economics Framework

In an economy, behaviour of agents are determined by rules, tradations and habbits, rather than rationality. These determinants are called "institutions". Institutions are "...in subtance, prevalent habits of thought with respect to praticular relations and particular functions of the individual and of the community; and the scheme of life, which is made up of the aggregate of institutions in force at a given time or at a given point in the development of any society" (Veblen, 1898:127). When agents act, they defer to rules of game and constraints which help them to reach their points which they can not do alone otherwise, and to make them decision in certain and uncertain conditions (Özçelik, 2007:206).

Unlike the orthodox economics which is mostly based on pyshics, institutional economics is based on biology, so the both economics and social life have dynamic characteristic and evoloutionary progress. "How do instutions emerge and change in time?" is the one of the main questions in this school, one explanation has given by Hodgson's systems theory (Özçelik, 2007: 220-230). In systems theory, mutual and cumulative causation determine the evolution of institutions by interaction with individual activity and institutional environment. Figure 1.1 illustrates systems theory and how it works. When institutional environment was impacted by individual activity, new institutional enviroment also impacts individual activity and faciliate new one and so on.

Figure 1.1: Systems Theory
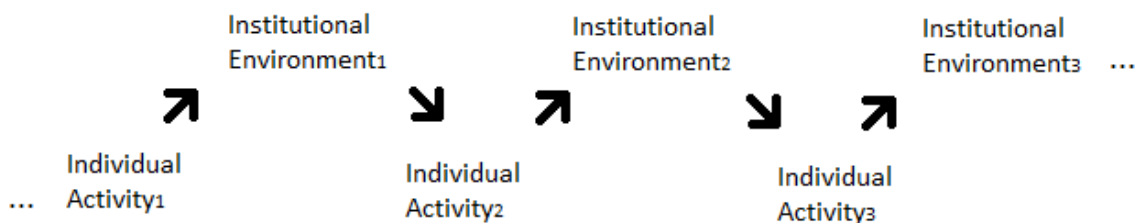
Source: Özçelik, Emre (2007), Kurumlar, Kurumsal İktisat ve Avusturya Okulu, in **Kurumsal İktisat** pp. 201-235**,** ed. Eyüp Özveren, İmge Kitabevi

The important point in this process is institutional enviroment does not change at all, it still keeps some parts of old one. If it can't achieve to carry these residuals, its existence doesn't sustain. The harmony of old and new for institutional change is a necessity. Turkey has experienced many institutional changes in her economy since she was founded. These changes include liberalism, estatism, planned economy and import substitution industrialization, export-oriented economy, regulations and so on. But public sector has always been leading the economy by tenders, public procurements and selling or renting public lands. Also, dominance of assembly industry still continues on. The most known sector is automotive, also Turkey has smartphone firms, but almost all components of smartphones are produced in abroad.

Also rant seeking behaviour has been evaluated as institutions changed, and its residuals hasn't changed in itself. Squatting in Turkey, since 1950's, constitutes corrupted relationships between municipalities and shanty owners. Shanty owners built new flat above their houses before every selection and municipalities submit title deeds for them. Thus owners have rented their new flats and this profitable job, perhaps created a new political mentality. Also owners of little houses on city surroundings received opportunities as the city enlarged. Owners accepted to release their lands to builders, and in return they got flats from apartment had been built on their lands. This exchange motivated people to buy lands near city. Earning money from tenants has become a popular; and macroeconomic instabilities also incited society for real estate investment. Construction sector might take its strenght from this behavioural pattern. Today, building malls, building complexes, but also big projects such as third airport project and opening new channel in Istanbul called as "crazy project" are sourced from corrupted relationships between politicians and rant seekers.

Veblen adresses some basic instincts as sources of institutions (Gürkan, 2007:244). These are workmanship, idle curiousity, parental bent, mutual expoitation and predotory bent. Altough Veblen's works are based on evolutionary framework, he demontstates that these instincts are relatively stationary. He also classifies institutions as dynamic-technological and static-ceremonical. The first one meets human needs that frequently change, sources from constructive, beneficial instincts. Latter changes slowly, sources from exploitive, predatory instincts and it slows down the dynamic-technological process.

Businessmen, managers who specialized on trade and finance focus on vendibility (Rutherfold, 1994:107). According to Veblen, these are examples for static-ceremonial process and exploitive instincts. On the other hand, specialists, engineers and workers response to social needs, so their focus point is serviceability and epitomized to dynamic-technological process and sourced from peaceable instincts. Therefore, there are two components that determine the institutional structure in modern world. First is machine process and the second one is business enterprise (Veblen, 1999[1904]:22-23). Machine process and industrial system based on machinery technology is dynamic progress could change the institutonal structure; and business enterprise is a conventional component could protect statu que. Veblen argues that industrial system, as a coordinated structure with its sub-mechanic process, would create a realistic, specialized and coordinated individual. Humans would be alienate to abstract-individual phenomenon which is not coherent with objective-production conditions and metaphysical thought forms. This alienement would include business enterprise sourced from predatory instincts.

Why does trade, or business enterprise, slowdown technological progress? Businessmen, are reluctant to decrease the costs and increasing productivity through technological progress, and increasing profit. Rather, they prefer less risky way; decreasing production level and increasing prices in market. If the industry is managed by trading purposes, productivity decreases and sub-mechanic process is distorted. Veblen crictized the transition of the businessmen in industry to financial sector at the end of 19th century. Even businessmen who stay in industry sector became part of this financial system because of the necessity of being inside of banking and credit systems.

2. New Institutional Approach

In New Institutional Economics (NIE), institutions are defined as game rules in a society (North, 1990: 3). These rules impact deciding process of agents, especially investors who pay attention to investment climate, meaning existing or expecting environment for politics, institutions and behaviours determine returns and risks from investments (Stern, 2001: 12-13). There are two types of institutions. First is, informal institutions including ethics, customs, and the other one is formal institutions including laws. When the market deepen, formal institutions come into prominence. The main dynamic for transition is technology in old institutional school, rather than market dynamics. Yet, new institutional approach recognizes the evolution and its notions such as genetic drift and explains institutional differencies between two countries by using concepts of evoultionary process (Acemoglu and Robinson, 2013:106). However, NIE is sometimes criticized for its proximity of orthodoxy due to being attached to methodical individualism which assumes individuals are passive to economic conditions and seeking utility maximizing, also investment climate is more decisive for sustainable growth, rather than instincts. These are the main factors that distinguish two school approach from each other.

It is not only between developed and developing countries, institutional differences are also fact between developed countries (Freeman, 2000). Developed countries converge more with their financial markets and less with their labor markets. If we are talking about difference between labour markets, the decisive factor is trade of between opportunity and welfare. For example, labor seek opportunity more in USA and welfare in Europe. And what about Turkey? One survey (Güle, 2014) on students preparing to graduate less than one year in Kocaeli University give us some clues. According to results, %31,19 of students seek for income maximising and the %18,65 of students attach importance to job security. There is an duality between public sector which provides to employees job security and private sector open up an opportunity for income maximisation for its employees.Close distribution of two factors, or the high rate of job security seeking, especially for educated young adults who may have big dreams for their future comparing the older ones, may be a clue that risk taking behaviour in Turkey.

Following Rodrik[†] (2007:66-109), we'll be able to get an insight of possibilities of producing high technology products by looking at investment climate and growth constraints

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[†] Altough Rodrik demonstrates his work is written with neoclassical approach, he puts forward institutions and there are no essential inconsistencies with new institutional arguements.

in Turkey. In Figure 2.1, main reasons for low levels of private investments and entrepreneurship are given, and some of them worth seeking in Turkey with particular conditions.

Figure 2.1: Diagnostics of Problem; Low Levels of Private Investments and Entrepreneurship[‡]
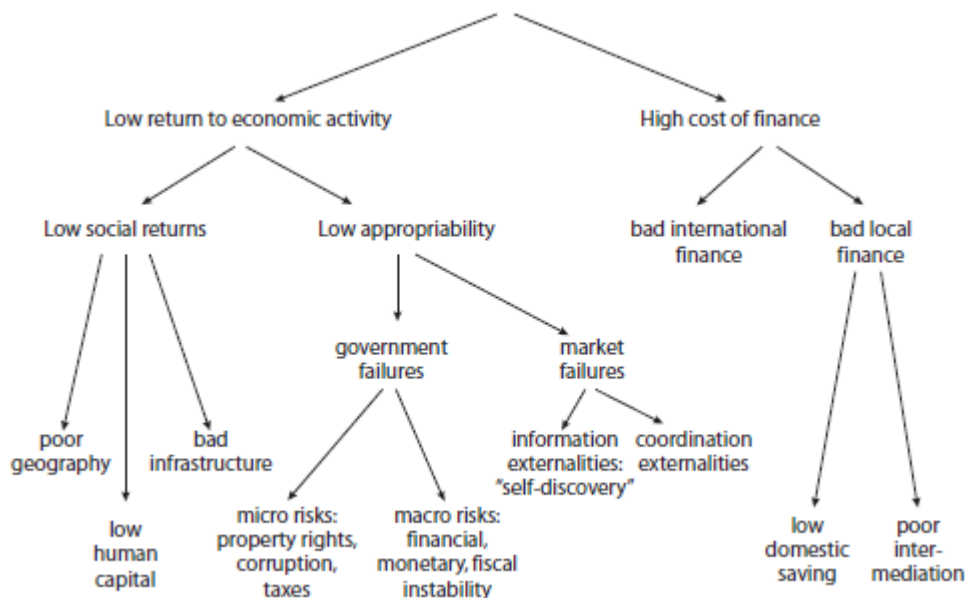
Source: Rodrik, Dani (2007), One Economics, Many Recipes Globalization, Institutions and Economic Growth, p.66

Through the indications, we are capable understand which problems rise out of of the ruck. For example, if the credit supply and demand meets on a high rate of interest, and also current account deficit is an issue in an economy, then we know that that economy suffer high cost of finance or insufficient saving rate. On the other hand, we also know that, return of investments is high too, otherwise investors might not demand funds on high rates. These are the occurences in Turkey, as macroeconomic stability is given, low saving but high return rates (at least some particular sectors) are issue, so we can say that high cost of finance may be an obstacle for sustainable growth in Turkey, but it still doesn't explain unsufficiency of high tech production level.

If we focus particularly on high tech production, then looking at low rate return of investment problem would be more reasonable. Let's take a look at low social returns part. There are three subpart beneath it, poor geography and bad infrastructure parts are good for analysing regional inequality in Turkey, but it is not our subject. Low human capital is a suspicious matter also. In an economy, if return of education is relatively high, then we can

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[‡] This approach has neoclassical basis again, we use it as a reasonable bridge between different approaches

tell that economy suffers from low human capital. However, if government is decided to solve this problem and increase the number of educated people rapidly, it would be still uncertain that whether growth in a sector will be ensured. If not, it is possible to observe low return rate of high level education in that economy. Even so, how will authorities over come this problem? In developing world, governments built more schools, trained more teachers and developed infra-structure for providing accesibility to education. Altough, all these activites increased supply in education, demand for educated did not pursue it (Pritchett, 2004). Demand for educated would be increased and return of education wouldn't be low, if there were economic opportunities and demand for inovation. In Turkey, relatively high wages in defense industry in which innovation activities are intensive don't give us enough information. Because these wages are not far from other job groups such as engineering excluding research and development or financial fields. Also despite the fact that firms in defense sector choose their employees from graduates from premium universities in Turkey, it is an object at issue that neither number of these universities nor their students are low.

Then low appropriability problem may have a clearer answer for us. Macro risks, such as high inflation, deficits, and other macroeconomic instabilities impacts investment climate negatively. For Turkey, like other developing countries, has relatively higher unemployment, inflation and interest rates comparing to developed world. These rates also have more volatility, yet they haven't constituted any danger for stability so far. Public deficits and public debts are relatively light; but sustainablity of current account deficit and private debts in Turkey is questionable. Both problems are sourced from low saving rates and relatively low value added production profile of country. There for these two are not reason, but result of the problem we are looking for.

Other problems are micro risks beneath the government failure topic and information and coordination externalities of market failures. Without seperating the sub parts of the topic from each other, in other words if we use holistic view for low appropriability problem, then we can get an institutional look for debate. For this, inclusive and exctractive institutions concepts in book "Why Nations Fail" from Daron Acemoglu and James Robinson (2012) may be helpful. In their work, Acemoglu and Robinson investigate economically succesful and unsuccesful countries, and try to understand reasons beneath, by using political science, not only economics. Accordingly, inclusive economic institutions "...secure property rights, law and order, markets and state support for markets; open to relatively free entry of new

businesses; uphold contracts; access to education and opportunity for the great majority of citizens", and inclusive political institutions state rule of law, shortly. Exctractive economic institutions "...lack of law and order. Insecure property rights; entry barriers and regulations preventing functioning of markets and creaiting a nonlevel playing field.", and extractive political institutions state "...political institutions concentrating power in the hands of a few, without constraints, checks and balances or 'rule of law'". If a country has inclusive institutions, on condition that she also has some degree of political centralization, then she may enjoy sustainable growth. On the other hand if a country has extractive institutions, then she grows just by her political centralization; but in long term, she lacks of creative destructions, so her growth may not be sustainable.

To correlate inclusive and extractive institutions approach with government failures and market failures, we should continue to examine the sub parts of these problems and also industry policy. One of the sub market failures, information externalities or self discovery problem is sourced from unknown prices and profits from a sector which hasn't be formed yet in the economy. This is not only about innovation or invention; also products or services that already has been producing in some other countries. Entrepreneurs don't know if they fail to earn profit or not if they produce these products; they only know that if they fail, they would bear all the costs, or if they earn profit, they must share these earnings with other entrepreneurs that would enter the sector. The second market failure is coordination externalities sourced from lacking of additional investments, especially large fixed ones such as electric and logistic networks, when a firm invests to new sector. These investmenst should be made simultaneously.

An industry policy plays a substantial role for leading investors to produce desired products. Either government or market failures no longer be big problem when the right policies are ensured. Government can process the firms and provide coordination between them, solve simultaneous investments problem. Also government can constitute an sector, provide the information for enterpreneurs whether it is profitable or not, if so, enterpreneurs enter the sector. The important point is that public officers are not well-informed what main failures, opportunities and constraints are. So they must be in a political enviroment in which business world make them informed of opportunities and constraints constantly; in other words, public officers should not keep private sector at a distance. On the other hand, Rodrik warns that industrial policies are appropriate for moral distortion. If private entrepreneurs and

bureaucrats are close enough, it may not be coincidence when corruption spreads. Conversely, if bureaucrats keep private sector at a distance, then they can't be well informed. That is a balance issue and way of the policies are determined by institutions.

With Ministry of Science, Industry and Technology (MSIT), Ministry of Development and its sub-unit Development Agencies, The Scientific and Technological Research Council (TUBITAK) etc., Turkey has govermental institutions that make policies and provide coordination between private sector and public officials for innovation, research and development. MSIT applies some tax exemptions, supports for building and intrastructure cost, also shares some operational costs in a particular rate, if producers work in "technology development zones". Through these subsidies and tax exemptions, there is some remarkable progress in software manufacturing. Also TUBITAK supports scientefic projects, Development Agencies provide financial support for enterpreneurs for their innovative (or profitable) projects. These all sound good, but Graph 2.1 and 2.2 show that technological development averages in Turkey reaches to averages of neither upper income nor middle income countries.

Graph 2.1: High-technology exports (% of manufactured exports)
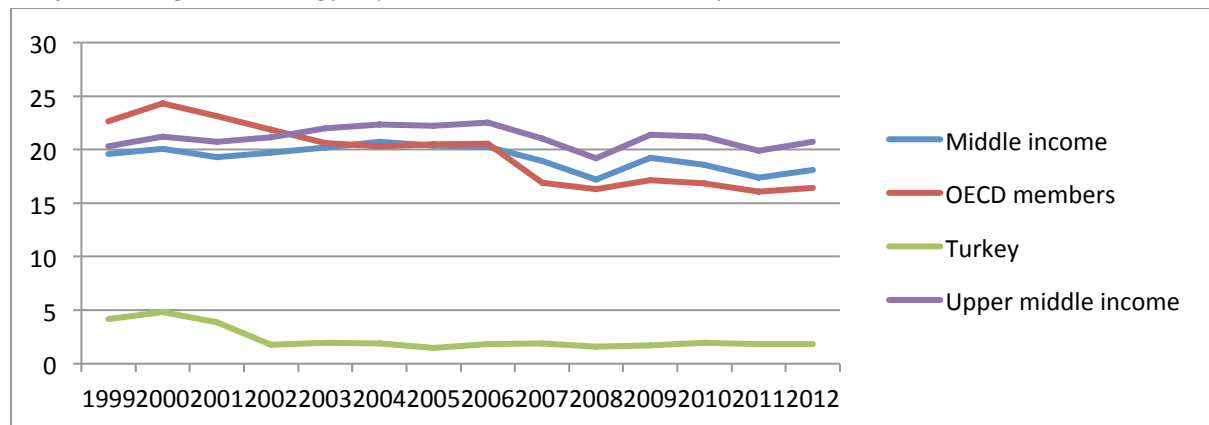
Source: World Bank Data Indicators, data.worldbank.org (24.06.2014)

Graph 2.2: Research and Development Expenditure (% of GDP)
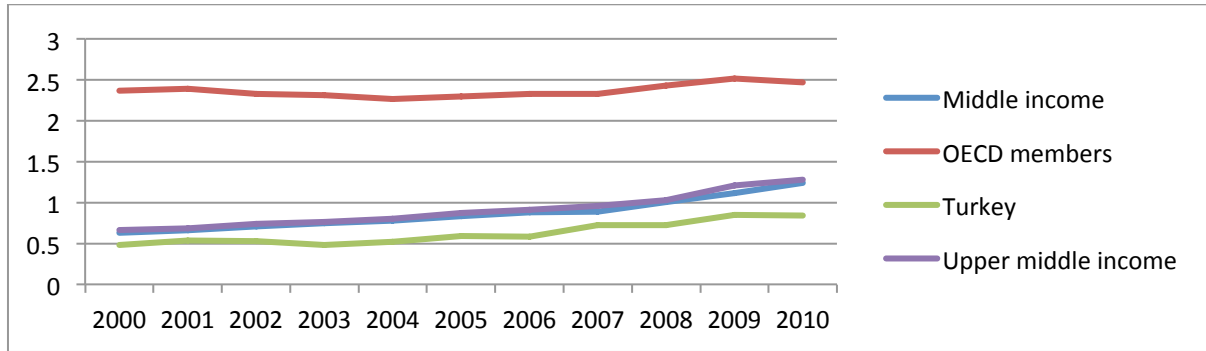
Source: World Bank Data Indicators, data.worldbank.org (24.06.2014)

Yet, as seen on Graph 2.3, resident patent applications have cought a positive trend hopefully in relation to increasing increasing R&D. Because these positive occurances don't reflect to high tech exports, we infer to this production process response to domestic necesseties.

Graph 2.3: Resident Patent Applications
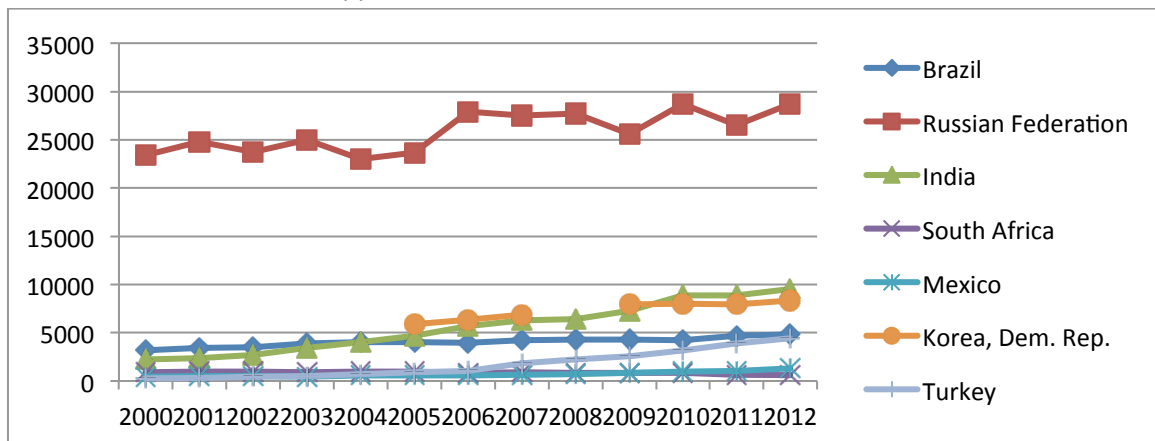
Source: World Bank Data Indicators, data.worldbank.org (24.06.2014)

Turkey's main problem may be her exctractive institutions. We conclude that from many reasons, First, politically, Turkey has an parliement, opposition parties, elections which are indispenable for democrasy, but also %10 election threshold which is relatively high. Such a high election threshold damages pluralism. If pluralism is damaged, then people can't make them heard and call rulership to account efficiently. Second, legal system in Turkey is on slippery slope. During 2000's, rulership critized legal system, and changed the members of supreme council of judges and prosecutors. Also council was tried to become a kind of sub-unit of ministry of justice in 2014. Some decisions of courts and supreme court of appeals have not been obeyed. Third, open tender procedure has rarely been applied, and public tender act was changed several times. Fourth, tax penalties for businessmen close to rulership has

been forgiven or discounted on a high rate. And if a busiessman turn into opposition position, then his firm receives many tax inspectors soon.

All these happenings have a message for enterpreneurs: "If you are one of us, then you can earn profit from the jobs that we call for.". And these jobs mostly include construction which is not a productive area, also rant seeking behavior has been welcomed. On the other hand rulership also a message: "If you are against us, then you'll feel our breath on your neck.". This threatening message is not given to only businessmen, but also given to academicians, journalists etc., and impacts intellectual environment negatively.

Conclusion

The answer of the question that can Turkey produce high tech productions more is 'why not?'. Turkey is on verge of middle income trap (Yeldan et al., 2012). To overcome of this problem, constraints on creative destruction process must be vansihed. But this aim is difficult to reach due to extractive institutions. The messages we refered above, leads enterpreneurs to wrong way, the sources are distrubuted to unproductive areas, due to rant seeking behavior sourced from exploitive instincts.

Imbs and Wacziarg (2003: 63) showed that there is a U shape relationship between level of per capita income and sectoral concentration. This means, when economies grow, sectoral diversification increases until a level of per capita income at first. Afterwards economy reached this level, sectoral distribution of economic activity starts concentrating again. Can construction sector lead economy to such a sectoral concentration or rescue from middle income trap? As Veblen mentions, main dynamic of evolution of economy is technological progress. Consturaction sector lacks of productivity, also capability of leading economy into information in long term. Either creative destructions or high tech production needs inclusive institutions, thus institutional transformation is a necessity for Turkey.

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