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How Could the Investment Incentives Address Income Inequality in Turkey

Emir Çelebi[a]

[a] DG of Incentive Implementation and Foreign Direct Investment, Ministry of Industry and Technology, Ankara, Turkey

Abstract

Turkey still finds itself among countries with high income inequality, although it has diminished over the long term. Investment incentives have always been in place as a primary policy tool to alleviate regional disparities along with its other macroeconomic aspirations. To bring concrete recommendations on income inequality, we have examined inequality data and the related literature before dwelling on the investment incentive framework. Regional disparities, quality and attainability of education, lower labour participation and wages of women, the informality, distortion of factor revenues in favour of entrepreneurs and weak labour productivity gains are the major drivers of inequality. Accordingly, in the last episode, concrete policy implications are delivered for the investment incentive system to contribute to a fair distribution.

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1. Introduction and Brief Investment Incentive History

Classical economists have emphasized the income distribution dimension of the economic policy; according to Ricardo, economics aims to analyse the roles of the laws on the distribution of income among production factors, social classes and individuals (Paterson, 1994: 446). Income distribution has gained particular importance after the industrial revolution (Çelik, 2004: 53), which has created lucrative opportunities for entrepreneurs while oppressing wages downwards, leading to social unrest, and sparked ideological debates (Aksu, 1993: 1). The argument stands still as Sachs (2015: 11-12) defines three prevalent social concerns: extreme poverty, inequality, and social mobility (equal opportunity).

In the economic policy domain, those concerned about social justice and inequality criticize that the importance of the GDP Pie has long been overshadowed by the obsessive focus on GDP figures (Stiglitz et al., 2018: 34). Contemporary economic research is also being criticised as failing to cooperate with other social disciplines and focusing on excessive mathematical analysis instead (Piketty, 2014: 34).

As a reflection of the global liberalization wave in the 80s (Kolsuz, Yeldan, 2014), the transformation of the economic paradigm has enormously influenced developing country preferences as well as the international rules and standards. In line, Turkey has adopted a liberal export-led growth model instead of import substitution. The new vision has a high opinion on privatization, lesser governmental interference and business cost reduction policies aiming to boost international competitiveness. Since then, Turkish economic policy has focused on climbing up the value-added ladder, curbing public debt, inflation and external imbalances; particularly on the development side, preventing the income inequality and regional disparity.

As a part of the remedy, investment incentives have always been in place in response to economic and social matters in various forms since taxation and subsidies are the most effective ways to redistribute the disposable income (Shaikh, Ragab, 2007) and they are widespread components of investment policy around the world (Redonda et al., 2019). For instance, the 1979-1983 Development Plan introduced the

CONTACT Emir Çelebi emirchelebi@gmail.com

term "priority regions for development" to channel productive investments along (SPO, 1979: 294). The efforts to diversify regional incentive structure continued in the 1990s and the term "industry belt" referred to underdeveloped provinces where support level was higher than average (Official Gazette, 1995).

At the beginning of the 2000s, the incentive structure remained the same. The investment tax credit is implemented with a discriminative approach within the range of 40% and 200% depending on the regional priorities, value-added capacity and amount of the capital expenditure (Official Gazette, 2001). In 2003, the differentiated investment tax credit rate was fixed at 40% (Official Gazette, 2003), while priority region provinces were updated according to the socioeconomic development classification prepared by State Planning Organization (SPO) in 2004. Incentive legislation was amended several times while regional scope persisted (Official Gazette, 2004).

The year 2006 was a turning point for the incentive legislation. 40% fixed investment tax credit is repealed considering the forthcoming general corporate tax (CT) reduction (Official Gazette, 2006). Hence, one of the best-known incentive instruments has been abolished. The years between 2006 and 2009 are relatively distinct from the other periods. With the abolishment of the investment tax credits, the incentive system has become the simplest ever. In 2006, there were only value-added tax (VAT), customs duty exemptions, and credit interest subsidies for Small and Medium Enterprises (SMEs) under the sectoral and regional limitations. Energy supports were in place for only tourism investments (Official Gazette, 2006b).

Historically, the six-legged incentive structure (customs duty and VAT exemptions, investment tax credits, CT deduction, CT delays and credit interest subsidies) remained throughout the years, although the names, scheme labels, classifications and support volumes have been varied. In 2009, the most large-handed and comprehensive incentive scheme was enacted and evolved into its ultimate form in 2012 (MOIT, 2020).

Income inequality has always been a hot topic in the economics literature, even though recent economic remarks complain about the inadequate emphasis on GDP pie rather than GDP growth and figures. Investment incentive has been an important policy tool for many years, striving to alleviate regional disparities based on tax exemption/credits and credit supports. In this study, the causes of income inequality in Turkey will be explored through related literature and available data before touching upon the current investment incentive system, including the tools and inequality dimension. Followingly, the empirical studies dwelling on the impact of the investment incentives on income inequality and regional disparities will be considered to make inferences in the last section on whether incentives have mitigated the disparities and what can be done to improve the redistribution capacity of the current scheme.

Since the focus of the study is income distribution; productivity, investment stimulation or feasibility of the incentive scheme is beyond the scope. The previous studies investigating the root causes of inequality and current inequality indicators will be both the basis and the limitation of the inference potential of the study. The regional perspective of the incentive system is acknowledged as a fundamental characteristic since it has not only lasted for so long but also reflected the regional redistributive vision of the system. Side targets of the system are also based on the regional scope. So, the inferences will be kept within the current frame.

2. Introduction and Brief Investment Incentive History

In the 1950s, the Kuznets curve was pretty famous, which claims that the income inequality would surge due to the widening gap between industrial and agricultural revenues at the beginning of industrialization. It would fade eventually as soon as development process gets close to completion. Yet, several case studies worldwide (Deininger, Squire, 1998) opposed him, even though global food deprivation and primary health issues have been abating over the centuries (Sachs, 2015: 26).

According to the study of Ak, Altintaş (2016), income distribution was initially balanced in Turkey when income grew. But afterward, it deteriorated while income was increasing and income inequality followed a "U" shape between 1986-2012, instead of a "reverse U". Dağdemir (2008) also claims that globalization led to higher income inequality in developing countries. There are pieces of evidence implying that the developing countries keep diverging (Aghion, Howitt, 2008). Shaikh, Ragab (2007) illustrated that the relative income and life standard of the first 80% percentile of the gross income pie (vast majorities) is not improving throughout the years in observed countries. Moreover, Jones, Klenow (2016) argue that most of the developing countries are significantly poorer in welfare indicators than the actual GDP figures implied due to the shorter lives and severe inequality. However, Yanar, Şahbaz (2013) illustrated that globalization had reduced the share of both the poorest segment and those with incomes below the poverty line and reduced the Gini coefficient in developing countries. McMillan et al. (2017) admit the progress, albeit it has slowed recently due to lackluster trade, insufficient jobs, greater income inequality and bulges of youth. Inequality remains to be a major economic and social concern.

2.1 Gini Coefficients and S80/S20 Ratios

In this section, several available inequality figures will be mentioned to illustrate the current status and find out the roots and types of inequalities in Turkey. Filiztekin, Çelik (2010) compiled various historical Gini coefficient calculations (Table.1) for Turkey to elucidate the long-term trend. Gini coefficient has diminished over the years in Turkey, but it is still high enough to be classified as inequal. Ercan (1999: 114) claims that unjust capital allocation is the primary driver of the high inequality in the 60s and 70s.

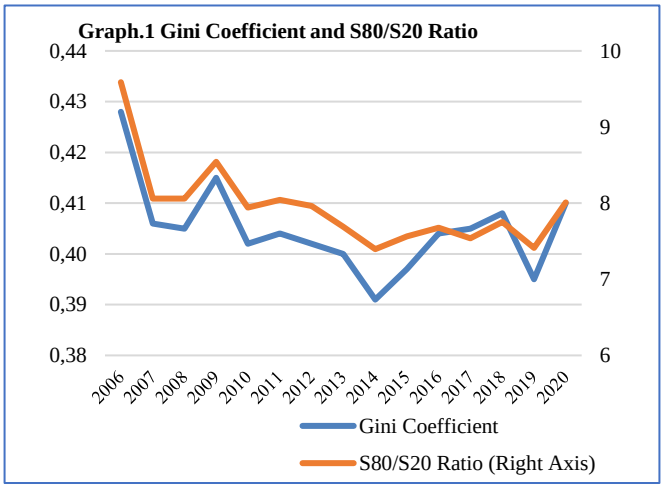
Table 1. Gini coefficient

Table.1	Gini Coefficient
1963	0,55
1968	0,56
1973	0,51
1978	0,51
1983	0,52
1986	0,5
1987	0,43
1994	0,49
2002	0,46
2003	0,43

Source: Filiztekin, Çelik (2010)

In Graph.1, the Turkish Statistical Institute (TSI) Gini coefficient and S80/S20 ratio are showni. Gini coefficient contracted between 2002-2007 and fluctuated around 0.42 from 2006 to 2018 while S80/S20 somewhat decreased further albeit at a slow pace, yet both figures are relatively high2.

Figure 1. Gini coefficient and S80/S20 ratio



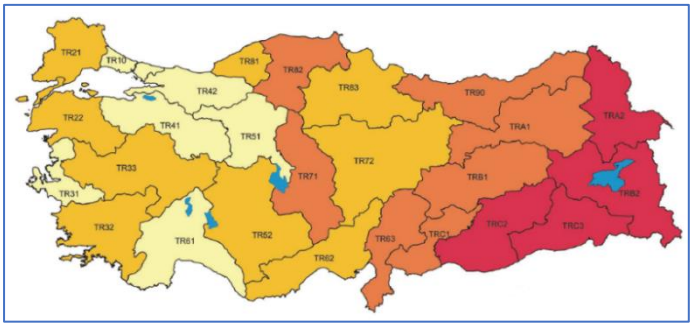
Source: TSI (2021)

The recovery in the 2002-2007 period might have stemmed from the supply-side improvements in interest rates and inflation (Selim et al., 2014: 58). The lowest percentile of income groups also improved during 2002-2007. On the other hand, the post-2007 growth was demand-driven instead, limiting the inequality progress (Selim et al., 2014: 72). Authors argue that the structural reforms and macroeconomic policies backed by the IMF stand-by agreement in the post-2001 economic crisis have enhanced the potential growth and it was the underlying reason for the inequality improvement. Moreover, the significant decrease in interest income, obviously originating from the falling inflation and interest rates, accompanied by increased labour and pension incomes along with transfer incomes, has contributed to rebalancing (Selim et al.: 81, 88-89). Bakis (2014) also states that total factor productivity growth was remarkable between 2002-2006, complying with the increasing employee gains in agriculture, manufacturing and services, but it slowed significantly between 2007-2011. Authors argue that the difference probably stemmed from the reallocation of the hidden unemployed labour away from agriculture in 2002-2006, rather than an intrinsic productivity gain.

2.2 Regional Inequality

Regional inequality is a chronic bottleneck for the Turkish economy. Strategy and Budget Office (SBO) (2013) has developed a socioeconomic development index for all provinces in Turkey considering the elements such as demography, education, health, accessibility, finance, competitiveness and life quality. Relative development levels are shown in Map.1; darker regions imply lesser development levels and the disparity is crystal clear. The poverty level is almost three times higher in rural areas than in urban sites (TSI, 2020).

Figure 2. Socio-economic development level in Turkey



Source: SBO (2013)

The income level of the largest cities stands out, while the disparity widens in eastern regions. According to Tekeli (1972: 96), regional disparity dates back to the Ottoman Empire era when western provinces could integrate into international trade and enjoyed more favourable infrastructure and larger populations. Dinler (2008: 167-168) underlines that the challenging geographic and climatic conditions were other impeding factors for the eastern provinces.

Özcan, Özlale (2012) calculated the income share of the poor households among the total population and concluded that the southeastern region has the highest poverty share with 34,7%, while eastern Anatolia followed with 25%. Mıhçı (2012) compares United Nations Development Programme indices for the years 1970 and 2000 and indicates that, although the least developed regions have improved in time, their relatively handicapped position did not change one bit, even occasionally deteriorated. Besides, Erlat (2005) finds no interregional income convergence between 1975 and 2001. Gezici and Hewings (2004) indicates that interregional inequality even exacerbated between 1980 and 1997.

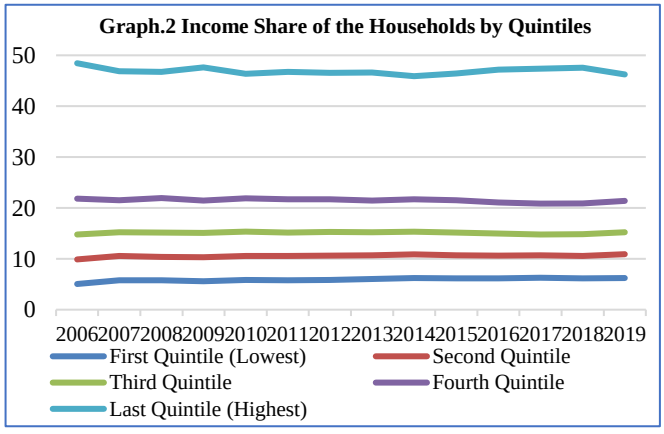
Dağdemir, Acaroğlu (2011) applied a regression analysis and stated that capital stock, labour volume, human capital and urbanization are the determinants of the disparity among provinces. The regional disparity has stemmed from historical and geographical fragmentation, which is not easy to tackle. Yet, the liberalization and global integration steps did not seem to alleviate the problem alone.

2.3 Households Income Share and Education

According to Graph.2, the quintiles' income share has not changed a bit over the years, besides the absence of regional convergence.

Another interesting point is that the number of pieces of evidence suggests that national income inequality originated from intra-regional rather than inter-regional inequalities (Selim et al., 2014: 138).

Figure 3. Income share of the households by quintiles



Source: TSI (2021)

Educational attainment is a crucial factor behind the income differences among households. High school and university enrolment are effective on lifecycle earnings in Turkey (Duygan, Güner, 2006). Ağır, Kar (2010) states that the SPO education sector development index has a significant impact on GDP per capita of the provinces, as Kar, Taban (2003) confirms the positive effect of education and social security expenditures on GDP growth. Enhanced educational attainment would improve the qualification of labour and chance to find a job, strengthen and expand the middle class and mitigates social exclusion. In this regard, removing impediments to starting education, improving both the quantity and quality of the facilities and bearing the educational expenses would help (Eroğlu, Belen, 2019). Mıhçı (2012) reveals that educational attainment has improved significantly, but none of the southeastern provinces converged towards national averages.

Education also positively impacts the shadow economy, which undoubtedly plays a role in lower labour earnings (Duman, 2011). In Turkey, the informal economy holds about ¼ of total economic activity, which is higher than the EU average (Güler, Toparlak, 2018). Loayza (2018) claims that 70% of employment and 30% of economic activity is informal in a typical developing country which implies the share of informal unemployment in Turkey might be more extensive than informal economic activity.

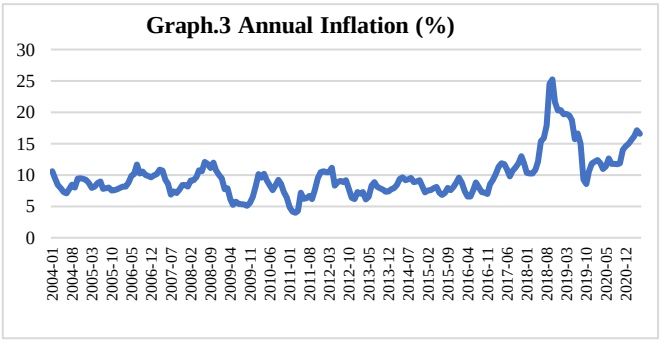
Education helps on being formally employed alongside its income-generating effects (Galiani, Weinschelbaum, 2012). Chen (2012) confirms education's supportive formalizing impact on labour and entrepreneurs.

The refugee influx from Syria also contributed to the informality dominance in Turkey. Unclear status and absence of work permits exert pressure on refugees to work informally with lower wages due to not having minimum wage contracts and severance payments (Korkmaz, 2018), as also observed in the EU (Hazans, 2011).

Policies focusing on education might contribute to inequality objectives through productivity gains and formality.

2.4 Inflation and Inequality

Figure 4. Annual inflation (%)



Source: CBRT (2021)

One of the primary reasons for the inequality is persistently high inflation (Kuştepeli, Halaç, 2004) and Turkey has been struggled with high inflation rates for a long time till the 2000s when the fiscal discipline and central bank independence were paid off and inflation has declined gradually yet it is still higher than the advanced (1.7%) and developing economy (4.7%) averages (IMF, 2019) (Graph.3). At first glance, inflation is known as a monetary policy issue, but Bartik (1991) states that unemployment and inflation are interdependent issues and regional investment volumes influence national inflation rates, thus affecting income distribution. When investments are channelled towards the regions with high unemployment, upward wage pressure would be limited. If an investment took place in an area with low employment, it could have pushed the wages upwards and exacerbated the inflationary pressure. Within the income distribution perspective framework, fostering investments in underdeveloped regions is vital for generating income and employment for the locals and also essential to curb inflation.

2.5 Inequality Among Production Factors

Yeldan et al. (2013) calculate the contribution of capital, labour and factor productivity to GDP growth between 1980-2010. They find that contribution of capital is 58%, the share of labour is 23%, while factor productivity accounts for 19% in total. The contribution of capital increased by 16% over three decades while the contribution of labour shrank by 20%. According to Kolsuz, Yeldan (2014), the GDP elasticity of manufacturing employment has declined from 0.49 between 1980-2000 to 0.39 in the post-2002 period. The rate of decline is sharper in the services sector, from 0.76 to 0.47 in the same consecutive periods.

2.5.1 Employee vs. Employer Gains

The annual income gap keeps on diverging between employers and employees as Graph.4 illustrates. Labour revenues get 33.6% share while gross company operating surplus (including capital consumption and net company surplus) gets 67% on average. In advanced countries, labour share reaches up to 70% (Yumuşak, Bilen 2000, s. 79).

Figure 5. Mean annual income by employment type (TL)

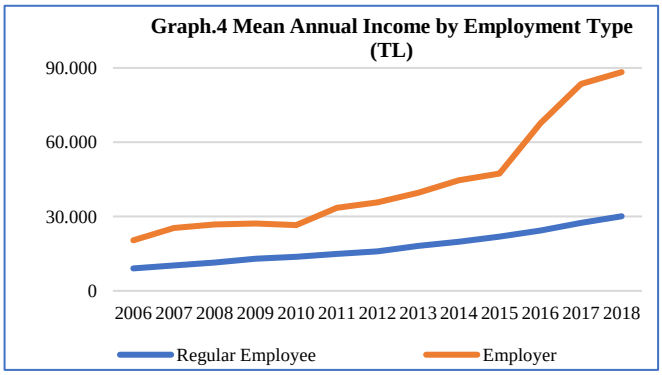
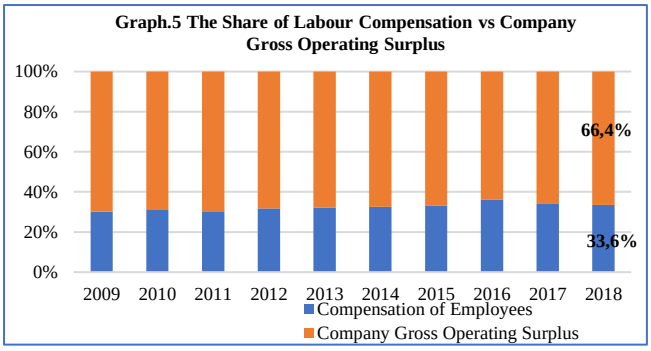


Figure 6. The share of labour compensation vs company gross operating surplus



2.5.2 Sectoral Employment Performance by Gender

Figure 7. Agriculture employment/GDP

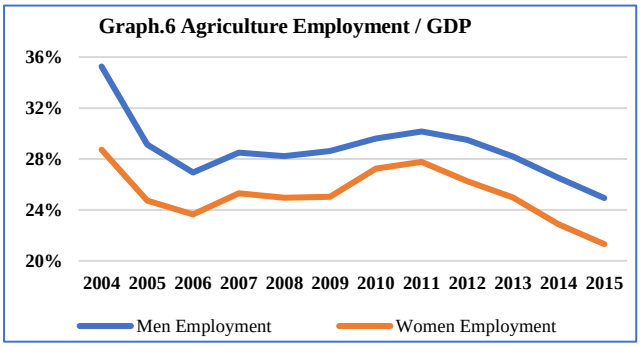


Figure 8. Manufacture employment/GDP

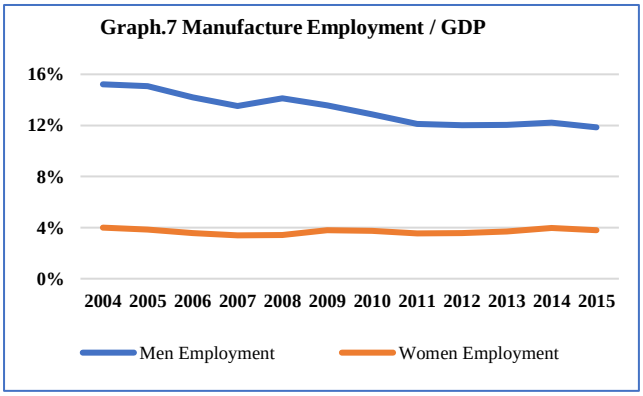
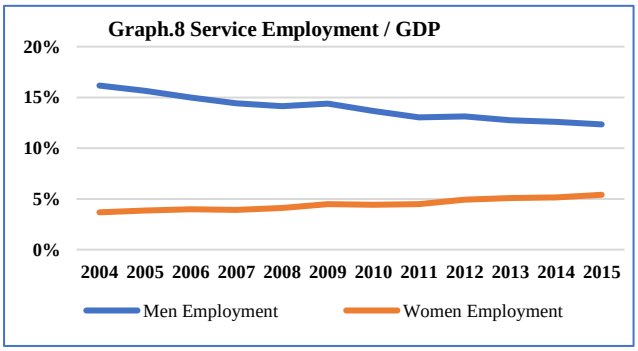


Figure 9. Service employment/GDP



Source: TSI, SBO (2020)

In Graphs 6, 7 and 8, absolute sectoral employment numbers are divided by sectoral real GDP volumes to see the employment creation performance of sectoral production by gender. Employment generation capacity is on a downward trend and the men employment slows harder than women's, most probably because of the base effect. The trend is sharper in agriculture due to reallocation towards industry, while women's gains are prominent in services. Besides, the share of women's employment is lower than men's; the gap is closing, albeit slowly (TSI, 2020).

From 2006-to 2018, women earned 25% less than men on average (TSI, 2020). The gap is 13% in OECD countries and women had to work almost half an hour longer in both paid and unpaid work (OECD, 2020: 17). Patriarchal dynamics of the society might be the core reason for lower women's earnings, of which Galiani, Weinschelbaum, (2012) illustrate similar patterns from Latin America that spouses are more likely to be employed informally instead of heads of households. Gender income inequality is also correlated to the weak labour participation of women (Şahin, 2012). In terms of literacy and income per capita, gender inequality persists (Mıhçı, 2012).

2.6 Incapable Debt Markets and Externalities

Imperfect debt markets are another obstacle to income equality (Kaelbe, Thomas, 1991: 67). Akerlof (1978) exemplifies a local lending relationship in India where overshooting interest rates was the leading factor in landlessness because the official local lender grants loans only to those (1) whom are easy to enforce his contract with or (2) those he has personal knowledge of their character. The author infers that this may cause other local lenders to end up doing business with "bad" debtors (lemons in the article's terminology), thus probably making a loss due to the asymmetric information. Because insufficient information makes other lenders to charge higher interest rates to other debtors, which causes good debtors to sweep away from the market and would result in lower reimbursement rates and revenues. The author addresses the importance of guarantees to alleviate informational asymmetry, thus keeping good "cars" or, in the financial market, good borrowers in the market.

Gale (1991) argues that the adverse selection can lead to higher lending rates, while Stiglitz, Weiss (1981) also underline that credit markets would eventually become rationed since banks would not be eager to lend to risky borrowers to avoid insolvency risks. Overall, it hinders the financial sector from providing equal opportunities for companies, individual entrepreneurs or bright students. Besides, shallow financial markets exclude young, small and no-name companies in developing countries. In Turkey, manufacturing companies and SMEs are found to be financially constrained (Yeşiltaş, 2009; Çetenak, Vural, 2015) which indicates another layer of fragmentation in terms of inequality.

3. Current Investment Incentive Scheme

In 2009, historically, the most aggressive and comprehensive incentive legislation was enacted with three different sub-schemes called general, regional and large investment schemes. In 2012, the legislation was amended a little bit with a macroeconomic perspective and the strategic investment scheme was introduced, while the large investment scheme was also replaced with the priority investment scheme later on. This legislation is still in force and subject to our study. In this chapter, the framework of the incentive scheme will be investigated to understand how the system could address inequality better. The current incentive system has four sub-schemes and all of which have various types of support measures as can be seen in Table 2.

Table 2. Current incentive system

Support Measures	Regional Scheme	Priority Scheme	Strategic Scheme	General Scheme
Vat Exemption	✓	✓	✓	✓
Customs Duty Exemption	✓	✓	✓	✓
Tax Deduction	✓	✓	✓	
Social Security Premium Support (Employer)	✓	✓	✓	
Income Tax Withholding Support*	✓	✓	✓	✓
Social Security Premium Support (Employee)*	✓	✓	✓	
Interest Subsidy**	✓	✓	✓	
Land Allocation	✓	✓	✓	
VAT Refund***			✓	

* For investments in the 6th region.
** Only for investments in Regions 3, 4, 5 or 6.
*** Only applicable for construction costs of Strategic Investments worth above TL 500 million

Source: MOIT (2020)

3.1 Sub-Schemes

3.1.1 Regional Schemes

In the regional scheme, six different regions are classified according to the socioeconomic development level prepared by SPO. Investors can enjoy the

instruments of their region of presence depending on the sector of activity and minimum capital requirements.

Table 3. Provinces by regions as of 2021

1st	2nd	3rd	4th	5th	6th
Ankara	Aydın	Adana	Afyonkarahisar	Bayburt	Adıyaman
Antalya	Balıkesir	Burdur	Aksaray	Çankırı	Ağrı
Bursa	Bilecik	Düzce	Amasya	Erzurum	Ardahan
Eskişehir	Bolu	Gaziantep	Artvin	Giresun	Batman
İstanbul	Çanakkale	Karaman	Bartın	Gümüşhane	Bingöl
İzmir	Denizli	Kırıkkale	Çorum	Kahramanmaraş	Bitlis
Kocaeli	Edirne	Kütahya	Elâzığ	Kilis	Diyarbakır
Muğla	Isparta	Mersin	Erzincan	Niğde	Hakkâri
Tekirdağ	Karabük	Samsun	Hatay	Ordu	Iğdır
	Kayseri	Trabzon	Kastamonu	Osmaniye	Kars
	Kırklareli	Rize	Kırşehir	Sinop	Mardin
	Konya	Uşak	Malatya	Tokat	Muş
	Manisa	Zonguldak	Nevşehir	Tunceli	Siirt
	Sakarya		Sivas	Yozgat	Şanlıurfa
	Yalova				Şırnak
					Van

Source: MOIT (2021: 23-25)

Region's support level/duration increases in underdeveloped regions while minimum capital requirements diminish (Appendix-1).

Table 4. Regional scheme support tools and levels

Incentive Measures			REGIONS					
			I	II	III	IV	V	VI
VAT Exemption			YES	YES	YES	YES	YES	YES
Customs Duty Exemption			YES	YES	YES	YES	YES	YES
Corporate Tax Deduction*	Investment Contribution Rate* (%)	Out of Industry Zones	15	20	25	30	40	50
		In Industry Zones	20	25	30	40	50	55
	Corporate Tax (%) Deduction Rate		50	55	60	70	80	90
Social Security Premium Support (Employer's Share)	Support Period	Out of Industry Zones	2 years	3 years	5 years	6 years	7 years	10 years
		In Industry Zones	3 years	5 years	6 years	7 years	10 years	12 years
Social Security Premium Support (Employe's Share)			-	-	-	-	-	10
Income Tax Witholding Support			-	-	-	-	-	10
Interest Subsidy (%)		TL Denominated	-	-	3	4	5	7
		FX Denominated			1	1	2	2
Investment Site Allocation			YES	YES	YES	YES	YES	YES

*Projects under the manufacturing sector (US-97 code from 15 to 37) between 01/01/2017 and 31/12/2022, each region shall get additional 15 points of investment contribution rate and deduction rate shall apply as 100%.

Source: MOIT (2020)

3.1.2 Priority Scheme

In the priority scheme, according to their socioeconomic value-added capacity, specific sectors enjoy the privileges of 5th region instruments and support levels, no matter where the actual investment takes place. The list of priority sectors can be found in Appendix-2.

Table 5. Priority scheme support tools and levels

Incentive Measures		TERMS & SUPPORTS*
VAT Exemption		YES
Customs Duty Exemption		YES
Corporate Tax Deduction*	Investment Contribution Rate (%)	40**
	Corporate Tax (%) Deduction Rate	80**
Social Security Premium Support (Employer's Share)		7 years
Interest Subsidy (%)	TL Denominated	5
	FX Denominated	1
Investment Site Allocation		YES

*All regions enjoy 5th region terms, yet 6th region investments enjoy their own terms.
**Projects under the manufacturing sector (US-97 code from15 to 37) between 01/01/2017 and 31/12/2022, each region shall get an additional 15 points of investment contribution rate and deduction rate shall apply as 100%.

Source: MOIT (2020)

3.1.3 Strategic and Thrust Scheme

Table 6. Strategic and thrust scheme support tools and levels

Incentive Measures		TERMS & SUPPORTS*
VAT Exemption		YES
Customs Duty Exemption		YES
Corporate Tax Deduction*	Investment Contribution Rate (%)	50
	Corporate Tax (%) Deduction Rate	90
Social Security Premium Support (Employer's Share)		7 years (10 years for 6th region)
Social Security Premium Support (Employee's Share)		10 years (only for the investments in 6th region and projects under Technology Focused Industry Thrust Program TFITP)
Income Tax Witholding Support**		10 years (only for investments in the Region 6; under the TFITP: 7 years in high-tech products, 5 years for the rest in 1st-5th regions)
Interest Subsidy (%)	TL Denominated	5 (10 points for high tech investments under Industry Thrust Program, 8 points for the rest of the Thrust program)
	FX Denominated	2
Investment Site Allocation		YES

*Projects under the manufacturing sector (US-97 code from 15 to 37) between 01/01/2017 and 31/12/2022, each region shall get additional 15 points of investment contribution rate and the CTD rate shall apply as 100%
** For strategic investments under TFIMP, the system covers up to 500 employees in high-tech projects and 300 employees in other projects.

Source: MOIT (2020)

In the strategic scheme, producing particular intermediate and final products with high import dependence is targeted to improve international competitiveness and reduce the import bill. It has specific criteria to be fulfilled[3]. Technology Focused Industry Thrust Program (TFITP) is also combined with the strategic scheme and it has similar goals, particularly on high value-added manufacturing investments (Official Gazette, 2019).

3.1.4 General Scheme

The general scheme covers the projects that do not fall under the abovementioned schemes regardless of the region, provided that certain capacity and minimum investment amount are met. It has no selective preference; traditional low-value-added production sectors and specific non-tradable services sectors are excluded (MOIT, 2021: 27-29). Incentive tools are explained below.

3.2 Quasi-Tax Supports

Quasi-tax supports apply to due tax liabilities of the investor and include a certain share or full amount of exemption of tax claims so that production costs are reduced and/or net operating surplus is increased.

3.2.1 VAT Exemption

Value-added tax (VAT) is exempted on acquisition or leasing of investment goods, software and intangible rights for projects with incentive certificates. The aim is to alleviate the initial cost pressure on investors.

3.2.2 Customs Duty Exemption

When a customs duty is applied to certain equipment under the National Import Regime, it becomes exempt from purchasing or leasing the imported investment machine and equipment under a project with an incentive certificate. If an additional customs duty applies for specific equipment under a particular Decree, it also becomes exempted (MOIT, 2021: 4-5).

3.2.3 Corporate Tax Deduction (CTD)

This tool is a certain amount of deduction on accrued CT liability of the investor. Two constraints need to be known under the application of the CTD. The first one is the CTD rate which is used to calculate the exact deduction amount. The second one is the investment contribution rate which refers to the maximum amount of refund that a company could receive. In other words, the total amount of CT refund by no means exceeds the assigned investment contribution ratio of the total fixed investment amount, even if the nominal equivalent of CTD allows for that.

If the calculated CTD[4] amount does not reach the investment contribution amount within a year, then the rest of the claims could be carried over to the following year.

The incentive implementation process is worth mentioning to clarify the expected benefit of quasi-tax incentives. Investors apply for an incentive certificate before they start actual investment activity. They are required to submit all documents and information asked for each sub-scheme. Applications are then available for evaluation by Directorate experts and executives. Approved applications obtain incentive certificates and become able to start capital expenditure, enjoying VAT and customs duty exemptions throughout the investment period. All exemption procedures operate through an electronic incentive system and the system interacts with databases of the Ministry of Trade and the Ministry of Finance for VAT and customs duty exemptions. Tax deduction and employment support only become available when the Directorate specialists complete on-site expert inspection of the complete investment. As soon as an on-site inspection takes place, experts confirm that the project complies with the related legislation and terms, companies become eligible to get employment supports and CTD. If a company fails to do so, it might be given additional time to fulfil its commitments; otherwise, they face sanctions for obtaining redundant exemptions (MOIT, 2021: 9).

With the provision of passage (c) of the second paragraph of Article 32 / A of the CT Law, companies are able to benefit from CTD for their profits originated from other economic activities during their investment period (Official Gazette, 2006).

3.2.4 VAT Refund

VAT refund is solely available for investment projects carried out under the strategic scheme, with an investment amount over TL 500 million. VAT cost of construction expenses of investors (not machine and equipment) in the manufacturing industry (US 97 code: 15-37) would be paid back. Ordinarily, construction expenses are not exempted from VAT and customs duty. It is only being added to the aggregated investment expenditure amount, increasing the amount of CTD support (MOIT, 2021: 5).

3.3 Employment Supports

One of the most repeatedly declared criticisms of investment incentives is its distortive effects on factor endowments due to the capital-focused incentive designs around the world. In Turkey, the employment premium burden was 35.9% which overshoots OECD and EU average (Akdeve, Karagöl, 2013) before the current incentive legislation. However, thanks to the disparity and unemployment vision, the system can be called generous in its employment support, particularly for the 6th region. Employment supports also apply in 1-5th regions, with varying durations depending on their development level.

3.3.1 Social Security Premium Employer's Share Support

Within the scope of this support, investors are exempt from their own social security premium share for every single newly hired employee. This tool only covers the minimum wage equivalent premium, even if the actual wage is higher and only applies to new employees hired under the investment project. In order to assign the generated employment number under a project, the Directorate specialists refer to the previously registered employment number of the company.

3.3.2 Income Tax Withholding Support

Like the premium support, income tax withholding support refunds the minimum wage equivalent to withheld income tax of newly hired employees on their gross salary. This tool only applies to projects in the 6th region, (MOIT, 2021: 7-9) Attraction Centres Program and strategic scheme investments under TFITP (Official Gazette, 2019).

3.3.3 Social Security Premium Employee's Share Support

This tool has the same application principles as the employer's share premium support. Distinctly, it exempts the employee's share and is only applicable for investments carried out in the 6th region, under Attraction Centre Program or strategic scheme within TFITP (MOIT, 2021: 8).

3.4 Other Supports

3.4.1 Interest Subsidies

For investments in the 3rd, 4th, 5th and 6th regions, fixed points of interest payments are paid back to the investors depending on the region of investment (Table.4). Likewise, in the CTD investment contribution rate procedure, only the loans up to 70% of the total capital expenditure are subject to the interest subsidy. In other words, if the investment is entirely financed through loans, the interest payments of 30% of the loan are not subject to the tool (MOIT, 2021: 5).[1]

3.4.2 Investment Site Allocation

If a suitable land or plot is found, the site can be allocated to the investor company within the procedures and principles of the Ministry of Environment and Urbanization as a right of easement. (MOIT, 2021: 9)

4. Impact of Investment Incentives on Inequality and the Disparities

Since investment incentives are a long-lasting policy tool in Turkey, several studies in the literature investigate its impact in response to the underdevelopment and regional disparities. As mentioned above, the incentive system was amended many times and took its current form with a leap in 2012. In this regard, the study findings will be mentioned in chronological order not to rule out the probable effects of amended legislations.

Sarı, Güven (2007) stated that the disparity between priority and other regions was exacerbated in 1979-1998 despite the priority regions approach. Likewise, Güven (2007) applied the Theil Index to investigate convergence among provinces and found that the disparity was even widened between 1970 and 2000. Erden, Karaçay Çakmak (2004) found that investment incentives could not affect regional private investment decisions, whether positively or negatively between 1991-2000. Altınbaş et al. (2002) also concluded that the priority regions program could not mitigate the income gap among the regions. Yıldırım (2005) found convergence among regions from 1990-to 2001, yet the impact of policy variables -including the investment incentives - was insignificant. Şahin, Uysal (2011) makes similar inferences for 2002-2009, concluding that investment incentives are ineffectual on regional development. According to Demirtaş, Aksel (2018), the impact of incentive certificates prepared for international companies is positive for regional development, while local incentive certificates were ineffectual between 2004-2010. The vast majority (94%) of the incentive certificates are allocated to local companies during this period. 60% of the certificates prepared for international companies are allocated to the projects located in the 1st region, where the development level is highest, implying limited convergence capacity (MOIT, 2020a).

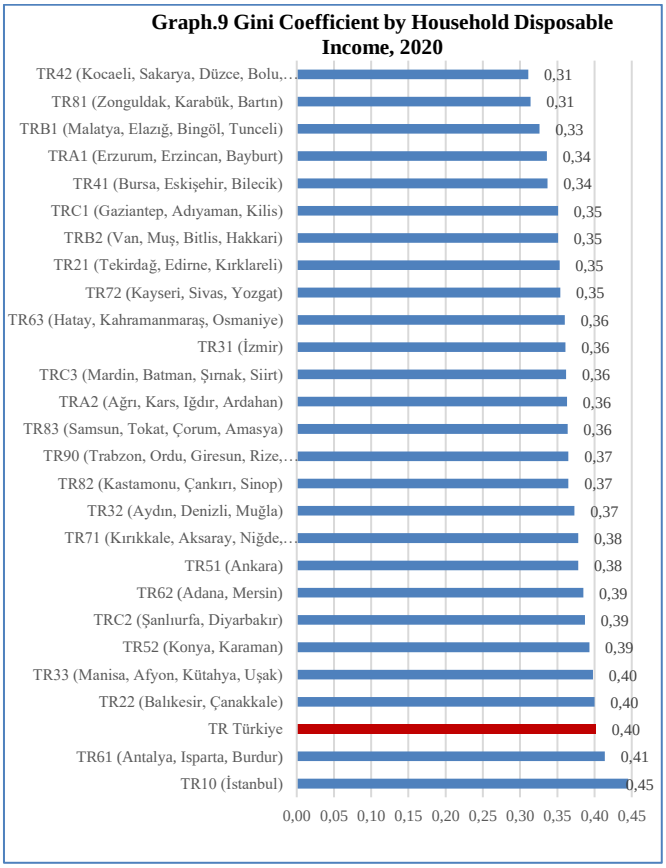
Çelik (2017) indicated another issue in the implementation of the investment incentive system that 1% of increment in the number of incentive certificates increases manufacturing investments by 0.31% in the region they apply while diverting investments by 0.29% in adjacent districts between 2003-2011. The author criticised the investment incentives for failing its macroeconomic aspirations due to the diversion effect. Yavan (2011) stated that investment incentives positively affected the income level of the provinces they applied for in the year 2010. Taşdoğan (2013) implemented a stochastic boundary analysis and found that new investment incentives are unable to make a statistically significant impact on the value-added capacity of provinces, although the time frame of the study is limited for 2012 and a new incentive system was enacted in June 2012 (Official Gazette, 2012). Saygılı (2020) stated that investment incentives have led to income convergence; however, convergence and effectiveness of the incentives are relatively weak in underdeveloped regions.

All of the studies except one (Yavan, 2011) indicate that the convergence ability of the investment incentives is weak. Since the building block of the investment system is its regional scope, the literature seemed to dwell on regional convergence rather than its national income inequality repercussions. It may have stemmed from the system's perspective or recent rigidness on national income inequality indicators may have led researchers to focus on regional disparities. Since the national income inequality mainly stems from the intra-regional or intra-group inequalities rather than inter-regional or inter-group fragmentation (Selim et al.,

[1] Data centres, call centres and certain manufacturing investment projects (National Classification 15-37) took place in Adıyaman, Ağn, Ardahan, Batman, Bayburt, Bingöl, Bitlis, Diyarbakır, Elazığ, Erzincan, Erzurum, Gümüşhane, Hakkari, Iğdır, Kars, Kilis, Malatya, Mardin, Muş, Siirt, Şanlıurfa, Şırnak, Tunceli, Van (4th, 5th and 6th region provinces) (Official Gazette, 2018).

2011:16), both the system and research topics may have implicitly overlooked this issue.

Figure 10. Gini coefficient by household disposable income, 2020



Source: TSI, (2022)

Intra-regional Gini coefficient is relatively high in most regions, especially those with higher industrialisation and population levels. The arithmetic average of the Gini coefficient shown in the Graph.9 is also high, 0,37. Hence, considering the population level of the regions with relatively higher Gini coefficients such as İstanbul, Antalya, Konya, Ankara and Şanlıurfa, the number of households affected by income inequality might be more significant than the regional Gini coefficient average implies.

5. Findings and Policy Recommendations

Turkey is still struggling with income inequality, although the Gini coefficient improved in the long term. Indeed, it has reached a plateau in the last decade. Regional disparity is severe and relative positions of eastern regions are barely changed. Employment generation capacity of GDP is shrinking throughout the years, employee share is relatively low in gross economic pie, labour and productivity contribution to GDP is unable to catch up the contribution of capital except for 2002-2007 period, women participation and their average income is also relatively low while informal economy exerts additional pressure on inequality.

The regional scope is the backbone of the incentive system. But as can be seen in Table.6, the incentive scheme fails to channel investors toward eastern regions as it is unable to compensate for fundamental drawbacks. However, it has managed to stimulate labour-intensive projects in the 6th region, although the inter-regional relocation power of the incentives was found to be rather limited compared to the fundamental factors (Morisset, Pirnia, 2000; Blomström, Kokko 2003).

Table 7. Gini coefficient by household disposable income, 2020

Region	Number of Investment Certificates	Estimated Investment Amount (Million TL)	Estimated Employment
1st Region	18.445	511.497	666.269
2nd Region	8.854	235.121	259.504
3re Region	7.090	244.555	194.457
4th Region	5.390	98.163	160.515
5th Region	4.293	73.767	152.599
6th Region	5.508	46.408	324.890
Multiple Region Projects	139	48.089	8.547

Source: MOIT (2020)

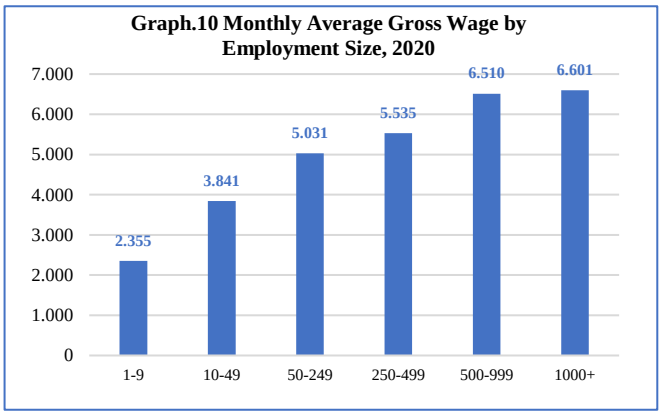
Investment incentives mainly focus on company revenues to induce capital accumulation by nature, while workers could only be addressed with social security benefits. Only employee wage targeted tool is available in the 6th region, which is also social security premium but employees share.

Considering the issues above and the current structure of the incentive system, policy implications are as follows:

- Lack of education is one of the leading causes of income inequality and it is a powerful tool to address intra-group / region inequality to elevate social mobility. Within the current system, school investments are deemed as a priority sector and acquire 5th region benefits, which are pretty generous. However, it has nothing to do with excluding the children of low-income families, although it promotes higher-quality private schools. The schools with a certain number of scholar students from poor families could be granted 6th region benefits. Because in social segments with relatively higher dependency ratios, children could easily be disengaged from educational attainment to make living. Support density and scholarship allocation can be more favourable for poor female students. The cost of the additional scholarships should not exceed the benefit of 6th region benefits for the schools to

encourage them. Schools having 5 poor scholar students enrolled, could be granted 6th region benefits; the underlying calculation takes the average cost and benefit of the investor companies[5].

Figure 11. Monthly average gross wage by employment size, 2020



Source: TSI, (2022a)

- Like the industry zone support tools, companies paying dividends to their employees during the investment term identified on the incentive certificate could be enabled to enjoy the benefits of the following region. Large companies might not prefer to pay dividends to all employees for a specific project (depending on the value of the project). Still, this tool could motivate SMEs to share profits with their employees to a certain extent. Lower average wage levels in smaller companies (Graph.10) would make this step more useful for broader wage gains through labour mobility and push wage levels up. Wage-based performance criteria might also help in formalizing employment.
- The following region tool could also help with women's employment. Companies with a certain share of women employees can become available to enjoy the following region instrument support levels depending on the sector of operation.
- Since the asymmetric information-based financial market frictions hit SMEs harder than larger enterprises, credit guarantees could be introduced instead of interest subsidies to relieve the funding stress of the financially constrained companies. The guarantees might well be cheaper on an annual basis than interest subsidy payments, as Janda (2011) suggests. The total due non-performing guarantee amount is TL 4.2 billion between 1994-2018 (CGF, 2018: 45), while one year of interest subsidy payment already amounts to TL 606 million in 2020 (Dünya, 2021).
- Informality persists. With this regard, minimum capital requirements of the schemes could be raised proportionally to ensure the formal share of expenditures is increased. Although minimum capital requirements have not been adjusted once in the past 9 years, the cumulative consumer price index increased by 2.6-fold while the domestic producer price index increased by 3-fold (CBRT, 2021). Higher capital requirements might also push for integration and efficiency in both the company and the incentive implementation processes. Additionally, anticipated formalization originated from the new criteria on women, younger employment and higher average wage would augment the ultimate effect of these renewed criterions.
- Support terms of the 3rd, 4th and 5th regions are not that advantageous compared to the 6th region and larger western cities where the investment climate is more favourable. Annual incentive certificate data (Table.6) confirms this picture. Minimum capital requirements and support level (Appendix-1) differences in-between groups of 1st, 2nd and the group of 3rd, 4th, and 5th regions could be realigned to widen the gap between these groups.
- Employment benefits not only provide additional employment opportunities in underdeveloped regions but also contribute to curbing national inflation through generating employment in regions where upward wage pressure is low[6]. Considering that the employment generating capacity of the economy has lost ground over the years, employment support is an accurate tool. It is the most distinctive aspect of the current incentive system compared to previous schemes in history.

APPENDIX

Appendix 1. Minimum investment amounts or capacities by sectors and regions that can benefit from regional support

Sectoral Code	Sectors to Benefit from Regional Incentives	1. Region	2. Region	3. Region	4. Region	5. Region	6. Region
1	Integrated animal husbandry investments including integrated breeding livestock investments (excluding investments that do not comply with the minimum capacity requirements specified in footnote 5)	1 Million TL	1 Million TL	500 Thousand TL	500 Thousand TL	500 Thousand TL	500 Thousand TL
2	Aquaculture (including fish fry and egg production)	1 Million TL	1 Million TL	500 Thousand TL	500 Thousand TL	500 Thousand TL	500 Thousand TL
3	Food products and beverage manufacturing (excluding investment subjects specified in footnote 6)	2 Million TL	2 Million TL	1 Million TL	1 Million TL	1 Million TL	500 Thousand TL
4	Manufacture of textile products (excluding yarn and weaving investments that do not meet the conditions specified in footnote 8)	10 Million TL for textile finishing, 2 Million TL for other investments	10 Million TL for textile finishing, 2 Million TL for other investments	10 Million TL for textile finishing, 1 Million TL for other investments	10 Million TL for textile finishing, 1 Million TL for other investments	10 Million TL for textile finishing, 1 Million TL for other investments	500 Thousand TL
5	Apparel manufacturing	Not supported	Not supported	Extension and modernization inv. above 1 Million TL	Extension and modernization inv. above 1 Million TL	500 Thousand TL	500 Thousand TL
6	Tanning and processing of leather Tanning and processing of leather	1 Million TL	1 Million TL	1 Million TL	500 Thousand TL	500 Thousand TL	500 Thousand TL
8	Manufacture of luggage, handbags, leather goods, shoes, etc.	1 Million TL	1 Million TL	1 Million TL	500 Thousand TL	500 Thousand TL	500 Thousand TL
9	Manufacture of wood and cork products (except furniture), manufacture of straw and similar knitted items	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
10	Paper and paper products manufacturing	10 Million TL	10 Million TL	10 Million TL	10 Million TL	10 Million TL	500 Thousand TL
11	Manufacture of chemicals and products	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL

12	Manufacture of Chemical Fertilizers and Nitrogenous Components	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
13	Manufacture of pesticides and other agro-chemical products	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
14	Manufacture of chemical and herbal products used in medicine / pharmacy and medicine	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
15	Perfume, cosmetics and toiletries manufacturing	1 Million TL	1 Million TL	1 Million TL	1 Million TL	1 Million TL	500 Thousand TL
16	Explosives manufacturing	2 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL	500 Thousand TL
17	Inner and outer tire manufacturing	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
18	Manufacture of non-metallic mineral products (except glass and glass products, fired clay tiles, briquettes, bricks and construction materials, cement, ready-mixed concrete and mortar)	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
19	Manufacture of non-metallic mineral products (except multi-layer insulating glasses, tiles, briquettes, bricks, cement, ready-mixed concrete and mortar)	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
20	Manufacture of non-metallic mineral products (except multi-layer insulating glasses, tiles, briquettes, bricks, cement, ready-mixed concrete and mortar)	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
21	Flat glass, shaping and processing of flat glass (excluding multi-layer insulating glasses), hollow glass and fiberglass manufacturing	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
22	Flat glass, shaping and processing of flat glass (excluding multi-layer insulating glasses), hollow glass, glass fiber and glass production of electrical insulators and ceramic insulation materials	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
23	Flat glass, shaping and processing of flat glass (excluding multi-layer insulating glasses), hollow glass, glass fiber and glass production of electrical insulators and ceramic insulation materials	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL

24	Manufacture of concrete products for construction purposes	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
25	Manufacture of non-metallic mineral products; manufacture of concrete products for construction purposes, lime, plaster	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
26	Manufacture of concrete products for construction and heat or sound insulating articles and mixtures	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
27	Base metal industry other than iron and steel, metal casting industry	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
28	Metal ware	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
29	Manufacture of central heating radiators and boilers, manufacturing of steam boilers (except central heating boilers)	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
30	Machinery and equipment manufacturing	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
31	Industrial mold	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
32	Manufacture of office, accounting and data processing machines	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
33	Manufacture of electrical machinery and equipment	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
34	Manufacture of radio, television, communication equipment and devices	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
35	Medical instruments, precision and optical instruments manufacturing	1 Million TL	1 Million TL	500 Thousand TL	500 Thousand TL	500 Thousand TL	500 Thousand TL
36	Motor vehicles and sub-industry	50 Million TL for motor land vehicles, 4 Million TL for sub- industry	50 Million TL for motor land vehicles, 3 Million TL for sub- industry	50 Million TL for motor land vehicles, 2 Million TL for sub- industry	50 Million TL for motor land vehicles, 1 Million TL for sub- industry	50 Million TL for motor land vehicles, 1 Million TL for sub- industry	500 Thousand TL
37	Maintenance and repair of aircraft and engines	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
38	Motorcycle and bicycle production	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
39	Furniture manufacturing (except those made of metal and plastic only)	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL

40	Furniture manufacturing (except those made of metal and plastic only)	4 Million TL	3 Million TL	2 Million TL	1 Million TL	1 Million TL	500 Thousand TL
41	Hotels	3 stars or more	3 stars or more	3 stars or more	3 stars or more	3 stars or more	500 Thousand TL
42	Student dormitories	100 students	100 students	100 students	100 students	100 students	500 Thousand TL
43	Cold storage services	1.000 square meters	1.000 square meters	1.000 square meters	500 square meters	500 square meters	500 square meters
44	Licensed warehousing	2 Million TL	2 Million TL	1 Million TL	1 Million TL	1 Million TL	500 Thousand TL
45	Education services (including pre-school education services, adult excluding education and other educational activities)	1 Million TL	1 Million TL	500 Thousand TL	500 Thousand TL	500 Thousand TL	500 Thousand TL
46	Hospital investment, nursing home	Hospital: 1 Million TL Nursing Home: 100 people	Hospital: 1 Million TL Nursing Home: 100 people	Hospital: 500 thousand TL Nursing Home: 100 people	Hospital: 500 thousand TL Nursing Home: 100 people	Hospital: 500 thousand TL Nursing Home: 100 people	500 Thousand TL
47	Intelligent multifunctional technical textile	1 Million TL	1 Million TL	500 Thousand TL	500 Thousand TL	500 Thousand TL	500 Thousand TL
48	Waste recovery or disposal facilities	1 Million TL	1 Million TL	500 Thousand TL	500 Thousand TL	500 Thousand TL	500 Thousand TL
49	Coal gas production (synthesis gas)	50 Million TL	50 Million TL	50 Million TL	50 Million TL	50 Million TL	500 Thousand TL
50	Greenhouse cultivation	40 decare	40 decare	20 decare	10 decare	10 decare	5 decare

Appendix 2

▪ Tourism investments in Cultural and Touristic Preservation and Development Regions and thermal tourism investments,
▪ Mining investments,
▪ Railroad, maritime and airline transportation investments,
▪ Defence industry investments,
▪ Test facilities, wind tunnel and similar investments made for automotive, space or defence industries,
▪ Nursery, Preschool, Primary, Middle and High School and education investments for the use, repair and maintenance of air vehicles
▪ Investments made to manufacture the products and parts designed and developed as an outcome of the R&D Projects supported by the Ministry of Science, Industry and Technology, TUBITAK and KOSGEB,
▪ International fairground investments with a minimum covered area of 50.000 m2,
▪ Motorized land vehicles key industry investments with a minimum investment amount of 300 million TL, automotive engine manufacturing investments with a minimum amount of 75 million TL and transmission components/parts and automotive electronics manufacturing investments with a minimum amount of 20 million TL,
▪ Investments made to generate electricity from coal,
▪ Investments made to generate electricity through waste heat recovery in a facility,
▪ Energy efficiency investments made in existing manufacturing facilities,
▪ Liquefied natural gas (LNG) investments and underground gas storage investments with a minimum amount of 50 million TL,
▪ Investments of carbon fiber or the composite materials made from carbon fiber provided that along with carbon fiber production.
▪ Investments made to manufacture high-technology products classified according to OECD technology intensive definition.
▪ Investments made to explore mines in the permitted fields for the investors holding Mining License and Certificate.
▪ Investments made to manufacture turbines and generators for renewable energy and wind turbine wings for wind power.
▪ Integrated investments for aluminium flat products using direct chill slab casting and hot rolling methods.
▪ Licensed warehousing investments.
▪ Nuclear power plant investments.
▪ Qualified laboratory investments
▪ Greenhouse investments based on automation with a minimum of 5 million TL, 25 decare and domestic spare parts
▪ At least 5000 bovine milk-oriented, at least 10,000 bovine cattle meat-oriented livestock investments
▪ Investments in waste recycling and disposal facilities amounting to a minimum of 5 million TL
▪ Elderly and Disabled care centres and wellness investments
▪ Medium-high technology investments amounting to a minimum 500 million TL

Source: Ministry of Industry and Technology – DG of Incentive Implementation and FDI

Notes

[1] The income quintile share ratio or the S80/S20 ratio is a measure of the inequality of income distribution. It is calculated as the ratio of total income received by the 20 % of the population with the highest income (the top quintile) to that obtained by 20 % of the population with the lowest income (the bottom quintile) (Eurostat, 2020).

[2] Average Gini coefficient in OECD countries was 0.33 between 2012 and 2019, when the income definition was revised (OECD, 2021). The ratio of income of the wealthiest 10% of the population to income of the poorest is 15.2 in Turkey, while it is 9.6 in OECD countries (Selim et al., 2014: 61).

[3] At least 50% share of the ultimate product must be supplied through imports nationwide; the import amount of the ultimate product must be at least $50 million for the last 12 months, which is not applicable for the goods with no domestic production. The minimum investment requirement is 50 million TL, production must create a minimum of 40% value-added within the borders of the country. Nevertheless, only 54 strategic investment certificates were prepared between 2012-2020.

[4] To clarify the tax deduction mechanism, an example might be useful. Let us consider an investment project worth TL 1 million under the regional scheme in the 4th region. CTD rate is 70% and the investment contribution rate is 30% while the corporate tax rate is assumed to be 20% for convenience.

Deducted CT Rate = (CT Rate) - [(CT Rate) X (CTD Rate) /100]

Deducted CT Rate = 20 – (20 X 70 / 100) = 6%

It means that the 20% CT rate would be applied as 6% and 14% of the CT amount would be waived.

The possible maximum amount of the tax refund will be calculated via investment contribution rate and the total investment expenditure;

Net maximum CT refund = (Investment contribution rate X Investment amount) / 100

Net maximum tax refund = 30 X 1.000.000/ 100 = TL 300.000.

As a result, the investor shall receive back % 14 of the annual accrued CT. Throughout the years after the investment is completed, aggregated CT refund cannot exceed TL 300.000. Obviously, the application of the investment contribution rate aims to keep the support amount commensurate with incentivised capital expenditure (MOIT, 2021).

[5] The calculation of the number of scholars should be coherent to the expected benefits of passing to the 6th region from the 5th region (Priority benefits). In the 5th region, schools get 7 years of social security premium support employer's share while 6th region investments get 10 years of premium support for both employer and employees. The support only applies to the minimum wage equivalent share of the actual wage. The minimum wage social security employer's share is 554 TL for the 2021 (PWC, 2021) For the 5th region total social security benefit would be;

554 x 12 = 6.648 TL per one employee for a year,

6.648 x 7 = 46.536 TL support per one employee for the entire investment. The average employment number per incentive certificate for school investments is "35" in the 2012-2020 period (MOITa, 2020) which translates into;

46.536 x 35 = 1.628.760 TL waived social security premium per school investments.

If schools are granted 6th region benefits for having poor children, they will get 10 years exemption from employers' share and additionally 10 years of exemption on employees share (500 TL for minimum wage) and withheld income tax (456 TL for minimum wage (PWC, 2021)). Then, for the 6th region, the total employer's share of social security premium support would be;

554 x 12 = 6.648 TL per an employee for a year,

6.648 x 10 = 66.480 in total.

Total employee's share premium support would be;

500 x 12 = 6.000 TL per an employee for a year,

6.000 x 10 = 60.000 TL in total.

Total withheld income tax would be;

456 x 12 = 5.472 TL per an employee for a year,

5.472 x 10 = 54.720 TL in Total.

Each support tool will be effective 10 years and for an employee total waived amount would be,

66.480 + 60.000 + 54.720 = 181.200 in 10 years. Considering the average employment number of the school investments (35), the total social security benefit provided for a school investment in 6th region approximately would be,

181.200 TL x 35 = 6.342.000 for the entire project. Considering the 5th region support level is a total of 1.628.760 TL, the difference is 4.713.240 which is the approximate amount that the school investor shall get in case of a 6th region benefit grant. The average private school annual fee is roughly 60.000 TL (Kamuajans, 2021). Thus, 8year compulsory primary education cost would be;

60.000 TL x 8 = 480.000 TL.

If the school investors are granted 6th region benefit terms in case they enrol poor students under the project,

4.713.240 TL ÷ 480.000 TL = 9,8. It means the difference in the grants of the 6th region could be enough to finance 9,8 poor students per project. Considering the frictions, scholarships they would consider giving to students and a certain additional profit margin to nudge them to enrol poor students in their district, 5 poor students enrolment seems plausible as a performance criterion in order to enable school investors to receive 6th region benefits no matter where the investment took place.

[6] Bartik (1991) argues that the unemployment level is usually higher than the average in underdeveloped regions where investment incentives address to develop further. Due to high unemployment, additional labour demand stimulated by the incentivised projects would not put extra upwards pressure on wages, thus not leading to any imbalances in the national inflation policy.

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Production Technology Dynamics of Manufacturing Industries in Turkey[1]

Sümeyra Korkmaz[a]

[a] PhD Candidate, Department of Economics, Ankara Hacı Bayram Veli University, Ankara, Turkey.

Abstract

This study analyzes the firm level productivity to clarify the differences among manufacturing sectors. We provide estimates of regional and sectoral total factor productivity (TFP) using firm-level data on Turkish manufacturing industry provided by TURKSTAT as survey data over the 2003-2015 period to understand firm heterogeneity across sectors and regions. Based on the results obtained from different estimation methods as ordinary least square, fixed effect and Levinshon-Petrin TFP estimations, there is a significant heterogeneity across sectors and firms in the same sector in the micro-level and this results in different average TFP levels for regions at macro-level. Our findings suggest that discrepancies in regional TFP levels are determined by technological dynamics of the industries that are dense in those regions. Calculating sectoral TFP differences may guide policymaker not only to give incentives to most productive sectors in order to accomplish sustainable growth with high value-added production, but also differentiating between firms and regions while giving incentives according to the density of the sectors on those regions.

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1. Introduction

Many theorists try to model long run growth path of economies. Since the seminal work of Barro et al. (1991), convergence of income levels between countries or between regions of the same country draws the attention of many researchers. However, most of the time, heterogeneity across sectors and regions of the country remains in the background. The presence of such heterogeneity across sectors or regions could result in several outcomes, one of which is total factor productivity (TFP) differences among these sectors/regions and the other is misallocation of resources. These outcomes have been put forward as reasons for within-country income per capita differences (Restuccia and Rogerson, 2008; 716-720). In this paper, I will analyze dynamics of regional and sectoral production technology in the manufacturing industries in Turkey using a panel data approach in order to examine whether TFP levels provide insight about different degrees of development within Turkey. As in Prescott (1998) and Hall and Jones (1999), I will mainly focus on estimation of regional and sectoral TFP using data on Turkish manufacturing firms to observe whether the dominant source of differences in output per worker is caused by differences in TFP levels.

Total factor productivity calculations are frequently used for addressing questions of efficient utilization of inputs and factors of production. Analytics of TFP can be traced back to Solow (1957). In his seminal paper, Solow defined change in the technology as “any kind of shift” in the production

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CONTACT Sümeyra Korkmaz sumeyra.korkmaz@hbv.edu.tr

function, nevertheless he focused on different saving rates to explain international income differences. As a follow-up, Lucas (1988) has taken the neoclassical approach a step further, and introduced the notion of "human capital" as schooling, experience or specializing to elucidate income differences between countries. In what follows, Prescott (1997) has argued that these works were virtually unsatisfactory, as evidence reveals that the same level of human capital fails to explain international income differences. That's why, he resorted to total factor productivity analysis to clarify international and within-country income differences.

After the seminal work of Prescott, the idea of "total factor productivity" issued to explain variations in developed and developing countries' income levels, and the TFP approach is utilized to compare per capita income differences among countries especially after trade-liberalization income experiences. Grossman and Helpman (1991), is one of the examples that model a close economy in which productivity increases after trade liberalization due to the interactions of knowledge and innovation spillovers across trading partners. Caselli (2005), in turn, endeavors to clarify cross-country income differences not only with factors of production but also with differences in efficiency levels using survey data from both OECD and non-OECD countries. He claims that differences in human capital or physical capital are not enough to explain income inequality, but that efficiency differences would be the biggest part of the question.

TFP measure is also used by policy makers for regulations and subsidies in order to distribute resources more efficiently on specific sectors and/or regions. Having a far-reaching data set, Gennaioli et al. (2014) analyze 83 countries regional growth and convergence rates, including Turkey, over the period 1975-2001. They conclude that regional growth is shaped ultimately by the aggregate characteristics of national growth, and countries with more effective regulation exhibit faster convergence. Atiyas and Bakıs (2013) provide an aggregate sectoral TFP growth analysis for Turkey. Their findings show that after 2000s TFP growth in Turkey is more than 3 percent, and agriculture sector exhibits strikingly higher TFP growth than industry. Furthermore, in his empirical work Filiztekin (2000) analyzes the productivity growth in Turkish manufacturing sectors after trade liberalization of 1980. He finds a significant effect of openness to trade on productivity and growth using data up until year 2000.

Focusing on capital accumulation to explain sources of economic growth, Saygılı et al. (2005) ascertain that there is a positive correlation between economic growth and capital accumulation. They also claim that productivity indicators are weak for agriculture and services, whereas they are high for industry. They draw attention to the increase in productivity with structural transformation after 2000s. In their work, Taymaz et al. (2008) use establishment-level data where they determine the factors effecting producitvity increase taking sector heterogeneity into account. While all the papers reviewed above give a general idea about TFP levels, usage of aggregated data, and methodological problems warrant that there is an acute need to estimate regional and firm-level TFP micro-data, as well as more robust techniques, a gap that this paper aims to fill.

Background data requirements for this research are production, employment and firm dynamics on Turkish economy. Publicly available data by TURKSTAT indicate that with 54.3% of the production share at the enterprise level, industry has the biggest portion. Moreover, 81% of the production level of industry is supplied by manufacturing. For this reason, we direct our attention to the manufacturing industry specifically. In addition, 97% of the firms in Turkey has less than 20 people employed but their share in aggregate production is comparably small. Therefore, we concentrate on the production dynamics of the large enterprises.

It is an inevitable fact that regional and sectoral analysis of Turkey at firm-level is significant that is missing in the literature. Awareness of firm heterogeneity and availability of detailed data provide us to analyze dynamics of regional and sectoral production technology in the manufacturing industries in Turkey.

2. Data and Methodology

The data set used in this paper is provided by Turkish Statistical Institute (TURKSTAT) available for use only in the data research center of the institute. Data are collected as annual surveys from enterprises which have 20 or more employees or if the firm is a significant producer in its sector. The time interval used in the paper is restricted due to the data provided by TURKSTAT as a survey for manufacturing firms covers until 2015. Beginning from 2016, TURKSTAT has changed methodology and started to use administrative data provided by Turkish Revenue Administration instead of collecting survey answers from firms. However, the differences in the calculations between two series made it necessary to revise administrative data for the time before 2016 to make it compatible with the earlier series. Nevertheless, these differences between calculations and structure of the dataset make it impossible to involve new series with the same methodology due to missing variables in

the new series.[2] For this reason, this paper covers between survey years 2003 and 2015. Table-1 gives data on the number of enterprises.

Table 1: Number of Enterprises

years	all firms	manufacturing	sample obs.
2003	77592	31198	12396
2004	78463	33536	15005
2005	63304	25318	17760
2006	85016	34020	19354
2007	83963	33285	18744
2008	82662	32842	18883
2009	99921	35043	17025
2010	106715	33890	20932
2011	138013	41194	23596
2012	147916	43281	26268
2013	168676	46998	27754
2014	159433	45316	24916
2015	161716	45978	25286

Here the first column displays observations for all sectors, second column is the observations for manufacturing firms. we eliminate some of these observations that have less than 20 employees that are drawn randomly from the sample since their capital stock estimation becomes problematic for them due to missing values for some years, however our reduction for the sample size does not ruin unbiasedness thanks to random draw. We find that, production value and added value for the omitted sample are around 1% of the overall volume. Lastly, we have omitted the firms that operate only once over the 13 years analysis period in order to estimate capital stock with perpetual inventory method, which will be mentioned in detail below.

Production value of the firms included in the data set is measured as the sum of annual sales and changes in the stock value of final products for that year. Other dependent variable used in the estimations is value added with factor prices provided by TURKSTAT. According to reported sectoral inflation rates by TURKSTAT at the 2-digit level, production value and value added are deflated in base year (2003). Deflating the values with own sector prices is particularly important since variation in sectoral prices is quite substantial with, for instance, a 500% inflation over a period of 13 years such as petroleum and coal, whereas in some sectors price level decreases, e.g pharmaceuticals. Labor, as an indispensable factor of production, is given for firms in every year as "total number workers engaged". Unfortunately, there is no information about the skills, education level or service area of the employees as white collar or blue collar. Therefore, we had to resort only one type of labor in our estimations.

Another main factor for production, capital, is not reported in the survey data. Hence, it is estimated using investment data of firms which is reported separately as investments on machinery/equipment, patents/computer programming and building/structure.[3] Another independent variable included in the estimates is material input calculated as value of purchases on intermediate inputs plus the change in the material input stock for that year, as deflated by the corresponding sectoral price indices. Summary statistics of these variables for our sample are reported in Table-2 yearly.

Table 2: Summary Statistics

years	produciton value	number of workers	estimated capital	added value
2003	162	1179726	107	40.6
2004	200	1382613	118	48.0
2005	219	1583688	131	42.9
2006	252	1723300	146	51.4
2007	260	1809293	171	51.6
2008	273	1839605	180	57.0
2009	242	1648004	186	51.7
2010	292	1918892	205	58.9
2011	339	2101980	218	67.6
2012	356	2352571	237	67.5
2013	389	2489306	243	79.6
2014	391	2516514	249	81.1
2015	413	2597823	252	83.7

[2] The variables used in the estimation is not available in the new series starting from 2016, since this study covers survey data results. For the detailed information, please check "Yıllık Sanayi ve Hizmet İstatistikleri, Metodoloji" document provided by TURKSTAT.

[3] After deflating the investment series with relevant price deflators, capital stocks for each item is constructed with perpetual inventory method. Before applying the method, an assumption is needed for the initial capital stock estimation, that is firms' are regarded to remain at their balanced growth path. Considering K_{i0} as initial capital stock of firm i and δ as depreciation rate, we can write

$K_{i1} = (1 - \delta) * K_{i0} + I_{i0}$

Dividing both sides of equation 1 with K_{i0}, we get;

$K_{i1} / K_{i0} = (1 - \delta) + I_{i0} / K_{i0}$

Since we have assumed that firms are at their balanced growth path,

$K_{i1} / K_{i0} = Y_{i1} / Y_{i0} = 1 + g_i$

where g is the real growth rate of the firm calculated as growth of deflated production value. Thus, we get

$K_{i0} = I_{i0} / (g_i + \delta)$

In the data set, not all firms report positive investment for their first year they appear in the data set. For this reason, we have taken the first year reported with positive investment to calculate the initial capital stock levels, and iterated back for the former years with deflated by the depreciation rate 1/(1-δ) for each type of capital stock.

TURKSTAT also reports summary statistics according to firm size annually on their website and our sample captures most of the firms operating in manufacturing industry with at least 20 employees in Turkey. Sector information for the firms are given at NACE-4 level, but we used 2-digit sector specification. Finally, region information of these firms is given as the headquarter of the enterprise in the dataset.

We start with the common assumption that the production technology of the firms s represented in the Cobb-Douglas production function form:

$$Y_{it} = A_{it}\ K_{it}^{\beta k}\ L_{it}^{\beta l}\ M_{it}^{\beta m} \qquad (1)$$

where Y_{it} stands for output of firm i at time t and K_{it}, L_{it}, and M_{it} are capital, labor, and material inputs of firm i at time t, respectively. Ait stands for the productivity level which is unobserved while other variables are observable.

Taking the natural logarithm of the production function in equation 1, and expressing in econometric format:

$$y_{it} = \beta_0 + \beta_k k_{it} + \beta_l l_{it} + \beta_m m_{it} + \varepsilon_{it} \qquad (2)$$

we get logarithmic form of production function where lower-case letters correspond to natural logarithms of each variables. Natural logarithm of A_{it} is equal to the summation of mean efficiency level, β_0 and time and firm specific measurement error of TFP, that is, ε_{it} .

Estimating TFP as residual from OLS estimation can create simultaneity since choices of inputs, such as labor, can be correlated with the unobserved productivity shock to the firm. Also in the balanced panel data, we only observe surviving firms over time, which may cause a selection bias. Therefore, estimating TFP with OLS method can cause endogeneity or selection bias problems (Van Beveren, 2012). There are some methods to get rid of simultaneity problem like instrumental variable (IV) estimation, fixed-effect (FE) (Mundlak, 1961; Hoch, 1962) or random-effect panel estimation. However, they all have some drawbacks in estimation process. For example, in fixed-effect estimation needs the assumption of strict exogeneity, unless it causes inconsistency and bias towards to zero in the estimation and this assumption does not hold in practice (Van Beveren, 2012). Whereas, IV method does not need strict exogeneity assumption for consistent estimation. In this method a variable correlated with inputs and uncorrelated with the shock such as input prices is essential, but most of the time input prices are not observed or even if it is observed, firms with market power set their input prices according to their productivity and sales, so input prices become endogenous. Lagged levels of inputs can also be used as instruments. But this approach introduces a downward bias in the estimates of the coefficient of the capital input (Van Beveren, 2012). Therefore, Blundell and Bond (2000) introduce generalized method of moments (GMM) for more accurate estimates defining AR(1) process for a part in error term. Although GMM is a proper solution for endogeneity problem, it is not sufficient to deal with selection bias issue since it does not take survival probability of firms into account.

As mentioned earlier, estimating coefficients with OLS can cause problems of endogeneity since the time and firm specific shocks to productivity are observed to the firm, and can lead them to choose their inputs accordingly resulting in correlation between the coefficients and the shock. In addition to endogeneity, firms with lower productivity have higher probability to exit the market and average productivity increases when they exit. As a result, entering to market afterwards become more difficult for new entrants (Melitz, 2003) and this situation causes selection bias in OLS estimation.

To overcome those problems, Olley and Pakes (1996) propose a model in which investment is chosen as proxy variable in order to get rid of endogeneity problem. They also suggest a solution to selection bias problem. While other balanced panel data methods require the existence of all firms in all years, Olley and Pakes argue that exit or entry decisions of firms depend on their future productivity. Therefore, they develop an algorithm in which at every period each firm decides whether to exit or continue according to their expected productivity level and if it exits it never re-enters. However the assumptions needed for Olley and Pakes method are too restrictive that only firms with non-zero investment levels can be included in the sample. Since in most of the developing countries data, including Turkey, firms report zero investment, it is not a suitable method for the survey data provided by TURKSTAT.

Olley and Pakes suggest a model where ε_{it} is decomposed into an observable or forecastable component, w_{it} as a function of productivity and capital, and unobservable component n_{it} . Thus, the production function takes the form below:

$$y_{it} = \beta_0 + \beta_k k_{it} + \beta_l l_{it} + \beta_m m_{it} + w_{it} + n_{it} \qquad (3)$$

Let's denote, $\beta_0 + w_{it} = a_{it}$. To solve for ait OP use exit variable, X_{it} following a first-order Markov process to prevent the selection bias problem in addition to a proxy variable as "investment levels of firms". They claim that investment as a function of capital and productivity is strictly increasing in productivity so that its inverse exists. Taking the inverse of function $i_{it} = h_t(k_{it}, a_{it})$, productivity as an unobservable variable can be written as a function of observables as $a_{it} = g_t(k_{it}, i_{it})$, where $h_t(.) = g_t^{-1(.)}$. Setting $f(k_{it}, i_{it}) = \beta_0 + \beta_k k_{it} + g_t(k_{it}, i_{it})$, OP estimate the following

regression using OLS method to consistently estimate βl *and* β_m at first stage.

$$y_{it} = \beta l l_{it} + \beta_m m_{it} + f(k_{it}, i_{it}) + n_{it} \quad (4)$$

Using the estimated coefficients and taking survival probability into consider- ation, OP estimate βk in the second stage. Estimated productivity in OP method can be constructed as residual from the following equation.

$$\hat{\alpha}_{it} = y_{it} - \beta_k k_{it} - \beta_l l_{it} - \beta_m m_{it} \quad (5)$$

After taking the exponential of $\hat{\alpha}_{it}$, TFP is calculated at firm level for each year. However, a sizable truncation in the data was needed for the OP method since a quarter of the firms in our data set report zero investment, and this fact could cause another type of selection bias.

While Olley and Pakes suggest using investment as a proxy variable so as to prevent endogeneity problem, Levinsohn and Petrin (2003) are aware of the fact that developing countries' data contains a significant amount of zero investment entries. Since firms report non-zero material input such as electricity and gas consumption, they suggest material input as a proxy in estimation. It is also possible to get healthier results than investment as a proxy since materials such as electricity can respond better to productivity shock.

Again taking the same productivity function equation

$$y_{it} = \beta_0 + \beta_k k_{it} + \beta l\, l_{it} + \beta_m\, m_{it} + w_{it} + n_{it}$$

and demand for material input positively depends on the firms state variable k_t and a_t

$$m_{it} = m_t(k_{it}, a_{it}) \quad (6)$$

Positive effect of a_{it} on demand of m_{it} allows the inversion of demand function as

$$a_{it} = n_t(k_{it}, m_{it}), \text{ where } m_t(.) = n_t^{-1(.)}. \quad (7)$$

Therefore, unobserved productivity function becomes function of two observable inputs. LP also allow us to estimate TFP taking value added, v_{it} as dependent variable where

$$v_{it} = \beta_0 + \beta_k k_{it} + \beta l\, l_{it} + w_{it} + n_{it} \quad (8)$$

and TFP can be calculated as taking the exponential of following equality.

$$\hat{\alpha}_{it} = v_{it} - \beta_k k_{it} - \beta_l l_{it} \quad (9)$$

The estimation process identified in the above includes two stages in which LP estimates first β_l consistently and at the second stage β_k is estimated and differs from OP as taking material input as proxy. Due to the structure of available data, LP estimation technique is used for the estimations.

3. Discussion and the Conclusion

We estimated TFP with three additional methods; OLS, fixed effect and LP with production approach to check the robustness of our results (Table-3).

Compared to other estimations' coefficients, OLS gives higher values for labor which is expected. Since the positive correlation between productivity shock and labor choice, OLS results are biased upwards confirming the theoretical results (Van Beveren, 2012).

Table 3: Estimation Results

	(1)	(2)	(3)	(4)
	OLS	GLS	FE	LP
	lnval	lnval	lnval	lnval
lnKtotal	0.146**	0.138**	0.134**	0.131**
	(0.00091)	(0.00123)	(0.00178)	(0.00589)
lnworkers	1.035**	0.952**	0.873**	0.814**
	(0.00200)	(0.0026)	(0.00328)	(0.00536)
Constant	7.420**	7.833**	8.222**	
	(0.0103)	(0.0152)	(0.0237)	
Observations	222506	222506	222506	215238
Chi2				56.89 (p=0.0000)
R-squared	0.7265			

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

When capital coefficients are examined, it is clear that OLS gives a downward bias that results underestimating the effect of capital in production[4]. The difference of fixed effect estimates with OLS and LP estimates can be explained by change in the magnitude of productivity shock of firms over time. According to firm-level TFP estimation, what we observe is that firms' productivity level changes over time but not with a constant rate. Therefore, our data does not properly fit to fixed-effect estimation model. We also used energy usage as a proxy for unobserved productivity shocks instead of material. Differences in referring these two variables as independent arise when executing the regressions. In the case where production value is dependent variable, LP are unable to identify coefficients of variables due to lack of variation in the data (Arnold, 2005). Therefore, our estimation relies on value added approach of LP estimation techniques tabulated in Table-4.

[4] Our results are robust to different depreciation rates for different investment types to construct capital for building using δ=5%, for machinery δ=10% and for patent δ=30% (Yılmaz and Özler, 2005). Table-4 includes estimates of capital with two different capital estimation and they give similar results.

Table 4: Levpet Estimation Results		
	(1)	(2)
	lnval	lnval
lnmaterial	0.488**	0.490**
	(0.00501)	(0.00529)
lnworker	0.403**	0.405**
	(0.00414)	(0.00503)
lnenergy	0.227**	0.234**
	(0.0744)	(0.0926)
lnK1	0.390**	
	(0.0203)	
lnK2		0.382**
		(0.0153)
Standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

This paper estimate TFP at the firm-level for manufacturing industry in Turkey and explores that TFP levels of sectors and their distribution among regions lead to heterogeneity within Turkey.

Sectors	Nace-2 Code
High technology industries	
Aircraft and spacecraft	28
Pharmaceuticals	21
Office, accounting and computing machinery	28
Radio, TV and communications equipment	28
Medical, precision and optical instruments	26
Medium-high technology industries	
Electrical machinery and apparatus, n.e.c.	27
Motor vehicles, trailers and semitrailers	29
Chemicals excluding pharmaceuticals	20
Railroad equipment and transport equipment, n.e.c.	30
Machinery and equipment, n.e.c	33
Medium-low technology industries	
Building and repairing of ships and boats	31
Rubber and plastics products	22
Coke, refined petroleum products and nuclear fuel	19
Other non-metallic mineral products	23
Basic metals and fabricated metal products	24
Low-technology industries	
Manufacturing, n.e.c.; Recycling	32
Wood, pulp, paper, paper products, printing and publishi	16,17,18
Food products, beverages and tobacco	10,11,12
Textiles, textile products, leather and footwear	13,14,15

Source: OECD Science, Technology and Industry Scoreboard 2011

As seen in the table at the appendix estimating the TFP taking sector specific differences into account is signid. Classification of manufacturing industries according to technology intensity and the distribution of the sectors in Turkey at level-2 shows us firm and sector heterogeneity resulting in regional heterogeneity among Turkey. It is evident that the production function takes different coefficients for different sectors and the TFP level for those sectors vary significantly as seen in Table-5. The results are in line with OECD technology distinction of sectors, where the highest TFP levels are estimated in sectors 21 (manufacture of pharmaceuticals) and 26 (manufacture of computer and optical instrument).

TFP distribution of all firms between 2003-2015 behaves like pareto distribution, which is expected as many firms having low TFP and small number of firms having higher TFP levels. We observe a slight increase in TFP levels of firms by sector and also by region from year 2006 to 2015.

Figure 1: TFP distribution of **Textile** firms in region TR32

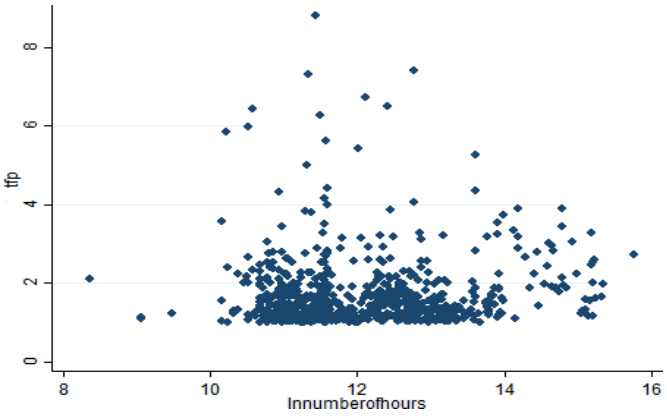
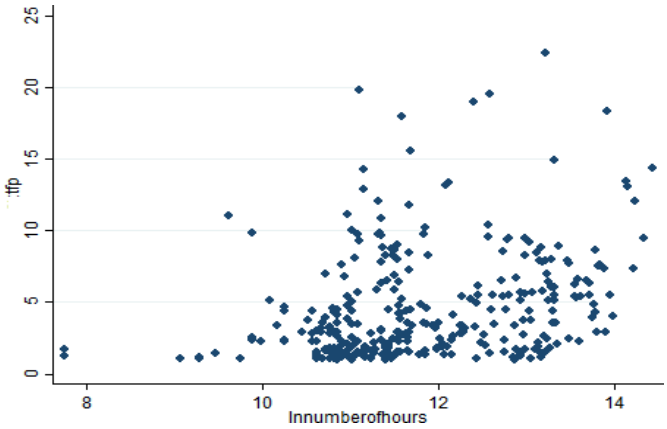


Figure 2: TFP distribution of **Chemicals and Chemical Products** firms in region TR42



Textile and chemical products are one of the examples that we can reproduce in order to show the TFP distribution and level differences among sectors. According to the figures and Table-5, TFP levels in high-technology sectors are well above

the ones in the low technology sectors, like textiles. While analyzing each region's data specifically, it is observed that in Istanbul region (TR10) number of firms is high not only because of the existing firms in that region, but also it is high because of being the head of lots of local units. Therefore, Istanbul can be thought as the average TFP of the country. Although high productive sectors - manufacture of rubber-plastic and manufacture of non-metallic minerals- operate in regions like Tekirdağ (TR21) and Balıkesir (TR22), its TFP is not as high as expected since food products and textile products are produced in lots of small firms that have around 30 workers and these sectors are means of living for the big part of the population. Therefore, low levels of TFP is caused by the domination of low technology industries in these regions.

The remaining regions of the West like Izmir, Bursa, Eskişehir and Kocaeli, etc. including Ankara have relatively higher TFP levels. The reason for higher TFPs in these regions is that their giant firms operating in high technology industries defined by OECD, such as chemical products, non-metallic minerals, basic metal industry, computer and optical instrument and transportation equipments or high value added sectors like petroleum and coal, like the ones in region TR42 shown in Figure 2. Additionally, the positive relationship between TFP level and the size of the firm, which can be inferred from the number of workers, is apparent in chemical products sectors. However, there is no significant relationship between TFP level and size in the textile sector. This difference also contributes to not only sector specific but also firm level heterogeneity. Therefore, calculating the sector specific TFP levels at firm level is prominent to canalize the subsidies into more procutive firms for the sake of sustainable growth.

Based on the results obtained from different estimation methods, there is a significant heterogeneity across sectors and firms in the same sector in the micro-level and this results in different average TFP levels for regions at macro-level.

However, the differences between the TFP levels of regions are originated from the fact that some sectors being conglomerated in some regions. Therefore, sectoral analysis becomes more prominent for a regional result. Calculating sectoral TFP differences may guide policymaker not only to give incentives to most productive sectors in order to accomplish sustainable growth with high value-added production, but also differentiating between firms and regions while giving incentives according to the density of the sectors on those regions.

Table 5: Sector and Region specific TFP results

Sectors	TFP Level		Regions	TFP Level
10	2.3		TR10	4.4
11	6.1		TR21	2.6
12	6.2		TR22	3.0
13	1.9		TR31	3.5
14	1.9		TR32	2.5
15	1.8		TR33	4.4
16	3.1		TR41	3.1
17	2.8		TR42	4.8
18	2.6		TR51	6.2
19	5.4		TR52	2.8
20	4.0		TR61	2.8
21	7.7		TR62	3.2
22	2.9		TR63	3.7
23	2.7		TR71	3.0
24	3.0		TR72	3.5
25	2.3		TR81	4.8
26	7.5		TR82	2.0
27	3.4		TR83	2.5
28	2.7		TR90	3.1
29	4.0		TRA1	5.1
30	6.3		TRA2	2.0
31	1.8		TRB1	1.6
32	2.9		TRB2	1.4
33	4.7		TRC1	3.0
			TRC2	2.0
			TRC3	4.4
Overall TFP				**3.0**

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Appendix

Table 6: Estimation Results for each Sector at 2-digit

NACE-2 Codes	lnworker	Standart Error	lncapital	Standart Error	N
10	0.776**	(0.014)	0.139**	(0.0313)	22685
11	0.668**	(0.0804)	0.338**	(0.0987)	1077
12	0.693**	(0.182)	0.239	(0.231)	178
13	0.868**	(0.0166)	0.208**	(0.017)	24082
14	0.882**	(0.00876)	0.0807**	(0.0312)	34189
15	0.865**	(0.0328)	0.175**	(0.0342)	5283
16	0.892**	(0.0336)	0.0554	(0.0864)	3577
17	0.979**	(0.0364)	0.105**	(0.0348)	4520
18	0.917**	(0.0519)	0.173**	(0.0465)	3061
19	0.903**	(0.11)	0.0537	(0.142)	450
20	0.921**	(0.0353)	0.155*	(0.0793)	5578
21	0.823**	(0.0887)	0.101	(0.0826)	1134
22	0.871**	(0.0214)	0.145**	(0.0499)	13584
23	0.820**	(0.0206)	0.277**	(0.0245)	15951
24	0.848**	(0.0292)	0.151**	(0.0206)	6740
25	0.905**	(0.0153)	0.212**	(0.0325)	19278
26	1.019**	(0.0536)	0.213**	(0.0719)	1929
27	0.874**	(0.0244)	0.134**	(0.0446)	7619
28	0.956**	(0.0187)	0.172**	(0.0233)	16127
29	0.927**	(0.0249)	0.153**	(0.0326)	7908
30	0.835**	(0.0394)	0.372**	(0.0727)	1813
31	0.887**	(0.026)	0.0549**	(0.0229)	9888
32	0.892**	(0.0346)	0.204**	(0.0534)	4504
33	0.738**	(0.0298)	0.269**	(0.103)	3086

TFP levels are the results of Levinsohn-Petrin estimation of production function where dependent variable is value added. Standard errors in parentheses, * p<0.10, ** p<0.05, ** p<0.001

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Entrepreneurship and Poverty Alleviation in Africa

Mamadou Amırou Sall[a]

[a] Department of Economics, Istanbul Commerce University, Istanbul, Turkey

Abstract

This article explored contemporary theories explaining the relationship between entrepreneurship and poverty reduction from various perspectives, such as remediation, reform, and social and plight perspectives. Moreover, the article presented the study concepts of poverty reduction and entrepreneurship in Africa and empirical studies concerned with investigating the current state of Poverty and entrepreneurship in Africa. Furthermore, a critical analysis of the reasons for the failures of poverty reduction programs in Africa is explored and explained. The study adopted a qualitative method and found that entrepreneurship development in Africa must ensure access to capital for the poor and be more focused on creating an enabling environment that aids individuals and groups in achieving significant entrepreneurship success. Finally, the study recommended that African leaders collaborate with local and international institutions and organizations to create and maintain enabling conditions that facilitate entrepreneurship growth.

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1. Introduction

Entrepreneurship is considered one of the key contributors to economic development and poverty reduction in Africa. With the recent innovation of the last decades, companies like Apple, Amazone, Tesla, Huawei, and Alibaba have inspired many young people to start the entrepreneurship's pleasant and risky journey. We have recently seen new words emerging, such as Agripreneur to designate a person beginning an entrepreneurial journey in Agriculture or Afropreneur to indicate an entrepreneur of an African origin. Entrepreneurship is the capacity to see and seize new business opportunities and profit from the outcomes generated by providing solutions to existing problems of their society (Dialoke et al., n.d.).

Poverty alleviation in Africa is one of the significant issues faced by African leaders and their financial partners. Over the years, billions of U.S. dollars have been spent to assist African countries in tackling widespread Poverty. Despite efforts to implement reforms and promote growth strategies, it is obvious to acknowledge that expected results have not been met yet. The United Nations, as one of the champions on the front line against Poverty, includes poverty reduction as one of their primary concerns, among others. As far as the World Bank is concerned, ‘’Poverty is the economic condition in which people lack sufficient income to obtain certain minimal levels of health services, food, housing, clothing and education which are necessities for the standard of living’’ (Dialoke et al., n.d.).

According to the OECD (2022), at the end of 2021, the top ten poorest countries with associated high poverty levels include seven African countries.

These countries include South Sudan on top with a poverty rate of 82.30%; Equatorial Guinea with a poverty rate of 76.80%; Madagascar with a poverty rate of 70.70 percent; Guinea Bissau with a poverty rate of 69.30%; Eritrea at 69.00%; Sao Tome and Principe with a poverty rate of 66.70% among others.

The analyzed data showed that poverty reduction in Africa is still a challenge; and that the continuous progress chalked

CONTACT Mamadou Amırou Sall derstallmann@gmail.com

over the years has been dilapidated by the covid 19 outbreak (KPMG, 2020).

They argued that an analysis of efforts made by leaders in Africa to alleviate poverty from the continent is poor and susceptible to global economic, political, and social threats. However, global Poverty has been reduced only in regions, most notably in South East Asia and South America, but not Africa (Vermeire & Bruton, 2016; Bhagwati & Srinivasan, 2002; Easterly, 2006). The reasons are that most social researchers and scholars have failed to look at its association with entrepreneurship over the past years in their study of poverty reduction in Africa in terms of the structural policies and programs (Sutter, Bruton, and Chen 2019; Dzingirai, 2021). The theorized argument that industrialization is the key to growth is overstated since the global conditions favoring Africa's development are facilitated by the informal sector, which has been created by the handwork of entrepreneurship (World Bank, 2001). According to the World Bank, entrepreneurship in Africa is on the ascendancy but poorly supported by stakeholders and governments as it is perceived as an individualized activity. Dzingirai (2021) explained that this low support was because most African entrepreneurs are individualistic, informal, un-resourceful, risk-takers, and short-term planners, making them unattractive to receive support technically and financially from public and private institutions. In addition, the informal sector in most African economies is characterized by individualized entrepreneurs who are described as uneducated and crude in terms of business practices. On the brighter side, entrepreneurship activities have increased employment opportunities for the unskilled and skilled and increased income of the poor. Thus, there is a need to investigate the efforts taken by government institutions and agencies and private sectors to increase entrepreneurship growth in Africa.

The research methodology of this article is qualitative. It is based on the consultation of scientific papers, books, and information from non-governmental organizations to have a deep dive into the linkage between Entrepreneurship and poverty reduction in Africa. The article aims to provide valuable insights into studying the close relationship between the concepts mentioned above.

The selection of this methodology sought to amass qualitative data as much as possible to shed light on the positive implications of startup-ups on economic development, reduction of unemployment, and, most importantly, poverty alleviation in Africa. According to Farr (2008:1), qualitative research is vital because it provides a broad range of portrayals of different individuals interpreting a specific investigation topic.

This article is outlined as follows. The second section covers the literature review and presents the current knowledge and understanding of the relationship between Entrepreneurship and Poverty reduction in general and in Africa. The third section that covers the conceptual Framework provides details about Entrepreneurship, Poverty, and poverty reduction in Africa. The fourth section that represents the theoretical framework highlights the perspectives of poverty alleviation through Entrepreneurship support, including the remediation perspectives, the reform perspectives, and the social and plight perspectives.

The Conclusion representing the fifth and last section covers the study's primary aim, the findings, and the recommendations drawn from the research outcomes.

2. Literature Review

According to a study by Olayinka, Olusegun, and Babatunde the relationship between Entrepreneurship and Poverty reduction in Nigeria showed that Poverty is among the significant concerns of the Nigerian government. Despite the strong influence of the Boko Haram sect in the country with all its implications, the terrorist organization is not the foremost responsible for the Poverty widespread in the economic lungs of the African continent. They pointed out that constant looting of public funds through corruption constitutes one of the fundamental issues for much socio-economic unrest in the country and Poverty in particular. Additionally, they showed that the level of Poverty in Nigeria is among the highest globally, even though the country is among the primary producer and exporters of oil. Moreover, their research pointed out the lack of employment opportunities, lack of suitable markets for goods and services in the rural areas, sacres land and capital availability for the population, and scanty access to education, health, sanitation, and water, among the causes of Poverty in Nigeria (Olayinka, Olusegun, & Babatunde, 2015). Furthermore, they highlighted the positive and significant relationship between Entrepreneurship and poverty reduction in the state of Enugu in Nigeria. Finally, they concluded that entrepreneurship is a crucial driver of economic development and poverty alleviation. They recommended that a focus should be directed on entrepreneurial training both by the government and the private sector, cooperation between small company entrepreneurs and research institutions, well as necessary funding to achieve technological development and transfer of knowledge and skills between research centers and small businesses and vice-versa (Olayinka et al., 2015).

Another study conducted by Nashir and Khan regarding the nexus between Entrepreneurship and poverty reduction found that there is a positive and significant nexus between Entrepreneurship and poverty alleviation since entrepreneurship is proved to be one of the most relevant ingredients for economic development, social uplifting, and poverty reduction. Their paper revealed that the World Bank cited entrepreneurship as one of the tools through which those who live in Poverty or below the poverty line can use to get themselves out of the Poverty trap and achieve financial and

social stability without relying upon their levels of skills or education to challenge highly skilled or educated people for employment. Researchers also found that entrepreneurship drives competition, innovation, economic development, unemployment reduction, and significantly participate in the betterment of a country and emphasize the fact that entrepreneurs are the key drivers of the economy since they come up with new ideas, and new skills and stimulate the economic environment by creating small and medium businesses that employ about 45% of the workers in developing countries, thus giving them the chance to move from unemployed and poor people to significant contributors to the overall economy. More importantly, their study revealed that entrepreneurship has a significant and positive role in the improvement of the productivity of a nation and hence constitutes a key asset for governments to promote the performance of their economies by incentivizing entrepreneurs to energize the economy (Khan, Nashir, Submitted, & Policy, 2017). Kareem (2015), who conducted a study of the impact of entrepreneurship on poverty alleviation, found a significant relationship between entrepreneurship and poverty alleviation in the state of Ogun in particular and in Nigeria in general (Kareem, 2015).

Additionally, he found a correlation between the incomes generated through entrepreneurship and poverty alleviation. He then deduces that entrepreneurship has a significant and positive impact on income improvement and effectively addresses poverty reduction by improving the standard of living in Ogun state in particular and Nigeria as a whole. Moreover, the researcher noticed the complaints of the investigated people of the Ogun state on the tax burden that constitutes a break for small entrepreneurs, hence deducting that government should grant tax holidays to small entrepreneurs to encourage them to thrive in the entrepreneurial journey. He concluded that the Nigerian government should promote entrepreneurial education and give a certain level of tax relief to small and medium-size entrepreneurs to boost the economy, encourage job creation and poverty alleviation, and create a better standard of living for Nigerians (Kareem, 2015).

A study conducted by Teymorpor, Nazari & Emami (2012) in Mardan (district of Pakistan) found about a 60% relationship between social entrepreneurship and poverty alleviation. An econometric study (R=0.601) highlighted that poverty reduction efforts positively impact social entrepreneurship's actions and that government intervention has a positive and significant effect on social entrepreneurship. Their study concluded that entrepreneurship constitutes a powerful engine for economic development and poverty reduction in the district of Mardan in particular and in Pakistan in general (Teymorpor, Nazari, & Emami, 2012).

A study conducted by Olson-Buchanan, Bryan, &Thompson (2013) showed that entrepreneurship is a significant economic contributor both at the micro and macro levels. They explained that at the micro-level, entrepreneurship significantly improves the income of individuals, thus substantially improving their purchase power and hence their standard of living by allowing them to consume more and save more. Researchers found that entrepreneurship plays a significant role in job creation on the macro level compared to other private or public sectors. More importantly, their investigation sheds light on the importance of entrepreneurial activities as a vector of self-employment, thus a critical factor in lowering the unemployment rate by boosting productivity and growth within a country (Olson-Buchanan, Bryan, & Thompson, 2013). They emphasized that entrepreneurship contributes to the nominal gross domestic product. Thus, they suggested that entrepreneurial activities are crucial for economic development, job creation, and poverty reduction.

According to Lin & Khashru (2019), entrepreneurship has close ties with economic development, income improvement, and poverty reduction in the world field's poor areas (Lin & Khashru, 2019). In addition, their paper revealed the close link between entrepreneurial activities and improvement of living standards, thus concluding that new entrepreneurship initiatives can be a powerful engine for economic growth, job creation, and social and economic upliftment in Bangladesh (Lin & Khashru, 2019).

Asitik & al. (2016) found a strong relationship between entrepreneurship and poverty reduction in Ghana. Nevertheless, they pointed out that the lack of proper infrastructure is a significant obstacle to market access and recommended effectively addressing the issue for entrepreneurial activities to become a workable way for poverty alleviation in Ghana (Asitik, Sharpley, & Phelan, 2016).

Thus, all the reviewed perspectives are essential in explaining the relationship between entrepreneurship and poverty reduction. However, the literature on Poverty and entrepreneurship revealed failures in the positive and significant impacts of entrepreneurship on poverty alleviation.

Lack of entrepreneurial education, lack of proper infrastructure for market accessibility, scarcity of funds, and insufficient government incentives such as tax reliefs to encourage young entrepreneurs to start, thrive, and enjoy the entrepreneurial journey are among the significant causes. A call for research conducted in this direction must be researchers' new focus on Poverty and entrepreneurship through other angles, such as remediation and social and plight perspectives.

3. Conceptual Framework

3.1 Entrepreneurship

Entrepreneurship as a concept involves the creation of new institutions, employment, incomes, and resources with limited resources (Ali & Ali, 2013). Entrepreneurship can be viewed as an individual or group activity that aims to identify and seek a solution to a problem for business gains or societal survival (Kuratko & Hodgetts, 2004; Coulter, 2014; Bagheri & Pihie, 2010; Akhuemonkhan & Raimi, 2013).

3.2 Poverty

Poverty refers to a low or lack of necessities at a low-income level (World Development Report, 1990). Poverty can be measured by assessing life expectancy, infant mortality rate, school enrolment, number of persons per physician, income level, malnutrition, access to social services, and social and political status (United Nations, 2004).

3.3 Entrepreneurship in Africa

Entrepreneurship development in Africa is slow as most entrepreneurs are found in the informal sector with limited resources to make advancements or survival in their business (Hussain & Bakar, 2014). They claimed that most African entrepreneurs are presented with many hindrances in their quest to earn a living for themselves and their families. Furthermore, they explained that the lack of support from family and friends and governments is due to their activities being perceived as unregulated and unprofitable.

Moreover, most innovative African entrepreneurs give up creative business ideas to large corporate firms and focus on informal trade, which is attractive and requires fewer resources (Hussain & Bakar, 2014). Furthermore, entrepreneurship in Africa is seen as a less formal business activity that explores learned ideas to create wealth but is characterized by the poor who wallow in absolute poverty. Thus, Africa needs to create opportunities for the poor entrepreneurs to access capital, resources, knowledge, and freedom and support their businesses to create new jobs, opportunities, and initiatives that increase income and a higher standard of living.

3.4 Poverty in Africa

Over the years, Africa's poverty level has increased due to certain defined factors. Besides low-income groups and poor living standards, Poverty in Africa is accompanied by a weak government and the inability of the poor to participate socio-economically and politically in the country's life.

Furthermore, systematic violations of human rights and freedoms granted by the constitution, restrictions on access to information and information technologies, and high corruption levels in all power branches make an unattainable decent life for poor people.

4. Theoretical Framework

The most popular research topic reviewed in African literature today is the concept of poverty reduction, as various financial and economic indicators have been linked to its research. Unlike entrepreneurship, the practices have been advanced in the developed world and received support from the public and private sectors. However, entrepreneurship has been poorly practiced and supported in Africa. A literature review revealed five major theoretical perspectives explaining the relationship between entrepreneurship and poverty reduction (Si et al., 2020). These theoretical perspectives have looked at the various impediments responsible for Africa's lack of entrepreneurship initiatives.

4.1 Remediation Perspective

This theoretical perspective argues that Poverty persists in communities due to a lack of capital or resources to fund the entrepreneurial activities of the poor (Sutter, Bruton, & Chen, 2019). This theory further explains that in most developing countries, the poor's capital resources are difficult to access as public and private institutions have put restrictions on capital access to frustrate the poor entrepreneurs seeking funds for their operations (Wu & Si, 2018). They recommended the need for foreign aid, grants, donations, and charities as a source of capital for poor entrepreneurs to embark on business initiatives to increase their income levels and alleviate Poverty. Nevertheless, this theory has been criticized as capital accessed from external sources is mostly misallocated to other private activities that do not financially empower the poor but worsen their poverty condition (McCloskey, 2017).

4.2 Reform Perspective

According to Sutter and Chen (2019), the theoretical remediation perspective emphasizes that creating avenues for the poor to access capital resources is thus not sufficient to facilitate the growth of entrepreneurship in Africa. Sutter and Chen (2019) explained that restrictions and bureaucracies in most institutions and agencies established in Africa impede the growth of entrepreneurship in Africa. The reform perspective reinforces the restructuring of institutions to create and maintain a conducive business environment for entrepreneurship development (Sutter & Chen, 2019).

For example, they argued that the reforms made by institutions and agencies to address the increased cost of business, other payments, taxes, high tariffs, and high utilities constitute an obstacle to entrepreneurial activities. Moreover, land tenure systems, political instability, and a high rate of

corruption in public institutions are significant hindrances to Africa's entrepreneurship growth (Haugh, 2019).

4.3 Social and Plight Perspective

The achievements of institutional reforms to promote entrepreneurship growth in Africa are equally essential but not similarly satisfactory as the psychological and mental upliftment of the perception of the plight of the poor to take advantage of entrepreneurship opportunities independently. Even though institutional enhancements are necessary for entrepreneurial growth, the difficulty of discrimination and abuse of fundamental rights and freedom are obstacles for poor people. Indeed, those barriers are significant factors that keep the poor and underprivileged suppressed in attaining their entrepreneurship dream (Sutter et al., 2017), as is the case of the abuse of females widowed in Africa. Their families stop embarking on entrepreneurs' activities, as is customary, not accepted, as they are perceived as properties gained after the death of their partners (Shaheen, 2016).

Other perspectives, such as learning and change perspective, subsistence, and innovation entrepreneurship, focus on developing the poor's entrepreneurial ability through learning and innovations to take advantage of market opportunities (Tomizawa et al., 2019). Entrepreneurial activities create new jobs and better income levels that enable the poor and deprived to satisfy their basic needs.

5. Conclusion

This article aims to seek the Link between Entrepreneurship and poverty alleviation in Africa based on the aim of this article. The study found that Entrepreneurship has a positive and significant impact on poverty reduction; hence, governments in Africa must promote Entrepreneurship training and incentivize current start-ups to empower youths and women to tackle effectively and efficiently the widespread Poverty in the cradle of humanity. The paper suggests that with a favorable environment for Entrepreneurship, outstanding contributions can be made to effectively address the rampant Poverty by tremendously reducing the employment rate of youths and women across the African continent.

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The Effect of Cluster Policy on Industrial Policy: The Turkish Experience

Esma Akyüz[a]

[a] Construction Machinery Cluster, Ostim Organized Industrial Zone, Ankara, Turkey

Abstract

The purpose of this paper is to examine the effects of cluster policy on industrial policy in Turkey. All countries have specific economic conditions, level of development and policies. There are several factors which determines the improvement and development level of countries such as; economic, political, cultural and demographical conditions. However, the level of development of a country can be increased by an industrial policy and it can change the destiny of a country. Each economy has different sectorial dynamics and it can be trigger by cluster policies. In this study, the effect of cluster policy on industrial policy is examined with the Turkish experience.

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1. Introduction

Industrial Policies are the main drivers for economic development of the countries. A country could have a chance to possess a strong position in competitive world market since it has a developed industry and high level of manufacturing ability. Otherwise, countries will sentence to exploit by the stronger ones as throughout history of human being. Cluster policy is one of the strong tools for development of industrial policy. Cluster Policy has significant positive effects to the industrial policies of the governments. Industrial Policy could be seen as the control room of giant robot of government for serving to the industry. However as all machine it needs a power button to turn on the robot. Cluster policy is the dynamo of that robot which triggers all the parts of it. Therefore, the industrial policy could not move without that dynamo which is Cluster Policy. The cluster policy is increasing the efficiency of the industrial policies of countries.

In this study, the effect of cluster policy to the industrial policy in Turkey is analyzed with the examples of clusters. In first and second part, definition of industrial policy and the industrial policy of Turkey is examined over historical context. The relations between industrial policy and cluster policy are reviewed in the third part. In the following parts, clustering policies in Turkey and the effects of the cluster policies to industrial policy are observed with the help of examples from Turkish Clusters in order to show how cluster policies increasing the efficiency of industrial policies of a country.

2. What is Industrial Policy?

There are several definitions of Industrial policy in literature. Foreman-Peck and Federico (1999) define industrial policy by European perspective as “every form of state intervention that affects industry as a distinct part of the economy” (Foreman-Peck and Federico, 1999, p3). As Yülek (2018) defines general industrial(ization) policy as “Industrial policy primarily aims at changing the production structure of the economy in favour of the manufacturing industry by channeling the government’s selected budgetary and non-budgetary resources and by channeling labour towards the manufacturing sector.” Industrial Policy is like a wand which increased the level of welfare and power of competitiveness of countries especially in east Asia. The countries which use

CONTACT Esma Akyüz esma.akyuz@ostim.org.tr

the industrial policies are developed economically with a high speed curve.

Every state make annually development plans in order to increase the welfare level of its citizens and country. One of the main elements of industrial policy is innovation. Innovation is a very popular term aims to find new product or service solutions with low cost and high quality which causes a feeling of new experiences in the society. But the real question is who can do the innovation? Innovation can only be done by entrepreneurs and firms. According to the economist Ronald Coase (1937) in "Nature of Firm", a firm is an organization as "entrepreneur coordinator" while individuals are only organisms. He means entrepreneurs as the coordinators of the firms which are capable of doing processes, duty, job and profession more influential than the price mechanisms do. In addition to this, famous economist William Lazonick emphasized that, innovation can be done by entrepreneurs and firms with strategizing, financing, and organizing. Nevertheless, it does not mean that every firm is innovative.

Firms are the main drivers of the economies for countries. Firm is an organization which gathers several abilities under same roof targeting with producing a service or product together. For instance, a boss could not have all abilities to produce and market construction machinery by himself. However, it will be possible to produce and marketing the machinery with human resources that have knowledge on engineering, marketing and financing. The greatest improvement in the productive powers of labor, and the greater part of the skill, dexterity, and judgment with which it is anywhere directed, or applied, seem to have been the effects of the division of labor (Smith, 1776 "The Wealth of Nations). Therefore, the productivity is going to be increase as a firm with the division of labor and by learning of a team. As Coase claims, productivity and profitability can be increase with planning and coordination. Individuals may do one unit of work, while a firm can do 10 units of works possible with a team because firms have competences different from individuals. Therefore, countries need firms because firms are the main players of the economic games of countries. Besides there is competition in the market and competitive markets feeding with innovative firms.

Firms are the social organizations which can execute several of processes at the same time. As William Lazonick emphasized that; strategizing, financing and organizing are there important steps for firms. Firstly, firms are improving strategies for the product and the technology that they are planning to compete with its competitors. Secondly, firms are financers for the new technology investments in order to improve its product or service aiming with a profit in future. Lastly, firms have organization of all departments in order to transform a product as marketable. However, there steps are not enough to became an innovative firm.

In the late eighteenth century, Britain started to have a stronger position in world economy with mercantilism. At these years, Britain reach the raw materials and with value-added production system with mercantilist approach so they became the industrial leader in the world. They took the cotton as raw material and they produce textile with an innovative idea and export to other countries. In addition to this, this innovative production idea also improved a skilled labor force to Britain as with strategic view. Besides, they organize an on job apprenticeship learning programs which can give the opportunity of transferring the learning to next generation with adding up to new learning. Before the World War II, the mass production system of Britain is started to decline and Italy started to rise with its small firms and craftsman entrepreneurs on textile sector. The Italian government supported to the small firms and it cause the emerge of entrepreneurs and innovative firms as financial incentives. They started to improve "flexible specialization" which empowered the country economy with entering various sectors. Afterwards, USA started to rise with the managerial corporation as strategic control. Then Japan started to rise in the 20th century, with the financial commitment between innovative firms and financial institutions also showing as an organizational integration. Organizational integration can be defined as the extent to which distinct and interdependent organizational components rapidly and adequately respond and/or adapt to each other while pursuing common organizational goals (Barki and Pinsonneault, 2005, Lawrence and Lorsch, 1967).

Learning in the process and putting all this cumulative know-how as adding up is very important part of innovation. Though, it is an uncertain learning and process for a firm to create a new product or solution for a society. The innovation process is uncertain because, by definition, what needs to be learned about transforming technologies and accessing markets can only become known through the process itself. (Lazonick, 2003) This uncertainty come from the nature of the innovation because nobody knows what the new technology and product will bring to society and weather being acceptable in the market and bring profit or not. The process brings its learning and improvement with uncertain results. Learning is a social activity that renders the innovation process uncertain, cumulative, and collective (O'Sullivan 2000b) By this definition, the innovation processes not only an uncertain process but also a cumulative and collective process. Innovative firm need a cumulative learning at the same time with its human resources with different abilities. Cumulative learning could not be done alone at once and learning of today will be a step and bridge provides opportunities for new learning of tomorrow. Learning is not a linear process in innovative firms. Learning of technology, production, organizational and marketing process needs to add up the know-how layers in order to create an innovative product.

Therefore, all countries have to shape a strong industrial policy in order to catch-up the other competitive countries in world market. Thus, these kinds of tools such as innovation and entrepreneurship, industrialization and labor force could be seen as important factors of shaping industrial policies of countries. However, there is also some other policy which effects the industrial policies of countries such as clustering policy.

3. Industrial Policies of Turkey in Historical Context

Turkey's industrial policies have shown periodic variations. Periodically, the differences in policies cannot be considered independently of the developments in the world. For instance, the effects of the Industrial Revolution in 18th century, emerged with the 1839 Tanzimat movements in the Ottoman Empire and various facilities such as shipyards and ironworks were established. In the 1930s, the first industrial breakthrough of the Republic took place. Likewise, after the World War II, the protectionist policies that showed themselves all over the world gained importance in Turkey as well. As a result of these conditions, the State Planning Organization (SPO) established with the 1961 Constitution in Turkey and development plans started to made and implemented by SPO.

With the First Five-Year Development Plan put into practice in 1963, industrial investments gained momentum by focusing on non-agricultural industry. In the following periods, development plans were created every 5 years in order to increase the incentives to be made to the industry and the organized industrial zones. (Doğan, 2013:217) With the Customs Union agreement that entered into force in 1996, Turkish companies gained a competitive structure and in 1999 Turkey became a candidate country for the European Union, increasing the harmonization of the industry with the EU. In this direction, the investment profile of the industrial sector has changed and the development strategy of the information age has gained importance. After the crisis in 2001, a less risk policy was preferred and it was aimed to present export-oriented goods especially to Europe. The importance given to R&D has gradually increased and a more competitive industry has been targeted. Moreover, the importance given to R&D has gradually increased and a more competitive industry has been targeted. Although the industrial sector, which stagnated with the 2008 Global Crisis, started to strengthen with the incentives, the growth rate shows fluctuations still today. Industrial policies are related to having a high innovation level and innovative firms are the main drivers of the economies of the countries. Furthermore, every country needs innovative firms and targeted to rise empower their economies with innovation according to the history. As I mentioned above, clusters should be seen as the incubators of entrepreneurs and innovation and I will analyze the clusters experiences in Turkey which triggers innovations, learning, export and technology.

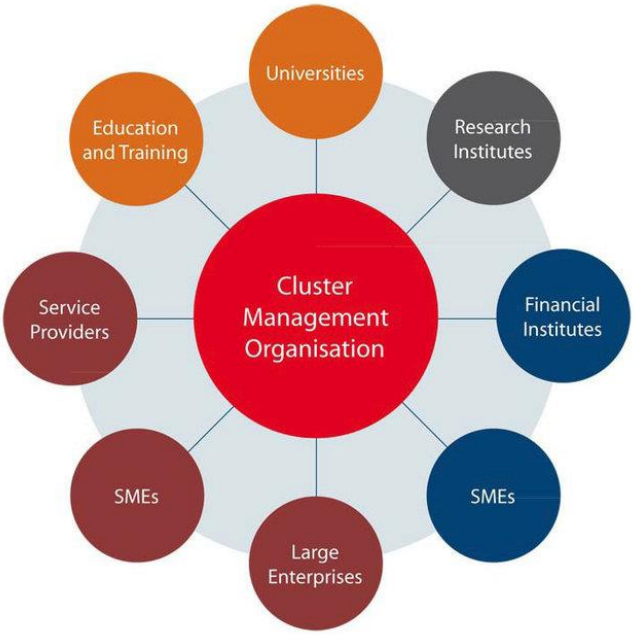
In conclusion, the main elements of increasing the welfare of the country is related to the level of innovation, level of industrialization, level of technology, level of employment, level of value adding manufacturing and level of export. The industrial policy aims to increase these factors in order to have a strong and resistant economy. These factors can be increase by the implement of cluster policies.

4. Clustering: A Tool for Development of Industrial Policy

The concept of cluster is defined in the simplest way as a group consisting of various economic units. (Henfer, 2009) According to a more comprehensive definition, clustering; It is expressed as the geographical concentration of companies, suppliers, service providers, companies in related industries, and institutions such as universities, standards institutes, trade associations that compete in a certain area and cooperate at the same time, interact with each other.

As seen in the definition above, clusters contain many economic units and institutions. Therefore, in order to fully understand the concept of clustering, the economic units and institutions within the cluster should be clearly stated.

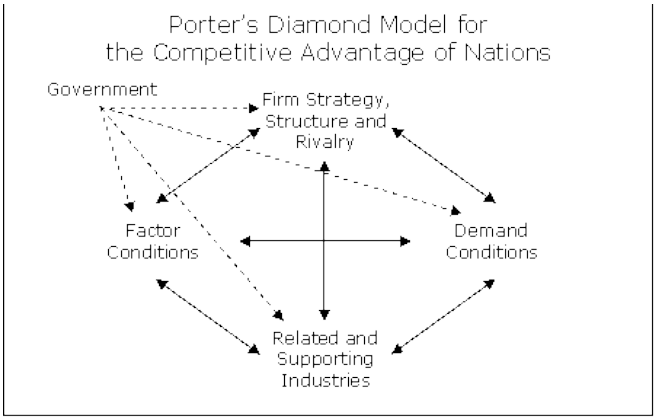
Figure 1. Cluster management organisation



Although the concept of clustering has recently come to the fore with M. E. Porter's book The Competitive Advantage of Nations published in 1990, it actually has a long history. As a matter of fact, one of the first studies that contributed to the emergence of the cluster concept was carried out by Von Thünen (The Isolated State) in 1826. In his study, Von Thünen

examined the factors that cause agricultural production to gather around a certain city center and stated that the main reason for this situation was transportation costs. It is the first time that industrial activities are gathered in certain regions; it was studied by A. Marshall (Principles of Economics) in 1890. In his study, A. Marshall stated that the companies gathered in certain regions benefit from a common infrastructure and facilitates the flow of information between these companies, leading to various externalities, giving companies the opportunity to expand their activities. With the expansion of the activities, the region's becoming more attractive in terms of capital and labor leads to the concentration of the said production factors in these regions, and as a result, the prices of the production factors decrease and/or their productivity increases. The decrease in the price of the factors of production and / or the increase in their productivity; it provides an economic benefit to the companies operating in the region in the form of a decrease in unit costs compared to the companies outside the region. In other words, according to A. Marshall, concentration of economic activities in certain regions positively affects economic growth and welfare by providing cost reduction and/or productivity increase. Almost a century after A. Marshall, M. E. Porter, in his study, examined the concept of clustering in detail and explained the factors affecting the economic performance of clusters within the framework of the "Diamond Model".

Figure 2. Porter's diamond model for the competitive advantage nations



Source: Porter's Competitive Diamond (Porter, 1990)

In recent years, clusters are thought as essential mechanisms for pioneering innovation, supporting growth in specific sectors and facilitating the industrial development. Clusters can be created either through a bottom-up approach, that is by firms and agents that already collaborate and have established relationships, formal or informal, or a top-down approach, by a specific policy mix, in the context of an overall industrial policy (Boekholt, P. 1997). Clusters can be occurred by the private sector or non-governmental organizations and at the same time it can be planned as an industrial policy by a government. Clusters can direct the industrial policies of a government with the power of cooperation.

Clustering has become a frequently used as an industrial policy tool in many countries, as it is an approach that increases national and regional competitiveness. The relationship between industrial policy and cluster policy is like a helix which could not be sever from each other. This helix can provide a chance to live under a welfare state conditions to societies and these conditions could be possible with a strong economic growth level and high income level of the country. Therefore, citizens expect their governments to provide them with a prosperous environment. On the other hand, governments also try to provide an environment where the quality of the services they provide to their citizens and the level of economic welfare are high. It can be possible to have a right industrial policy planning for a state and to balance this demand and supply; governments need to set various policies. Among these policies, one of the most powerful issues that can increase the economic income level of the country is industrial policies. A country that plans its industrial policies correctly is stronger and has a power to say in the world. There are different policies that can affect industrial policies. Cluster policy is one of the main factors affecting industrial policy. Increasing the power of industrial policies is through planning cluster policies. Clustering policies reveal and develop the strengths of countries by highlighting their sectorial capabilities. All actors of the sector focus on the same goal within the same value chain and there is very little chance of failure with clustering. Of course, this does not mean that clusters never fail. There are many clusters that fail due to lack of management. Because the most important block of a cluster organization is the structure of its management. The main factor that leads clusters to success is actually having a correct management structure. Therefore, it is very important planning the structure of the cluster correctly. First of all all clusters has a Cluster Management team compose of Board Members and Cluster Coordinators (managers). They need to think about what is best for the Cluster members and how to improve the sector in belonging region. Cluster management related such tools as; mission/vision, strategy, human resource, finance. Clusters could be establish on some legal basis forms such as; association (non-profit or for-profit), private limited company (LLC), joint stock company, hybrid forms (mix of association and public or private limited company) and foundation. Irrespective of what legal form is selected for the cluster, it is important to determine and decide on a formal cluster management structure. This involves determination and agreement on the following issues: Structure and composition of the cluster governance structures, Cluster management roles and responsibilities (who does what and who is responsible for what), Cluster management (how the cluster management structure will interact with cluster members on a day to day basis). The issue

of cluster management has also been underestimated, as Porter's cluster approach does not sufficiently take into account that cluster management is an important success factor. Most of the cluster programs that flourished in various parts of the world now focus heavily on the proper establishment and development of cluster management. In recent years, the issue of excellence in cluster management has come to the fore and clear evidence has developed that the tools developed in this context play a decisive role for the successful development of clusters. Cluster excellence is determined by three key dimensions: framework conditions, cluster actors and cluster management organization (Christensen T, Kôcker G, Lämmer-Gamp T, 2011).

Clusters has a unifying role between all players in value chain such as raw material suppliers, manufacturers, maintaining service companies, stakeholders, sectoral NGOs, educational and governmental institutions. All these cluster participants and actors are starting to think together to create new solutions fot sector problems and they also participate the need analyzing and networking activities of the cluster together therefore they feel themselves closer. In addition to these, clusters organize lots of activities such as training, consultancy and matchmaking events with trade delegations abroad. It is a very proper platform that all the actors and members of the cluster to create and/or strength their relations. An SME which is a member of cluster could be a supplier of an large scaled member company owner just with sitting next seat to him/her in a long hours flight by plane during cluster trade delegation visit to abroad. In addition to this, clusters creating network with other clusters and between their members in other countries and this is also a unifying role of clustering.

There are several success stories of clusters in different countries such as Silicon Saxony, Californian Wine Cluster and

Italian Leather Fashion Cluster. First of all "Silicon Saxony" is Europe's largest microelectronics cluster and the fifth largest worldwide. Every third chip produced in Europe bears the label "Made in Saxony." In Dresden, GLOBALFOUNDRIES, Infineon Technologies, and – starting in 2021 – Bosch operate some of the most modern semiconductor production sites to be found anywhere on the globe. A unique concentration of companies providing extensive expertise in the sectors micro and nano electronics, organic & flexible electronics, 5G, MEMS / sensors, and automation technology is found in the region. Renowned research institutions such as the Fraunhofer Institute for Photonic Microsystems IPMS in Dresden are working on the technologies of tomorrow. With "Silicon Saxony e. V.", Saxony has one of the most successful branch associations in Europe. (www.business-saxony.com) To look for another success stories, Porter basically highlights two important cluster formations in almost all of his works. The first of these is the cluster of wine producers in California, USA. Another is the cluster where leather fashion production in Italy is concentrated. Californian Wine Cluster. The California wine cluster is a good example of this. This cluster includes 680 commercial wineries and several thousands of independent (wine) grape producers. There is also a wide range of complementary industries that support both winemaking and grape growing, including vaccines, irrigation and harvesting equipment, casks and labels, specialist PR and promotion companies, and numerous wine advertisements targeting the consumer and commercial audience. However, local institutions such as the world-renowned viticulture and winemaking program at the University of California at Davis, the wine institute, and special committees in the California senate are all wine-related hosts. The cluster also has weaker links with other California focuses of agriculture, food-restaurant and wine tourism (Porter, 1998a:78; 1998b: 201).

In addition to the California example; consider the Italian leather fashion cluster, which includes the best known shoe companies such as Ferragamo and Gucci as exclusive suppliers of shoe parts, machinery, molds, design services and tanned leather. Various types of leather goods (connected by common inputs and technologies) and different types of leather shoes (with overlapping channels and

It consists of interrelated industries, including manufacturers (linked to technologies). These industries use common marketing media to compete with similar images in similar customer areas. An Italian cluster related to textile fashion; manufactures complementary products, including clothing, drapes and accessories, often using center channels. The extraordinary strength of this cluster is due, at least in part, to the large number of connections and synergies employed by the participating Italian businesses (Porter et al. 1998a:79; 1998b:200).In particular, the studies on the region called the third Italy are actually shown as the most important success example of clustering. Third Italy; It is used to express the regions between the industrial zone in the north-east of Italy, which is based on the mass production of standard goods, and the underdeveloped southern region. The industrial structure in these regions is generally based on small and medium-sized enterprises that specialize in the production of traditional sectors such as textiles, ready-made clothing, shoes and leather goods, ceramics and machinery for these sectors based on traditional technologies and low competitive labor costs. It has been observed that these companies, which continue to operate, have adapted very well to the changing market conditions after the 1970s. Thus, these companies have achieved great competitive success after the 1970s by clustering among themselves and combining traditional and computer-aided new technologies with qualified workforce (Ferri and White, 1999:99–105).

As a result of clustering, the industrial policies of the countries begin to change and take a better shape together with

the developing sectors and regions. The demands of sectoral companies, educational institutions, public institutions and non-governmental organizations cannot be ignored in the shaping of industrial policies. Clustering is where all these actors meet and influences decision makers with their demands. Governments care about the demands coming from the actors of the sector and try to develop policies according to them. Generally, governments do not have a chance to know the dynamics and requirements of the sector better than the sector players. Thus, industrial policies and clustering policies are in a strong relationship that interacts with each other.

5. The Turkish Clustering Experience: OSTIM Clusters

The concept of clustering entered Turkey at the beginning of the 2000s and quickly became one of the top of the agenda with the awareness-raising activities carried out by various institutions and organizations. Clustering studies, which started to become widespread and find application areas in Turkey in the early 2000s, have shown a serious increase especially in the last 10 years. It was stated in the Ninth, Tenth and Eleventh Development Plan of Turkish Republic that clustering would be supported, and subsequently, measures to support clusters by the public were put into practice in annual programs. (online: https://www.sbb.gov.tr/kalkinma-planlari/) In summary, the inclusion of clustering in Turkey's last three Development Plans shows that the steps taken in clustering have been maintained and developed. In this context, clustering, like innovation, has managed to take its place as a fixed range in the field of national development. Although national coordination cannot be fully achieved in clustering still, players at the national scale; stands out as The Ministry of Industry and Technology, the Ministry of Commerce and the Ministry of Development.

As it is stated above, the clustering can be organized naturally by regions and private organizations support. Ostim Organized Industrial Zone is one of the best examples which proof the effects of cluster policies to industrial policies of Turkey. It has started with the competitiveness analysis study carried out in 2007 is the basis of the clustering studies initiated by the Ostim Organized Industrial Zone. Ostim established the first cluster which is Construction Machinery Cluster (ISIM) in 2007 with the collaboration of Cankaya University as a result of the competitive sector analysis. Thereafter, OSTİM established Ostim Defence and Aviation Cluster (OSSA), Ostim Medical Industry Cluster, Ostim Renewable Energy and Environmental Technologies Cluster (ENERJIK), Anatolian Rail Transportation Systems Cluster (ARUS), Ostim Rubber Technologies Cluster and Ostim Communication Technologies Cluster.(HTK). Nowadays, OSTİM has seven clusters in seven sectors as a regional and sectorial development model. OSTİM forces the Ministry of Trade of Turkish Republic in order to prepare an incentive program which supports only clusters in Turkey. As a result of the social pressure of Clusters which consist of hundreds of Industrial companies for each cluster under OSTİM, the Ministry of Trade of Turkish Republic started to prepare a special incentive program which name is Increasing the International Competitiveness (URGE) Projects with the contribution of OSTİM. URGE projects started to run at the beginning of 2011 with 3.000.000 million USD budget. Construction Machinery Cluster (ISIM) execute one of the first URGE projects in Turkey in 2011 and at the end of the project the results were very satisfied for Ministry of Trade and also for member companies. As Akyüz (2017) shared as a ISIM project manager of URGE, at the end of the first URGE project, the export rates (export turnover based) of companies increased up to 121%, the number of new export markets had increased up to 97% and the level of employment rate up to 94%.(www.ostimgazetesi.com) It shows us clearly that a cluster policy could direct the industrial policy positively. As a matter of fact, the industrial polices aims to increase the export levels and the employment levels of countries in order to become a welfare state. Therefore, we can say that cluster policies can increases efficiency of Industrial Policies as mentioned with an example above.

On the other hand, OSTİM Clusters are started to force The Ministry of Science and Technology of Turkish Republic to plan and implement a special incentive for Industrial companies under clusters. As a result of this social and industrial pressure of clusters, The Ministry of Science and Technology of Turkish Republic created Cluster Project program which supports a cluster up to 25.000.000 Turkish Liras budget. These programs targeted to establishing new clusters in strong sectors in different regions of Turkey. Nowadays, ENERJIK cluster executes one of the first projects with the support of The Ministry of Science and Technology of Turkish Republic. ENERJIK cluster aimed to establish a common Wind Tribune with its cluster members at the end of the project. If the project is going to be successful at the end, Turkey will develop learning for industry and technology also in renewable energy sector.

Besides ARUS has a different experience about giving a new way to public industrial policies of Ministry of Transportation Turkish Republic. This cluster forced the Ministry of Transportation of Turkish Republic in order to put an offset in the tenders of high speed train wagons as public procurement. Few years ago there was a tender of government to buy 324 high speed train wagons. As you can guess, the tenders are generally gained by Chinese or other huge companies in this sector. However, there was ARUS cluster which is going to object to this system of tenders in the last tender of Ministry of Transportation of Turkey. This cluster and OSTİM forced the ministry to put a 51% offset rule to the tender. This offset force the foreign company who wins the tender to buy some parts of those wagons as local (from

Turkish local companies) up to 51%. This will bring the technology learning and developing the ability of the companies in Turkey. It means the foreign company should buy up to half from Turkey and it will remain the value-added profit in Turkey which is seriously important for a country.

The last experience belongs to the Communication Technologies Cluster (HTK) about producing the 5G Technology. This cluster established in 2017 and it has over 150 members operating in Communication Technologies. This cluster aimed to produce 5G technology with the same time with the worldwide competitors. This target is become an industrial policy of the government as a result of this cluster initiatives on this technology. Information and Communications Technology Authority of Turkey could not be remaining unconcerned to this subject and they support the cluster and development of 5G technologies. Furthermore, it shows us a cluster can direct an industrial policy of an country with adding this subject to its implication plans. Industrial Policies are targeted to increase innovation, technology, learning and export for increasing the income level of society. As a result of the cluster policies, new sectors will emerge in Turkey and innovative entrepreneurs will increase with these kinds of developments.

6. The Effects of Cluster Policies on Industrial Policies

In addition to these, there is a risk for every country and companies to catch the new technologies in order to survive in this high competitive market game. In the history of human being, there are several inventions made by inventors and some of them stayed as just an invention and some of them turned to innovation. Innovations create demand in the market and makes money because they give to society a feeling of a new experience. Every Innovation has big effects and changes in habits of society whereas inventions not always have these result. Joseph Alois Schumpeter is the first economist who defined innovation and he has a theory of "Creative Destruction" (Schumpeter,1942). This theory claimed that innovations comes by itself in a time, creates productivity and destructs old ones. The Schumpeterian view has an evolutional economics approach which is such a perspective is at the core of Schumpeter's analysis of capitalism, just as it is in Marx. "Capitalism . . . is by nature a form or method of economic change and not only never is but never can be stationary" (Schumpeter 1950, p.82). According to Schumpeter, the main feature of capitalism, which is the dynamic structure it exhibits. Capitalism is a proactive system where the capital accumulation process constantly requires new production methods, new forms of industrial organization, new transportation methods and new markets. As a short definition of the "creative destruction" process in which the economic structure is transformed from within, the old one is destroyed and a new structure occurred.

The fundamental new impulse that sets and keep the capitalist engine in motion comes from the new consumers' goods, the new methods of production or transportation, the new markets, the new forms of industrial organization that capitalist enterprise create…the same process of industrial mutation … that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism. It is what capitalism consists in and what every capitalist concern has got to live in…Every piece of business strategy acquires its true significance only against the background of that process and within the situation created by it. (Schumpeter 1942), Capitalism, Socialism, and Democracy: 82–84) As Schumpeter's view, "Evolutional Economics" view is gaining inspiration from Darwin's evolutionary theory. Darwinian principles said that the one who adapts best to the environment will survive. It is not about being too strong, it is just about being fast adaptation to new ecosystem and new ideas. As Schumpeterian approach, you will bring innovation to market and it changes the sector and industry. Therefore, we can clearly see there are several industrial cycles even in the near history. For instance, there was beepers (pager phone) as an important technology for communication at the end of 1980s in Turkey. People especially business man bought that device and generally men carried the pager by attaching it to the belt around their waist. The device had given a beep when any people called you and it can also possible to send very short text messages as 2 words. Few years later, mobile phone came to Turkish Market and it started to spread rapidly in the society for use. The mobile phones destruct the beepers suddenly. Cassettes are another example which is destructed by music downloads such as mp3 and mp4s. Rental Films were very famous 10 years ago but now there is video streaming subscription service such as Netflix. Moreover, the issue of renting a movie cd has long been forgotten. Besides, alarm clocks, cameras, calculators, telephone directories and old line house telephones are already buried in the ground with the innovation of the mobile phones and applications.

Innovative technologies and goods can replace the old ones but it does not only harm to the old product or technology. It has also negative affects to the company owners, staffs in the company, suppliers and sub suppliers of that company also. For instance the stores in shopping malls could face a threat of bankrupt with the online stores e-buying systems. As a result, the owner of the store will close his store and the workers of that store will lose their job and the product suppliers will lose their customer and the producers of the products could lose their customer again.

To sum, as Schumpeter's "perennial gale of creative destruction" of capitalism, always harms the old technologies and creates new technologies. These technological paradigms increase productivity. Productivity increases the innovation

and then economic growth occurs. Capitalism creates a high motivation environment than Socialism. For instance, USSR was a Socialist regime and could not have a strong and successful economics system. On the other hand, western countries which have capitalist system are more successful than USSR and had a great growth than other countries.

As several economists in the history stated that entrepreneurs and firms are driven of the economies because of their creative and innovative view. However, it is not easy to become an innovative firm. The firms are trying to become more competitive in world market and they tried to make some innovations. According to Schumpeter, innovation has different types not only for products but also for processes, organizational side and marketing side. There are several international brands which gained success and money with making innovations on these innovation types. According to this view, Turkish companies should be try to be more innovative in these titles in order to create world brands. Innovation can be seen as a way to reach the success to new world market and an ability to adopt to the new technologies which is changing too fast. Otherwise you have to be going out of game with the "Creative Destruction".

In history, there are several thoughts about economic development models especially innovation. German Economist Frederick List who led Germany to catch up England and also founder of National Innovation System. He has an important work related with Political Economy of the National System (1841). In the first part of 18th century, England had been taken the dominance in production and value-adding to products with their developed industry. Unfortunately, other countries had fallen behind of England especially in producing value-added products. Germany was also at behind in these years. Then he led Germany increase with his approaches and arguments about new innovation approach. Germany listen him and he also became popular. I am going to examine the List's new innovation approach according to his arguments.

One of List's arguments is about countries can improve an industry under the protection of state intervention. For instance, England has become a world leader in textiles by developing its textiles industry with the state intervention protection. List's second argument is about buying the raw material from abroad and then after value adding with processing and selling it to abroad. For instance, British bought cotton as raw material from poor countries and after spinning, weaving and processing it became a clothing product. Then they sold it to abroad and it is value adding ability. They may be able to buy as a 2 USD/per kg of cotton but they can sell it to abroad as 500 USD/unit with a known brand of UK. This was how colonialism began. Furthermore, the value-adding profit remains in the UK and it increasing the GDP per capita. Thirdly, List has an argument about protecting small companies until they can be ready to enter world competition. List strongly disclaims Adam Smith's approaches of the free market the invisible hand argument which describes that people will make decisions based on their own personal self-interest and benefits. Furthermore, he emphasize the state should protect infant industries until they become developed. Fourthly, List has an Economic nationalism approach which claims economics should be applied for the welfare and interest of countries. His fifth approach is productive forces of the countries are the pistons of the economic development of the countries. A country can be strong in its productivity with its labor forces also and if a country did not give importance to education of nations and growth its citizens as craftsman, engineers, and technical persons and if they did not give importance to doing a systematic R&D then how can they became an innovative nation and state of art. His last argument is about the productive forces for that time: educational infrastructure, transportation infrastructure, technical/technological infrastructure, entrepreneurial infrastructure, institutional infrastructure of the state. In Japan's success story we can see this approach as a nation. Japan is a rising star in the world market although they were at the deep at the end of World War II and as victim of nuclear attacks of USA. Because they are successful as a new innovation nation with new innovation approach not only with their innovation policy of government but also with their educational infrastructure, transportation infrastructure, technical/technological infrastructure, entrepreneurial infrastructure, institutional infrastructure of the state. The new innovation approach can make a nation and country as a shining star in the economics field and in the world market. There should be a good interaction between all the players in national innovation system such as government, educational institutions, political systems with feedback and agents about demand and framework conditions. This model is very similar to cluster policy. Clusters should get their members in all the players in values chain of the sector.

There are several effects of the cluster policy to industrial policy of the governments. First of all clusters are shape the industrial policies in the right direction because the suggestions are coming from all the players of the sector under cluster value chain. It means, the data are the real demands which are coming from the field by the cluster interface to the policy makers. Secondly, clusters facilitate the implementation of industrial policies because governments need to have a facilitator. For instance, think that a government wants to increase the innovation and technology level of industrial companies and opens a new incentive to motivate them. However, industrial companies could not have awareness the importance of innovation, a trust to government or self-confidence to prepare the application documents to that incentive program. However, cluster coordinators can motivate them and also help them to do this because they are with them in the field and they already created a trust.

Furthermore, the industrial company owners could be convinced to use some state incentives about innovation with the help of cluster coordinators. Thirdly, clusters can ensure the success of the industrial policies by the implementation in the field with its proactive role. Fourthly, clusters develop the country's industry with gathering all the abilities and the actors in the sector. It gives a chance for a rapid flow of information and technical knowledge between the companies. It speeds up the developing of the abilities and knowledge about manufacturing. In addition to these, cluster policies increase the innovative side of industrial policies with organizing trainings, consultancy programs and market research delegations to all over the world. It provides an opportunity to have a training and consultancy programs about innovation and technology and also enables to see the current technologic improvements in other countries. Moreover, the industrial companies could have a chance to think more innovative way. Besides, cluster policies strengthen the relations between the public and industrial companies with gathering all of the sectorial actors together with the seminars and meetings. There beside, cluster policies are puts forward the strong sectors of the countries in a country and it can raise the awareness of customers in other countries. Therefore, the foreign customers could notice that the country has a strong in this sector if it has a cluster and will be willing to trust and buy from them. So, cluster policies will increase the export rate of the countries. It means the industrial policies about export will be shaped and affected by cluster policies. Cluster policies strength its members with the export rate and opening new markets for them. Thus, the employment level will be increase by the clusters. Cluster policies including increasing the qualified technical workers so it has some studies to increase the qualified human resources. It will also affect the industrial policy of the government about teaching more qualified technical works and need to shape its policies again about vocational education systems. Cluster policies increase the technology and innovation level of the sector so the country needs more technological infrastructures especially in Organized Industrial Zones. Therefore, industrial policies will be affected by this need of change and demand. Then, clusters always try to see the needs and find solutions for sector. Clusters have a power to affect the policy makers with the power of collaboration of the high numbers of members and stakeholders. For instance, a cluster can change a public procurement rule and styles of a government with the force with its members and using media with saying of national production and patriotism. Lastly, clusters aims to gather actors of a sector and increase the competitiveness of their members and sector. According to this target, clusters seek some tools such as incentives for their clusters members. Developing the cluster policies in a country could emerge some strong sectors in some regions and will affect the industrial policies in those regions such as establishing the local development agencies and incentives for special sectors. Furthermore, some sectors will be determined by the cluster policies in the regions rather than strategic sector plans of government's industrial policies. Thus, the government will change their strategic sectors with the strong clusters in different regions.

7. Conclusion

In conclusion, cluster policies highly influenced the industrial policies of the countries. There is a strong relationship between cluster policy and industrial policy. Cluster policy has very positive affects to shaping the industrial policies of countries. Cluster policies emerges new sectors and also entrepreneurs which is going to develop the economies of the countries. The cluster policy is the triggering tool for industrial policies of the countries. Clusters are the incubators of innovation, new technologies, high industrial employment quality, competitiveness of industrial companies and export. These are the significant factors of the development of economies and industrial policies of countries. Cluster policy is a successful tool to have a strong industrial policy and save the economy with creating new technologies. Cluster policy increases the efficiency of Industrial policies with its proactive role in the industry and economy. In Turkish experience, there are several clustering examples which directs the industrial policy according to these cluster's policy. It shows that cluster policy affects the industrial policy of the countries as a director and facilitator for the implementation of the industrial policies.

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Changing Health Policy in Turkey: Public-Health Oriented Policy of Turkey Around 5C

Savaş Yılmaz[a]

[a] Industrial Engineering Advisory Board, Istanbul Commerce University, Istanbul, Turkey

Abstract

When the outcome document of the 2016 United Nations General Assembly Special Session on drugs was accepted unanimously by 193 member states, it has been recognized that 'drug addiction is a complex multifactorial health disorder which has a chronic and relapsing nature'. This indicated a significant shift from security-based policies to public health policies in the fight against drug addiction. For a long time, addiction-related issues were regarded as a security matter for most countries as a result policies were security driven. Therefore the outcome document of 2016 Special Session is a milestone for the policy change. One of the signatories of the document is Turkey, which indicates that Turkey is also responsible from the major policy change and its implementation. This paper emphasizes on the current policy of Turkey in the fight addictions and what new about the policy is and how this new policy can be explained through 5C referring; change, coordination, cooperation, civil society involvement, and communication.

The policy change in Turkey has started in 2014 with initiative of the government. First five ministries drafted the National Anti-Drug Strategy Paper and it was further amended in 2015 with academicians, public agents, representatives from civil society, media and sport federation. The paper includes both drug demand and drug supply reduction in 12 thematic areas. The policy implementations of these areas are allocated among various actors.

The policy change of Turkey can be understood by 5C analysis in details. The analysis refers to a transition which starts with change, followed by coordination of different actors for the policy formation. Cooperation refers to collaboration between various actors. Civil society involvement is an essential part to be a public policy. And lastly communication is crucial step to grasp the effects of the change and revise it accordance to the feedbacks.

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1. Introduction

When the outcome document of the 2016 United Nations General Assembly Special Session (UNGASS 2016) on drugs was accepted unanimously by 193 member states, it has been recognized that 'drug addiction is a complex multifactorial health disorder which has a chronic and relapsing nature. It means that drug addiction is regarded as a health disorder which can be treated and it is not the result of moral failure or criminal behaviour (Volkow et.al, 2017.) Therefore, the outcome document makes a clear reference to a significant shift from security-based policies that view drug addiction as a security matter to public health policies that view drug addiction as a public health issue. Many nation states regarded drug addiction issue, for a long time, as a security matter and their policies were security driven. Since addictions were not considered as a health disorder and policies against drug addictions were mainly formed and implemented by security forces.

One of the signatories of the document is Turkey, indicates that Turkey is also responsible from the major policy change and its implementation. This paper emphasizes on the questions such as what the current policy of Turkey in the fight against addictions is, what new about the policy is and how

CONTACT Savaş Yılmaz waryilmaz@gmail.com

this new policy can be explained through 5C referring change, coordination, cooperation, civil society involvement, and communication.

2. Background of Turkey and The New Addiction Policy

Turkey is located at the conjunction of Asia and Europe and has unmatched geographic assets in terms of its location and accessibility within the region. It has a population more than 80 million, 67.9% of the population is aged between 15-64 (TUIK, 2019), the income per capita is 10.592$ and the average of life expectancy is 75.4 years old (World Bank, 2020). Additionally, Turkey hosts more than 3 million Syrian refugees who indirectly affected from social policies and their implementation.

Statistics show that Turkey has a considerable rate of young population and social policies such as addiction policy affects large segment of the society. Therefore, social policies need to be regulated and implemented by various actors in order to gain support of the society and to be embraced by the society. The current policy of Turkey against addiction is worth to be considered in this respect, which sets an example of multi-directional approach to addictions specific emphasize on drug addiction, and also sets an example for the localization of the social policies, since many actors, which are related and can be crucial during the implementation of the policy, are included.

The first change in the policy of Turkey regarding addictions goes back to 2014. The change started with the initiative of the government. The Immediate Action Plan in the Fight Against Drugs was drafted by five ministries such as the Ministry of Family and Social Policies, the Ministry of Youth and Sports, the Ministry of Internal Affairs, the Ministry of National Education, and the Ministry of Health. Later in 2015 with contribution of other public authorities and institutes, academicians, non-governmental organization representatives, artists, athletes, media representatives, former drug-users, drivers of the school buses, canteen keepers at schools, and headmen, the plan was amended and extended. In addition to the Immediate Action Plan, the National Anti-Drug Strategy Paper and the Working Principles and Procedures of the Provincial Narcotic Coordination Committees were drafted. In the light of these plans and papers, 95 activities were decided under 12 thematic areas and they were allocated among 27 ministries, organizations and institutions.

Building on the National Anti-Drug Strategy Paper and 12 thematic areas, in 2016 the National Action Plan in the Fight Against Drugs (2016-2018), and the Strategic Document in the Fight Against Drugs were drafted around revised 11 thematic areas. These thematic areas are taking measures in relation to educational institutions, identifying target groups, anti-drug counselling units, strengthening treatment for drug dependence, social integration, scientific advisory board for anti-drug activities, anti-drug decision support system, legislation for the anti-drug activities, coordination and cooperation, communication with the public, and diagnosis and laboratory services. These thematic areas are not determined permanently they can be changed over time in line with long term purposes.

Simultaneously with strategic papers and plans, committees that actively involved in the policy formation process were established. The committees have been formed according to their responsibilities. There are four committees; the High Council for the Fight Against Drugs is responsible for inter-ministerial coordination, the Board for the Fight Against Drugs supports the work of the High Council, the Technical Board for the Fight Against Drugs supports the work of the Board and has specialised members such as academicians, and last but not least the Provincial Councils or District Boards for the Fight Against Drugs which serves the principle of localization of the new policy. The policy formation process and involvement of various actors such as bureaucrats, politicians, civil society, and academicians was appreciated by the World Health Organization (WHO) as a good practice and the policy was translated to other languages in order countries to benefit from it.

The increasing rate of drug addictions and an increase in overdose deaths especially among youth are essential motivators of the policy change in Turkey. Between 2007 and 2016, there were 2148 overdose deaths. A major increase was in 2015 as 56 cases associated with cocaine, 206 cases with amphetamines and 166 cases with MDMA (European Drug Report, 2017). In most of these cases, more than one substance was detected as cause of deaths. Not only death rates have increased but also drug seizure has been increased. While herbal cannabis interception remained relatively stable between 2005 and 2010 in Europe, it increased fourfold in Turkey (Annual Report,2012). Therefore, recent increases in overdose deaths and drug seizures prove that Turkey has a significant consumer market and has become a transition route for drug dealers due to its geographical position (European Drug Report,2017). Turkey is under the threat of drug addiction not solely because of its domestic production and consumption but also its geographical proximity to Afghanistan and Morocco which are defined as major cannabis producers in UNODC (United Nation Office on Drug and Crime) reports (Annual Report, 2012). Considering deaths rates and geographical neighbours which may pose threats, it was unavoidable that Turkey needed a national and multidisciplinary policy for the fight against addictions.

3. Analysing The Current Policy of Turkey Around 5C

The Public Health Approach is mainly about improving the health, safety and well-being of a person and the entire population at the end. Since the approach regards addictions as treatable, it does not criminalize addicted but offers various types of treatment depending on their addictions level.

To be based on the idea of public health, the current policy of Turkey in the fight against addictions is different than previous policies. In this paper, the current policy explained by providing significant changes and in this section its differences are analysed around 5C approach in order to understand further details.

The first C refers to change. Reasons behind the policy change and how the new policy formulated is detailed above. Additionally, what makes the current policy of Turkey significant in terms of change is that, for the first time in the history of Turkey, the secretariat of policy implementation has been given to the Ministry of Health since 2014. Previously, the Turkish Monitoring Centre for Drugs and Drug Addiction (TUBIM) which is attached to the Department of Anti-Smuggling and Organized Crime/the Ministry of Interior had run the secretariat of policy implementation regarding addictions specifically drug addiction. Such a transition of responsibility between state authorities from security forces to a civil authority serves the principle of civilianization which is one of very essence condition for public health approach. The public health approach emphasizes on treatment and to be more inclusive rather than accusatory.

In 2015, the United Nation Office on Drugs and Crime and the World Health Organization created an Informal International Scientific Network which consists of experts and scientists who were appointed by member states and present diverse geographical regions, political systems and cultures. The Network drafted eight recommendations which were adopted and summarized in the outcome document of the UNGASS 2016. It starts with elimination of stigma and discrimination towards individuals with substance use disorders. Therefore, transferring of responsibility in the name of civilianization to not criminalize but to embrace addicted is critical at this point. These eight recommendations are followed as addressing substance use disorders as public health problems instead of criminal justice issues, implementing evidence-based prevention programs and evidence-based treatment for substance use disorders, collecting and utilizing scientific data and engaging scientific experts in policy making, engaging diverse stakeholders in coordinated policy making and supporting drug-related research (Volkow et al., 2017). Moreover, involvement of many actors to the policy formation process is worth to be emphasized for the importance of change. The current policy was drafted by committees at different level and various actors from different segments of the society.

The second C refers to coordination. The current policy was drafted with coordination of various actors, but leading actors were ministries. As mentioned above, the policy first initiated by five ministries and followed by other ministries and actors in the society such as academicians, civil society representatives, artists, media so on. The policies drafted out of collaboration of various actors because addiction is a social problem that can be caused by numerous reasons. In other words, addiction can be result of many reasons that is why in order to understand the very essence of addiction, the policies should be formulated by many actors as much as possible. By formulating a comprehensive policy, the final outcome-a health society-can be achieved. The coordination principle also refers to exchanging of ideas between actors. The High Council for the Fight Against Drugs consists of Deputy Prime Minister (as the president of the High Council), the Minister of Justice, the Minister of Family and Social Affairs, the Minister of Labour and Social Security, the Minister of Youth and Sports, the Minister of Customs and Trade, the Minister of Internal Affairs, the Minister of National Education, the Minister of Health, the president of the Parliamentary Commission on Health, Family and Social Affairs. The High council is responsible from inter-ministerial coordination of the whole process. As a second ranked authority in the policy formation process, the Board for the Fight Against Drugs consists of deputy secretaries of ministries and the General Manager of the Turkish Green Crescent Society which is a non-governmental organization works in the fields of tobacco, alcohol, drug, gambling and technology addictions. The contribution of a non-governmental organization to policy formation process is highly significant since it makes whole process more participatory and diffuses the impact of the policy. The more it is participatory the more policies would be appreciated by the society and it would be successful.

The third C refers to cooperation among actors. Since many actors are involved in the policy formation process, the following acts and areas of responsibilities were allocated among them in order to increase efficiency and success of the policy. As mentioned above, 95 activities under 12 thematic areas have been allocated among 27 actors in terms of their profession and their area of working. Cooperation principle of the 5C approach is a complimentary act to the coordination principle, because cooperation emerges naturally after coordination. In other words, the roles and responsibilities of actors are conservatively become prominent during coordination process since actors contribute to the policy on the behalf of their profession. Therefore, cooperation is both following and complimentary act to coordination process.

The fourth C refers civil society involvement, which is the most important component of the 5C approach since it differentiates the social policy in the fight against addictions from the previous ones in Turkey. Inclusion of actors other than state institutions makes the policy more comprehensive

and it signals that the policy would be more grasped by the society. The importance of civil society involvement does not solely come from actors' participation but participation of the Turkish Green Crescent Society as a non-governmental organization which represent civil society. The Green Crescent does not only become part of committees but also has become responsible from some activities that are defined under 11 thematic areas in the National Action Plan in the Fight Against Drugs (2016-2018) (TUBİM, Eylem Planları). According to the Plan, the Green Crescent is responsible from 16 major activities and 15 sub-activities together with ministries and the responsibilities of the organization has been increased up to 50% of all defined activities under thematic areas in the revised the Action Plan, which is active between 2018-2023 (TUBİM, 2018-2021 Eylem Planı). To put differently, the impact of civil society involvement through non-governmental organization has been increased. Within its responsibilities, the Green Crescent has developed the Addiction Prevention Training Program of Turkey (TBM) which has been put into practice with the Ministry of National Education since 2013. The TBM aims to train students from different age groups in order to educate them regarding addictions and addiction's harms. Moreover, the Green Crescent introduced 'the Health Ambassadors' project which includes critical storekeepers in the fight against addictions (Sağlık Elçileri, Yeşilay). The project is about training storekeepers at critical location that are visited by students mostly. With the project, the aim is to train specific groups-storekeepers-on the streets, who communicate with student on daily basis. By doing so society can be more part of the fight against addictions.

The final C refers to communication which is not only about communication between actors in the policy formation process but also communication between actors and people. Since it is the reaction of the people determines whether the policy in the fight against addiction is successful or not, it is important to measure it. At this point, rather than state institutions, other actors in the policy formation process-academicians, civil society representatives, media, artists, athletes, major stake holders so on-would be more effective because they have numerous ways of communication with people. Another significant project of the Green Crescent is worth to mention at this point. Journalists, media representatives from different cities of Turkey were trained regarding broadcasting and publishing news about addicted and addictions. Journalists were trained about how to publish the news about addiction especially in terms of wording. In other words, to change mind-set of the society for better to accept addiction as a public health issue and as treatable, wording of the news has a considerable impact on conceptualization of people. After the training of journalists, in 2016 there had been decreases in media releases by 55% about criticisms, 48% about increase of drug addiction, 43% about inability of police forces, and 63% about inefficiency of treatment centres in press releases compare to 2015 (Uyuşturucu ile Mücadele Faaliyet Raporu). The research shows that the training program for press members has been successful and also it means that such projects should be extended and applied other groups in the society. Since general idea of people regarding a social problem matters a lot, it is significant to deliver right message with appropriate words and meaning in order to eliminate any misunderstandings. By doing so, state authorities can get support from society and policies for social problems can be grasped by society more easily.

We see that the policy change also affects the amount of public expenditures in this area.

Table 1. The amount of public budget expenditure against addiction

Addiction Combat Expenditures (Public Budget)		
Year	**Expenditures (Million TRY)**	**Percentage of Change**
2015	646	NA
2016	722	12%
2017	936	30%
2018	1.363	46%
2019	1.435	5%
2020	1.841	28%

(Compiled from 2017-2020 Drug Reports, TUBİM)

The table showing the amount of public budget expenditures in the fight against addiction and the change over the years is attached. It is seen that there has been an increase since 2016, when the policy changed. This is an indication of the increase in activities for prevention and rehabilitation services, especially outside the security dimension of this struggle.

4. Results

All in all, the fight against addiction specifically drug addiction is a serious concern for all segments of the society. That is the reason why, any policy in terms of the fight against addictions should include various actors from different groups of the society. The new policy of Turkey against addictions was drafted by many actors; therefore it also serves the principle of multi-directional approach. In other words, social problems such as addiction can be result of various reasons and they cannot be understood from single point of view. So, inclusion of different actors both in the policy formation and implementation process can pave the way of a comprehensive policy and ease the burden of implementation of the policies among actors.

Any social policy as Turkey's current policy in the fight against addictions can be drafted in accordance with the 5C approach which is explained in this paper. The 5C approach is

a broad approach which can be and should be adopted any social problem to form effective social policies that gain support of the society from the very beginning. The 5C approach serves the principle of public health and it enables to get the very essence of social problem. By doing so, unique social policies can be drafted that are specific to that country or society.

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