

International Innovation Networks and Knowledge Migration

The German–Turkish nexus

Edited by Andreas Pyka, Yesim Kustepeli and Dominik Hartmann

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International transfer of knowledge via Turkish re-migrants returning from Germany

Eberhard von Einem

Introduction

This chapter studies how Turkish re-migrants contribute to the transfer of knowledge from Germany to Turkey, shedding some light on those interlinked causal factors that allow Turkey's current economy to boom, both in manufacturing and services. The chapter starts from the assumption that Turkish re-migrants returning from Germany or other Western European countries help to improve the level of skills and competences in Turkish labour markets thus helping Turkey to develop its industry from low to medium tech. Because knowledge, once generated is only imperfectly spilling over spatially, capabilities to generate and absorb both codified and tacit new knowledge is unevenly distributed among countries and regions worldwide.

This chapter is based on individual job biographies, randomly selected from those 2 million Turks that had gone back for work in Turkey within the last 50 years, excluding the other 2 million re-migrants, that return home as retired workers living on their pay checks from Germany's social security system. The latter group was excluded from the research, as it exclusively concentrates on remigrants at the age of 15–65, resulting in 40 semi-structured interviews with Turkish re-migrants after having returned back to Istanbul. In addition 32 managers from Turkish subsidiaries of German manufacturing companies (FDIs) were interviewed along with industry and trade associations and with other experts from government, universities and research institutes in Istanbul. Turning the reader's attention to cross-border migration research, AnnaLee Saxenian (2005, 2006; Saxenian and Hsu 2001) has published explorative research on transnational migration of skilled computer experts allowing for a trans-pacific knowledge exchange. Re-migration of computer experts born in Asia and trained in the US, from Silicon Valley back to Taiwan and China, India and Israel have resulted in bi-polar innovation networks. The focus of this chapter is on testing the hypothesis, that a somewhat different transfer process of both technical skills and practical hands-on craft knowhow can be observed via remigration

of Turks returning from Germany and other EU countries to Turkey, in particular to Istanbul after having acquired advanced knowledge while working, going to school or attending universities abroad.

Upon reviewing research most publications concern disparities caused by migrating workers searching for a job within the limits of their home-countries (OECD 2005, 2008, 2014). Our research does not look at intra-national migration but at migration across European borders. Turkish–German migration patterns have mostly been researched one-way, not circular, focusing on in-migration into Germany, social discrimination and not-integrating into its wealthy society. Our research intends to look at the reverse process. It is assumed that in- and remigration can be described as two sides of the coin. In- and out-migration are conceptualized as a revolving process.

Occasionally research in Europe has addressed regional brain drain of students leaving their home-regions both for education and after graduation, with case studies concerning Sweden, Germany, UK and Italy (von Einem 1989; Faggian and Mc Cann 2009). Recently the economic impact of south–north migration of high-skilled workers from the poor Mezzogiorno to Lombardy and other wealthy regions in the north of Italy have been investigated (Marinelli 2013; Fratesi 2014; Fratesi and Percoco 2014). Regions in the south, even after investing in higher education are losing through out-migration, whereas receiving regions gain from mobile new graduates entering prosperous regions, thus generating knowledge flows (Tripple 2013). For more than 50 years Germany has attracted foreign workers as *gastarbeiter* (guestworkers) from countries such as Italy, Greece, Spain, former Yugoslavia, Poland, Romania and other Eastern Europe countries. However, Turkish *gastarbeiter* represent the largest group of in-migrants. Manufacturing firms have been recruiting Turkish labour mostly from rural Anatolia and Kurdistan as early as 1962. Many in-migrants became German citizens wishing to stay permanently in the country, others, among them Turks belonging to the second or third generation, had decided to return to Turkey after having lived and worked several years abroad. According to Turkish statistics 4 million Turks have been returning back from Germany over a period of five decades: 50 per cent had been coming back for retirement only, not counting those that returned from other European countries. Re-migrants returning for work have been easily integrated into the Turkish labour market or started their own business. Most of these second or third generation Turks are heading towards large megacities, especially Istanbul, Izmir, Ankara, Konya, Adana and other cities.

A decade ago migration patterns changed: the overall trend is different now. Since 2005 the number of re-migrants returning home from Germany exceeded those coming from Turkey first time. During the past 10 years more Turks have been going back to their home country overall compared with those leaving their home country. The stream of *gastarbeiter* coming for work to Germany has reversed (Aydin 2012; Griese 2013; Pusch 2013). Having said this, it is worth mentioning that only a few Turks are adding to the increasing number of refugees, very different from other Arabian and African countries. Three types of transnational migrants must be distinguished:

- Re-migrants with Turkish roots, born in Germany (two-thirds generation of *gastarbeiter*), emigrating from Germany back to Turkey after having visited school in Germany, after having acquired vocational training and/or after having gained additional work experiences over a number of years in German firms. Also about 10 per cent have been successfully earning an university degree.
- Young Turks that had been growing up in Turkey and then having been on leave from their home country for at least one year or more looking for a job outside Turkey or joining as students or visiting scholars the educational system both in Europe and North-America before returning home with accumulated knowledge, skills and competence gained abroad.

- The most talented enter the small group of circular migrants working both in OECD countries and in Turkey. After graduation from one of Turkish (mostly private) elite universities they have typically applied for a grant to specialize at one of Western Europe's or US universities as post-graduates. Going abroad is a cornerstone in many job biographies (Sunata 2010).

Re-migrants filling a gap in the Turkish labour market

Turkey, with its population of 73 million (mostly young) residents is an interesting case, because it allows a better understanding of what stages the economy of a developing country has to master in order to upgrade its GDP, to achieve higher technical standards and to gradually improve wealth. Upon a closer look the Turkish case provides evidence, what thresholds have to be successfully passed on its way up. Without increasing skill levels of regional labour markets, either through improved education, through FDI, foreign direct investments or via re-migration the dynamics of the Turkish economic development (2001–2014) would not have been possible. Up-grading local labour market profiles is a necessary precondition, to support the performance of any developing country, including Turkey.

Contrary to those few leading OECD countries, generating the vast majority of new patents via research and development this option is of rather limited importance for most developing countries. Instead absorbing and adopting new knowledge fast that in the first place has been created elsewhere becomes a promising option. This strategy, however, requires an answer to the following question: under what circumstances is knowledge mobile, and in particular trans-nationally mobile? Is there a difference concerning codified knowledge versus uncoded knowledge, so called tacit knowledge, or – as Meric Gertler puts it, “Can tacit knowledge be effectively shared over long distances?” (Gertler 2006). Distinguishing codified from uncoded knowledge is at the core of this issue. Is the latter remaining to be locally bounded (Bathelt, Malmberg and Maskell 2004; Markusen 1996; Bahar, Hausmann and Hidalgo 2014)? In other words: To what extent is knowledge creation and diffusion remaining to be sticky in geographic terms, bounded to certain locations, to people, institutions and organisations in cities and city-regions? What has changed in terms of distances in the light of an ever widening globalisation and accelerating digital revolution? In search for the relevant mix of multi-causal relations, explaining different economic and social dynamics of cities and regions, it is frequently asked: “How can innovation and learning take form beyond the local territory?”

According to Mark Lorenzen there are several pipelines for the diffusion of new knowledge across national borders (Lorenzen 2007; Maskell 2014). Remigration is one among several knowledge pipelines. First, databanks, computer, internet, smart-phones instantly provide data, information and codified knowledge worldwide. Although constantly improved it still does not cover the whole spectrum of all knowledge-elements. In particular tacit knowledge is still largely depending on personal contacts such as teaching, mentoring, and supervision. Second, Although German–Turkish innovation alliances (comparable to bi-polar networks Silicon Valley–Taiwan/China/India/Israel) are still rare examples (see Chapter 3 of this book), foreign direct investments (FDI) proves to be an efficient knowledge pipeline via off-shoring and sending experts from home countries to start a new subsidiary factory abroad thus transferring knowledge targeted to specific firms and locations (Dicken 2007; Yeung 2010). Third, knowledge intensive business services (KIBS) acting as consultants through their worldwide networks provide knowledge to clients supporting their ability to adapt via tailoring expertise to specific business needs. KIBS help to apply high end knowledge for solving problems locally (Simmie and Strambach 2006; Strambach 2008; Corrocher and Casmano 2014).

Confronted with a high qualification gap, the Turkish government has heavily invested to improve its educational system. By now in metropolitan areas eight years of basic schooling is obligatory. This is a success, if one takes into account

that in 1924 the rate of illiteracy has been 71 per cent for males and 90 per cent for females. Schooling has been a cornerstone in Atatürk's policy, to radically modernise the old Ottoman Empire. In 2010 these figures are down nationwide to 2.6 per cent (for males) and 22.4 per cent (for females), mostly in remote rural areas (Akkaya, özbek and Sen 1998).

A different picture concerns education at the university level. In 2013 about 10 per cent of each Turkish age cohort earns a university degree. There are almost 1 million students enrolled (2005: 590,000); 1.7 million have applied to the öSS test, which must be passed successfully to be eligible for entering any college in Turkey resulting in long waiting lists. A number of new universities had been found in recent years. By now, there are 172 universities in Turkey, 39 of them in metro politan Istanbul. Because of budget constraints, 70 universities are private, set up by wealthy persons or profit seeking conglomerates, such as Koc and Sabanci, with excellent networks to both European and US universities. Given a limited number of scholarships, private universities are demanding tuition, most Turkish families, although supporting their children is a must, cannot afford. Thus private universities are trying to attract new students from oil-rich Arab countries, Russia, North Africa and the Balkans. This is a big leap forward. Prior to 1930 Turkey did not have a single full university. In 1933 Istanbul started its first university (Istanbul University) – with the help of 38 professors, who emigrated from Nazi Germany; this proved to be an early case of knowledge transfer via out-migration.

Despite tremendous improvements, the Turkish educational system has a long way to go. It is still far from meeting European standards, with only a few patents issued each year. Turkish students participating in PISA tests, still perform rather bad. In comparison to the EU average Turkish youngsters received grades at the bottom line in mathematics, reading and natural science (OECD 2014; DIW 2011). Aside from schooling and universities one single main deficit remains: Turkey misses – with the exceptions of its technical schools – any systematic vocational training scheme (in crafts, technical, commercial and administrative professions) for the majority of the untrained youngsters. 35 per cent of each age cohort remain unemployed. Others are unvoluntarily forced to take up low paid jobs both in manufacturing and services. Lacking basic vocational skills, they may eventually gain experience on the job or fail, thus dropping out of the regular labour market, remaining poor, tied to the lower end of the workforce. Others end up as helping hands in one of the many family businesses, often without any pay in sectors such as retail, restaurants, construction industry, transport, cleaning or tourism.

In strategy meetings both businesses managers and policy makers again and again claim (OECD 2014) that it is extremely important to focus on human capital development, schooling and education as well as on further research and development to gain innovation. Education – although on different levels – seems to be the main essential policy in both high- and in low-wage countries. In fact, “although there are many factors that impede successful transition, one that stands out in the literature is the shortage of skilled labour demanded by firms in technology based manufacturing sectors” (Goldstein *et al.* 2012: 106). In order to gradually shift the spectrum of manufacturing and services upwards towards improving productivity and Turkish competences required for producing technical more advanced goods and services, developing countries have to upgrade their labour force (Glaeser 2014). “The quality of the labour force in a locality is the single most important aspect of local competitiveness” (Simmie *et al.* 2002; see also Lawton Smith and Waters 2011).

Re-migrants contribute to fill the gap that opens up in most industry sectors once advanced technologies are applied. Coming from agriculture, each level of Turkey's improved industrialisation requires a certain mix of skills and competences. Any developing country, including Turkey, aiming at enhancing its industrial base needs parallel improvements of its skills and competences. That said, only a few policy-options remain to meet these expectations. As is the case of Turkey, re-migration is but one of them, up-grading the level of human capital.

In fact re-migrants contribute to regional labour markets, suffering still from having too few professional services, technicians, media specialists and managers. Cross-national knowledge transfer cannot fully be explained by transmitting data and information via publications, computers, smart phones and the internet only, because it also involves personal knowledge exchange such as teaching, reading, training, conferences and cooperation in networks (Malmberg and Maskell 2002; Bathelt, Malmberg and Maskell 2004), in particular with respect to transferring tacit knowledge and reflexive reasoning (Almeida and Kogut 1999; Gertler 2006).

The performance of both the Turkish manufacturing and service industry depend on advanced knowledge, originally created outside the country, thus knowledge absorption is critical (Cohen and Levinthal 1990). However, receiving countries such as Turkey, wanting to specialize in middle-tech products can only be successful in those city-regions that had already invested sufficiently in schooling, professional training and its university system in the past. Compared to Taiwan, Korea, China and India, as well as Israel, Brazil and Mexico, Turkey, although on a smaller scale, also seems to have pushed its industry successfully into production and service lines of a middle-tech level. In doing so, the Turkish economy benefits from the skill and competences of its re-migrants that had spent a number of years abroad, in particular, after graduation from one of Western Europe's universities and – in addition – after having gained work experiences based on solid professional training, re-migrants are welcomed as they contribute to upgrade the Turkish labour market.

In the globalising world metropolitan cities in OECD countries can no longer claim, that research and development, break through inventions and product/process innovations still remain their sole domain. Developing nations are catching up, enjoying annual rates of growth outpacing Europe, Japan and North America. In this context transnational migrants seem to be an important knowledge pipeline. Receiving countries benefit. After having been educated abroad, Turkish re-migrants help to improve labour markets in particular in large metropolitan areas such as Istanbul, enriching qualification profiles. They are contributing to and compensating for still persistent deficits of the professional training schemes in Turkey.

If one conceptualizes knowledge not as a fixed stock that is freely flowing across national borders at no costs, but rather as a bundle of several knowledge elements that must be absorbed, assembled and learned, it becomes obvious that transferring knowledge requires more than disseminating data and information via the internet. Because competitiveness depends on being ahead of others in terms of technology, product and process development, it is not sufficient to draw on data, information and codified knowledge provided by the Internet only. The computer is a leveller eroding acquired knowledge to the ubiquitous public. Codified knowledge received via electronic media does not help to transfer the full set including every relevant knowledge-element. The bundle of knowledge needs to cover the whole spectrum, not just pieces. It must cover all multi-disciplinary elements, codified and un-codified, hard and soft. Each of these elements is transmitted differently. In particular the tacit elements of the bundle cannot be learned or absorbed without assistance and personal tutoring. Thus most developing countries, including Turkey, rather depend on adopting new knowledge instead of inventing new knowledge. Education is a pre-condition not only for generating innovation, but also for the absorbing new knowledge, created elsewhere (Cohen and Levinthal 1990).

According to the work of M. Polanyi (1966) tacit knowledge is defined as those elements that cannot be articulated or verbalized. Thus tacit knowledge cannot easily be transmitted via publications, documents, graphs, pictures and the computer. It must be gathered and accumulated through practical experience. Psychiatrists specializing in brain research have pointed out that every single lesson of new knowledge must be learned building on previous lessons. Its application must be repeated and trained in practice in order to be performed with

routine (Pöppel 2006). Re-migrants can be helpful because they bring with them advanced levels of understanding, technical and social expertise, and can engage in training other workers on the job. In particular they seem to be helpful to diffuse tacit knowledge, such as craftsmanship, hands-on know-how in practical services, organisational and management skills as well as language competences (von Einem 2011). Re-migration contributes to this process in several ways, including the transfer of tacit knowledge (Nonaka and Takeuchi 1995; Roberts 2000). Because experts moving across regional and – even more important – across national borders, bring their skills and knowledge to the receiving countries they improve the level of local knowledge, its absorption capacity and its competences for tailoring and adopting new knowledge to local needs. Turkey is still far from joining those few advanced OECD nations that successfully focus on inventing, patent development, new high end products and services.

Instead developing countries have to rely early on knowledge absorption. Under time constraints picking up new ideas, concepts and technical innovations instantly becomes a critical competence in its self. This, however, is not so easy, because knowledge absorption requires both a certain level of prior existing knowledge – including language skills – in order to be able to comprehend the essence of any new invention. Thus knowledge absorption is depending on prior related knowledge that must be ready available locally in the first place. If such prior related knowledge is missing, neither firms nor individuals nor any research and development team can understand and grasp the importance of a new idea or innovation, thus being unable to communicate within the networks of international professionals. Without such prior related knowledge it is not possible to participate in relevant global scientific dialogs. So, again, human capital is an essential; it must simply be there (von Hippel 1994; Cohen and Levinthal 1990; von Einem 2011).

Because endowments of human capital are unevenly distributed in geographic terms across nations and – more precisely – among city-regions within nations, the capacity of both knowledge creation and knowledge absorption is limited to those few cities and regions, that already had reached the necessary level of competence through improving its human resources in past decades. They are best performing candidates for knowledge absorption.

Istanbul: attractive for re-migrants

Upon returning re-migrants usually enjoy various opportunities to enter the Turkish job market both in top management or – even more important – in middle management positions. Also, re-migrants commanding expertise in various technical, fiscal, touristic, medical, social and business management professions, are welcomed. For applying a university job, a top or middle management position, as a consultant, in medical services and hospitals having studied or worked outside the country is regarded to be a necessity. Some expatriates become increasingly footless by joining the armada of international commuting experts that circulate between Istanbul and Western Europe.

Max Steinhardt (2012) has conducted research based on the SOEP (socioeconomic panel, administered by the DIW, the German Institute for Economic Research). He investigated transnational migration patterns of Turks. His results provide evidence that trained Turks living in Germany are more mobile and ready to re-migrate to Turkey as compared to workers without vocational training. Because of its strong economy, re-migrants prefer city-regions such as Istanbul avoiding rural areas.

Why are re-migrants returning to Turkey? Barbara Pusch (Orient Institute Istanbul) has pioneered transnational migration research. She published her findings, based on interviews with transnational migrants from Germany as well as with circular migrants (Pusch 2013; Aydin 2012; Pries 2013). Our research on

re-migrants confirms existing empirical findings on transnational migration patterns. Overall, there is no single motive, but rather a bundle of motives with a mix of the following elements:

- **Push-factors:** Discrimination and fear not being treated respectfully in Germany is a major motive. In almost every interview, partners report on having had problems searching for an adequate job, decent housing, or having been de-motivated in school in Germany. Many have not been accepted as qualified professionals but rather as auxiliary workers. In the view of those that decided to leave, these observations add up to discouraging experiences.
- **Pull-factors:** Istanbul is currently offering more attractive job-perspectives allowing for a broader spectrum of job opportunities and advanced carriers options. Some have initially been testing the labour market only, drawing on friends and family networks, before deciding to return. Businesses in Istanbul currently allow a wide range of both top and middle management jobs, although often with reduced wages. However re-migrant speaking two or three languages and bringing skills and competences in such critical areas as management, crafts, applied software or technical disciplines do not find it difficult to perform in new positions.
- **Personal search for identity** is the third motive, thus the decision of remigrants often has an additional social-psychological aspect, because of some kind of national uncertainty: Where is my home country? Is it Germany or Turkey?

To give an impression of the broad professional spectrum of such knowledge transfer, three job biographies have been selected and documented in the following boxes.

Case study A

In 1965 at the age of 8 years A (male) moved along with his father to the city of Herne (Ruhr Area). His father worked as a *gastarbeiter* at a steel factory. A attended 9 years at school and completed 3 years apprenticeship as a steel mechanic. Thereafter he had a number of jobs, including a wellpaid job assembling steel in the construction industry. At the age of 25 A re-migrated along with his father, who retired and lived in his Turkish hometown. A decided to make his living in Istanbul. He got married and lives with his family in an owner occupied condominium which he was able to buy with savings and a loan in 2001. The loan has been repaid by now. In Turkey he worked in the cement industry and was promoted as a leading mechanic in charge of navigating and controlling a partly auto - mated huge machine unit. In this position he had to supervise one of the factory's core production stages, including solving technical problems and repair in case of a sudden break-down. Further on A worked himself upwards into a middle manager position in the construction industry with a number of day-to-day responsibilities. The basis of his carrier has been his initial solid training in Germany when he was a youngster as a mechanic allowing him since to command the necessary basic technical competences. Based on these skills he gradually learned on the job to handle related tasks such as electrical engineering, software and administrative competences.

Case study B

B (female) is a 42-year-old teacher living and working part time in Istanbul. She grew up in Istanbul. Her parents were shop-owners. She graduated from Marmara University. At the age of 20 she married her husband, also a teacher. He was born and educated in Germany as a second

generation male with Turkish Gastarbeiter roots. He was working at that time at one of Istanbul's foreign schools. In 1994 he returned to Düsseldorf and B moved with him. B came to Germany with high expectations. The reality was a series of discouraging shocks. First, contrary to her academic background and her ambitions to teach at a German school, her Turkish examination in sports and languages was not accepted. The government had strict rules not allowing to employ Turkish teachers for the many second generation Turks living in North-Rhine Westphalia. Prohibited from working, she focused on her family and gave birth to two babies. The second shock was searching for decent housing in a neighbourhood that allowed her to raise her kids in a friendly, open minded and stimulating environment. She and her husband were judged and suspected belonging to the category of *gastarbeiter*. She felt to be discriminated. In the end the family moved north into a Duisburg neighbourhood with many foreign families. The third shock was applying for a good school for her kids. Instead of integrating in a bi-cultural school, her kids were sent to a school reserved for kids of migrants from Turkey, Italy, Spain, former Yugoslavia and other foreign countries. B protested because she felt not to be accepted with her background, competences and expectations. By then B and her husband had decided, to go back to Istanbul. In 2009 the family re-migrated. Both found it easy to find a well-paid job. B's husband became deputy director at a foreign school in Istanbul's city centre and B is happy also to work again part-time in her old profession and building on her improved double language skills as a teacher, specializing in multi-cultural programmes. B's parents helped to buy and finance an apartment on the Asian side of the Bosphorus, which results in two hours commuting down town every day. Together their family income is higher than in Germany. Also drawing on established family networks had been important for managing re-migration. Support from the wider family and investing in real estate is quite usual in Turkey, because it is the common way to save money for the elderly.

B and her family are part of Istanbul's growing upper middle class with its strong orientation to culture and values from Western Europe and its democratic traditions. They still visit Düsseldorf annually to visit friends. B's kids claim that they intend to go back to Germany once having finished school for studying at one of Germany's tuition free university.

Case study C

C (female) is a 36-year-old lawyer with Kurdish roots working in one of Istanbul's law firms. C grew up in Offenbach (close to Frankfurt) as a second-generation daughter in a family, that had migrated as *gastarbeiter* in 1974 to Germany. She and her two brothers and two sisters attended local schools in Offenbach. Among her sisters and brothers C was most eager to learn. She insisted to further go on to Gymnasium. Her parents encouraged her, whereas her teacher at school took a discouraging standpoint advising her to drop out of school and to enter apprenticeship at a local leather processing firm. C. worked hard, passed her Abitur and enrolled at the University of Bielefeld, department of law. With five years she successfully passed the first law examination and graduated after another three years from the second law examination (with results at the rather lower end of the scale).

She got her first job as a lawyer in 2006 in a Bielefeld law firm. However, she was assigned with cases only that were concerned judicial problems of Turkish and other foreign clients, in conflict with Germany's complicated regulations for working or living in the country, including asylum cases. She felt that she had little chance to further develop her professional competence and to be allowed to gain experience in other fields of law.

A friend from the Bielefeld campus had already moved to Istanbul and in 2010 offered her a job as a lawyer in his new and expanding law firm. She accepted and out-migrated from Bielefeld to Istanbul too; however, before being accepted by the Turkish association of lawyers she had to pass another examination, after taking additional courses at Istanbul University.

Meanwhile she has been working as a lawyer for several years both in Germany and Turkey. At the Istanbul law firm she earns less per month compared to her previous job in Germany, but she has a much wider spectrum of assignments. Mostly she is in charge for a multitude of variant business cases, in particular advising and handling joint German – Turkish investment cases. With her graduation both from the University of Bielefeld and from the University of Istanbul, with speaking three languages fluently (Turkish, German, English) and almost 10 years practical experiences she feels confident to master her way up in Turkey. Recently, she had been offered to become partner in the law firm. The only resentment is that she occasionally feels being offended, because of her solidarity with the Kurdish people thus not always being fully accepted by her Turkish colleagues and neighbours.

Turkey is undergoing radical social changes, deeply divided into a pro-Western urban society on the one side and a more traditional conservative Islamic society on the other side. In fact, Turkey is characterized by an internal polarization. Its society is split into a growing, mostly urban middle class and still a majority of poor residents both urban and rural. There is evidence that the new urban middle class is catching up with Western Europe's attitudes, consumption patterns, working habits, communication technologies and life-styles. Along with rising incomes, Istanbul's young middle class has been shattered in terms of changing their traditional habits, religion, and values in a most turbulent and radical process of civil modernisation. Turkey with its autocratic government enjoys little democratic legitimacy. Turks that had spent some time abroad, are bringing home more liberal and democratic aspirations. They seem to be increasingly unwilling to accept Ankara's authoritarian government, with its harsh and strict regulations.

The megacity Istanbul, with its 17 million residents and its 25 million residents in the wider mega-region both sides of the Marmara Sea, is still growing annually by 0.4 million new entries leaving Anatolia, Kurdistan and Syria in search for a better life. Rural Turks still depend on agriculture (22 per cent share of the local work-force) and on small family businesses in the food industry, in textiles, construction and mining, are facing little or no prospects for improving their income. Most of these new residents come without any skills adding to the urban poor. They live in inner-city slums or in shanty towns at the urban fringe (*"gecekondu"*, built from wood, plastic and rubbish overnight), which serve as arrival cities (Saunders 2011). Turkey by now hosts 2 million Syrian refugees mostly in southeast border towns but also adding to Istanbul's population. 20 per cent of Istanbul's population has still not been able to escape the urban poor. According to Turkish sources, the poverty rate of Istanbul's metropolitan population is defined as having not enough regular food, no sufficient clothes or no protection from the cold in the winter. According to Turkish estimates, 3 million of Istanbul's rising population has still not succeeded to leave the urban poor. Poverty is the other side of the coin for Istanbul, contrasting with its shiny middle class prosperity.

Most families, however, even the poor ones, are eager to send their kids to school enabling them to earn at least a small income and eventually to improve the families collective budget ... thus allowing them to gradually escape the poverty trap. Even among the urban poor it is well received that the way up is through improving education for the next generation.

Istanbul on its way up in the global economy

In 2001 Turkey experienced a severe banking crisis that forced its new incoming AKP government to implement reforms following IFM- recommendations to reduce inflation from 70 per cent to 8 per cent annually and inducing investment both domestic and foreign. The Turkish economy has been going strong in recent years with GDP-growth rates of 3–10 per cent annually. The only exception has been 2008/09, when the Turkish economy – as most other countries – was severely hit by recession due to the worldwide fiscal crisis. Thereafter the Turkish economy experienced again an unprecedented boom both driven by domestic demand and export (2014: +3%).

According to a DIW report (DIW 2011), Turkey's GDP in 2010 has reached €7500 per capita, still far below the EU average of €24,500 per capita, but steadily improving. Household incomes have risen from €2500 to €10,000 per household due to increased labour participation rates.

For understanding Istanbul's economic performance one has to investigate its links and dependencies in the context of globalization; this requires an interpretation of its strengths and weaknesses within a wider perspective concerning the causes, conditions, technical preconditions, legal framework and restrictions on urban and regional change that drive the current stage of economic globalization. In Europe off-shoring has initially been part of the EU policy intending to integrate core European countries. It got off the ground after the Rome treaty had been signed in the 1960s, starting with relocating the garment, shoe and food industry from Germany towards Italy, followed by shifting parts of motor vehicle manufacturing towards Spain. With the fall of the iron curtain in 1989 manufacturing firms in Western Europe immediately turned eastwards to Poland, the Czech Republic, Slovakia, Slovenia, and Hungary as well as to the Baltic states. Because of shorter distances to EU markets these countries had a clear advantage. In the 2000s, Turkey became another prime candidate for off-shoring in search for both cheap labour and new markets.

Foreign direct investments towards Turkey have been soaring, as has been reported by YASED (2014). The number of German firms investing in Turkey increased from 1000 to 5500 within the last 15 years, not counting FDIs stemming from the US, UK, France, Italy, Spain, the Netherlands and Scandinavia (see Figure 11.1).

Developing countries usually tend to specialize in the production of technical rather mature, standardized, labour-intensive goods. Upon industrialization developing countries have a clear cost advantage in the production of labour intensive goods that require only minimum education (Porter 1990; Saxenian 1994; Schamp 2008; World Bank 2009; Storper 2008, 2013; Storper and Scott 2009). This split in the global division of labour is in accordance to both the Ricardian and the Heckscher-Ohlin paradigm, which forms the theoretical basis for the "classic" core-periphery model: Developing countries enjoy an advantage in labour intensive routine mass production.

Since the 1960s, off-shoring has concerned almost exclusively labour intensive mass-production of technically rather simple goods such as textiles, shoes, apparel and plastics, but also steel, petro-chemicals and rubber (Piore and Sabel 1984; Reich 1983; Camagni and Capello 2013; Glaeser 2014) Most routine

Figure 11.1 Foreign direct investment inflows to Turkey, including real estate purchases by foreigners.

products that could be packed in boxes and shipped over long distances had eventually been screened for relocation on a global scale (Mankiw, Romer and Weil 1992; Kromphardt 2001; McKinsey 2005; Statistisches Bundesamt 2006; Dicken 2007; Stiglitz 2007). Off-shoring has in addition been supported by

technical innovations such as reduced costs for physical and digital transactions and transport. Manufacturing such standardized labour intensive items is requiring less transaction costs, as shipping costs have been declining due to containerization with ever larger vessels causing cheaper trans-ocean shipping rates. Also transaction costs have been falling due to expanding networks of air travel, aviation and improved telecommunication networks for transmitting and exchanging data, mails and information via the internet (Glaeser and Kohlhase 2004).

High-wage countries on the other hand specialize in precision and high-tech products at an early stage of their product life cycles requiring complexity and knowledge intensive inputs (Storper 2013), because a high level of education and training is needed in terms of human capital, advanced knowledge and faster absorption is needed (Glaeser and Maré 2001; Malecki 2010). Especially in high-tech and precision sectors, both hands on knowledge and knowledge intensive services are crucial. Drawing on clusters and regional labour pools that had been evolving over decades, certain regional clusters in OECD countries gained advantages in core technologies. Multi-national corporations (MNCs) tend to protect these knowledge assets against rivals in developing countries. Retaining and carefully developing such core competences at domestic home locations is valued as being an essential for sustaining competitiveness. This being said, strategies of western companies, competing on a global scale, focus on organizing manufacturing along the value chain with keeping core components, processing knowledge and R&D at home (Asheim, Lawton Smith and Oughton 2011). All these production stages require highly educated core personnel. For constantly accumulating new knowledge for innovating new products and services, technically advanced industries insist on custom made solutions in their home countries (Sturgeon 2002, 2008; Glaeser and Kohlhase 2004).

For more than four decades the “classic” core–periphery model has been the dominant pattern analysing the dividing line, cutting through the global economy. Its perception seems to have been fairly stable and unchallenged. Upon second view, this model may be a too simple perception to reflect and explain more recent observations. Conditions are about to change. The “classic” core–periphery model may not capture every aspect of the growing causal complexity that has been driving global off-shoring processes more recently in all its economic social and political consequences (Labrianidis, Kalantaridis and Dunford 2011; Pickles and Smith 2011). The “classic” core–periphery model of globalisation works no longer as the sole and dominant global relocation theory. It implies a road model with extremes on both sides of the spectrum. In reality gradually shifting technical levels upwards can be observed among several developing countries, resulting in a continuum along a scale of technology and knowledge intensity with Turkey in the middle. Manufacturing both precision and high-tech products – including incorporated business services – is no longer remaining to be located geographically in Western Europe, North America and Japan. Lowtech labour intensive mass-production of mature technologies are no longer the only candidates to be off-shored towards fast growing developing countries as these countries improve both their infrastructure and skills.

Over time MNCs have been widening their global reach, demonstrating changing preferences in terms of not only relocating mature manufacturing facilities geographically. In the 2000s, three new aspects added to globalization resulting in a more complex picture, indicating a next stage of globalization.

- First, increasingly multi-national corporations have started considering to outsource and relocate not only simple manufactured goods, but also technically more advanced products to low wage countries. Not all of these FDI's were successful; quite a number had been returning to high wage countries after having experienced problems with quality control, precision, communication and time-to-market logistics. Also as robots and automated processes were implemented, labour cost advantages of low wage countries started to

vanish.

- Second, increasingly multi-national corporations offshore standardised service jobs too, such as book keeping, back-office banking and call-centres (Splitt 2013), followed by more demanding complex services, such as engineering and software. With improved IT technologies, services that do not require personal delivering or face-to-face contacts, are candidates for relocation (McKinsey 2005; Blinder 2006).

- Third, in some cases even research and development branches had been set up in developing countries. In particular, special teams optimizing process innovations and adapting knowledge to local needs are installed. A new pattern of co-development targeted to various levels of knowledge, skills and competences is emerging along value chains. Some mega-cities in developing countries, including Istanbul, are among those challenging the classic core peripheral model. Its industry does not fit any longer the stereo-type of labour intensive low-tech mass production,

The classic model may still be valid for understanding globalisation in many countries, but not for understanding Turkey. It is overshadowed by another dynamic development, adding new aspects to the old picture, thus demonstrating that the global division of labour and markets is far from being without change. A next stage of globalization is on the horizon characterized by increasing technical competences in some developing countries.

Istanbul and its middle-tech industry

Istanbul is an example of rapid structural change of its industry from low-tech to middle-tech with re-migrants serving as catalysts. The EU is still Turkey's most important partner for export, representing a 40 per cent share of its €175 billion per annum export volume. Germany's share is 13 per cent. Turkish exports had increased dramatically from €10 billion in the year 2000. In looking west Turkey was eager for many years to become the latest member of the EU. Talks with Brussels began in 2004, however, recently with little or no progress. Since 2010 both Turkey and the EU seem no longer to be willing to uphold negotiations. The envisioned treaty is stalemated and the bargain-process with the EU is stagnating, indicating conservative reservations among both Western European and Turkish politicians. Instead Turkey is more and more looking east and north: The focus is on the Middle East (Iraq, Iran, Syria, and the Gulf states etc.), on Russia, Ukraine and other former Soviet Union countries (Azerbaijan, Georgia, Armenia) as well as on North African states. The Islamic world alone counts for a growing market of 1.5 billion residents. These nations are becoming increasingly important for Turkey, exporting goods and services, because there are growing middle classes too. In particular, the Turkish building industry has been successful in acquiring contracts for large infrastructure projects and rebuilding facilities that had been destroyed during the Iraq war. Thus Istanbul is again – as it has traditionally been in earlier centuries – the focal, dominant marketplace, where the west meets the east. Istanbul is the city that governs this process trading with wealthy Arabs and Russians coming to Istanbul for shopping and investing.

Istanbul's economic upswing since 2001 and its involvement in global markets, has been impressive. The mega-region Istanbul alone contributes about 50 per cent to the national GDP and 75 per cent to Turkish exports. The case of Istanbul illustrates the rapid transformation towards the production of goods and services both for export and domestic markets, that might be labelled as middletech, in other words: no longer low-tech and not yet high-tech.

While manufacturing labour intensive textiles, for example, has by now been passed further on to low wage countries such as Bangladesh, India, Egypt and Morocco, Turkish manufacturers developed new markets for medium tech goods

needed both by its own growing middle class and for export. Examples are low cost, easy to use machines, household appliances, dish washers, washing machines, refrigerators, electrical devices, TV sets, furniture, licensed auto mobiles and other technical components for export. In addition the building industry is booming, providing homes and modern infrastructures both for Istanbul's metrosystem, but also for Cairo, Beirut, Baghdad, Teheran and other megacities. Within Istanbul's mega-region a third Bosphorus bridge, a third airport and an additional harbour are on the agenda. Along with these hard-ware infrastructure, consumer services are expanding including transport and logistics, banking, insurances and leasing, rental services, real estate, retail, engineering, legal and medical services, software, consulting, telecommunication, call centres and media services, not to forget hotels, restaurants, travel and tourism.

In a technological sense advanced middle-tech markets require not only international experienced top-management, but also excellence in engineering, trained technicians, fore-workers and middle managers commanding the implementation of all the various stages of the value chain (Gereffi 2005; Sturgeon 2008) with sufficiently accumulated expertise. Implementation is a main threshold. Even adding graduates from universities to local teams is not sufficient, to meet all the expectations, that are necessary to perform multiple diverse tasks and to master the production-process with perfection, including finance, legal matters and marketing. Employing unqualified or poorly trained workers from rural Anatolia and Kurdistan, some of them still illiterate, is not a feasible solution. Although increasing numbers of graduates from local universities fill positions offered in manufacturing, and in service industries, in government, in NGOs, in the media and in culture institutions, this is not enough. There remains a shortage of expertise. Re-migrants help to fill the gap. The author of this chapter argues that deficits in vocational training are to some extent compensated by both re-migrants and by expanding and improving the niveau of its universities. On the other hand, Istanbul's manufacturing and services industries are still hindered, because of an enduring shortage of skilled labour due to Turkey's still underdeveloped professional training schemes.

Confronted with the global competition for talent (Florida 2002, 2005; OECD 2008), both Turkish and foreign businesses that enter the Turkish market, focus on re-migrants trained abroad. Also screening aggressively graduates from Turkish universities with the help of head hunters is on the agenda. Shortage is felt in occupations such as software, engineering, medical services, banking, research and development and management.

Meanwhile the Turkish government has declared to further improve its capacity in various fields of advanced technologies and precision products such as Turkish made automobiles, aeroplanes, instruments and devices for high-tech sectors. The Turkish government has declared its intentions, to manufacture not only trucks and busses, but developing whole prototypes of motor vehicles in Turkey including electronics. Also constructing fighters, warships, missiles and other weapons is high on the agenda.

A closer look, however, reveals that the Turkish industry – with a few exceptions – is not yet able, to perform sufficiently in high-tech markets. Success in these industries is still limited, because there is still not enough expertise, competences and routine both in its labour markets and its industrial facilities. Turkish manufacturers claim for instances that although they can handle the production of 70 per cent of all parts of an aeroplane and although the Turkish air and aviation industry commands the necessary assembly lines, constructing and testing a new plane completely within Turkish research and development centres and manufacturing a plane completely within Turkish facilities is not yet feasible. High-tech components still have to be imported.

Two examples for improving competitiveness are Siemens and SAP, that have been setting up research and development branches at Gebse, 40 km outside east of Istanbul with close access to the Sabiha Gokcen International Air Port,

employing 200 experts each. Teams are multi-discipline and multi-national, including both software specialists and engineers, partly delegated to Istanbul from German home destinations. The other half of these local teams had been recruited from Turkish universities. In doing so, SAP and Siemens responded to the shortage of expertise both in Germany and in Turkey. Managers from both research and development centres reported that they could not find enough talented graduates in engineering and informatics in Western Europe, therefore setting up R&D facilities in greater Istanbul (for a similar case in Italy, see Lorena *et al.* 2013).

Their work assignments are not basic research. Instead they regularly focus on applying and recombining various skills and adapting basic technology, invented and developed in the EU or the US, to the specific needs of local Turkish customers and clients. For designing such customer-tailored solutions it is essential to precisely understand and listen to the client's needs. Creative adaptation requires Turkish, German and English language skills along with technical and business competences. The working language in these teams makes it necessary to master two or three languages by every member in those teams. With their multi-lingual, multi-cultural, and multi-professional qualification profiles re-migrants are most welcomed to join the teams that critically depend upon qualified employees in order to increase their production both for domestic consumption and export.

Conclusion

The mega-region of Istanbul is still an island of knowledge within Turkey, along with Izmir, Ankara and a few other large cities, but very different from its rural areas lagging behind. Istanbul is the dominant motor of the rapidly growing Turkish economy. The city is increasingly becoming a hub connecting Western Europe and the Middle East. Its industrialized metropolitan region has specialized in manufacturing and services beyond mature, standardized labour intense items, requiring untrained labour only, often working under substandard conditions.

Instead, Istanbul's regional economy gaining from knowledge infusion has been successful in specializing in a wide range of goods and services in the range of middle-technologies. Demand for such advanced items from the middle-tech segment is driven by both the Turkish middle class and exports to Western Europe as well as to Russia, Arabian and North African countries. In this sense, remigrants serve both as agents of change for improving competitiveness as well as image figures speeding up modernisation and social change.

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