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THE CAUSALITY BETWEEN ENTREPRENEURIAL ACTIVITIES AND REGIONAL ECONOMIC GROWTH: CASE OF TURKEY

M.Sc. THESIS

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To my beloved ones,

FOREWORD

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ABBREVIATIONS

AEDC : American Economic Development Council
EGT : Endogenous Growth Theory
EMP : Employment
FC : Firm Closure
FF : Firm Formation
GDP : Gross Domestic Product
GVA : Gross Value Added
İBBS : İstatistiki Bölge Birimi Sınıflaması
NE : Net Entry
NEG : New Economic Geography
NUTS : Nomenclature of Territorial Units for Statistics
SME : Small and Medium Size Establishments
TEA : Total Entrepreneurial Activity
TFP : Total Factor Productivity
TURKSTAT : Turkish Statistical Insitute
UNEMP : Unemployment

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THE CAUSALITY BETWEEN ENTREPRENEURIAL ACTIVITIES AND REGIONAL ECONOMIC GROWTH: CASE OF TURKEY

SUMMARY

Competition, one of the main subjects of regional economy, had always been a driving force of the economy as discussed since the earliest stages of economic science. At the same time, since Schumpeter, entrepreneurship and the competitiveness of entrepreneurs have been accepted as the most important agents for economic growth.

With a history of over 150 years, the definition of 'entrepreneur' or 'entrepreneurship' is constantly evolved. One of the first definitions of entrepreneur was 'an agent of change', who transforms resources into useful products and services, while latest definitions are 'innovator', 'who takes risks' 'who creates employment' or 'who contributes to economic growth'.

Entrepreneurship is mostly defined or measured as numbers of self-employed, firm formation, business formation, new firm start-ups, firm births or net entry rates in the empirical studies which measure particularly the effect of entrepreneurial activities on regional economic development as, the growth of gross domestic product (GDP), gross value added (GVA) and the change of employment/unemployment rate or productivity.

Entrepreneurship, by creating employment or fostering competitiveness or affecting employment, somehow contributes to economic development. While theoretically, this issue is defined directly in the theory of creative destruction, other regional development theories such as new economic geography or endogenous growth theory, do not explain directly the effect of entrepreneurship on regional economic development.

The effect of entrepreneurship on economic growth is mainly seen in two time periods: long term and short term. Most of the empirical studies on this particular subject find evidence about the effects on regional employment at both short and long terms (Ashcroft and Love, 1996; Foelster, 2000; Braunerhjelm and Borgman, 2004; Audretsch and Fritsch, 2002). The literature generally groups the effect of employment growth in short term effect and the effects like crowd-out, displacement, the employment decreases because of the firm closures or employment and productivity growth caused by the new firm formations in long term effects.

The purpose of this study is to find the causality between entrepreneurship and regional economic development in Turkey at the NUTS1 regional level. In order to reach this aim, entrepreneurship is measured as firm formation and net entry, while regional economic development is measured by GVA, GDP and employment. One of the well-known techniques to identify the causal relations among the variables, correlation is used to measure the length, direction and the weight of the causal affects/relations between regional economic development and entrepreneurship.

The data gathering problems, the legal regulations of administrative borders and the changes in provinces and the final statistical regulation in 2002 (as 3 digits NUTS) has limited this studies' data gathering. The problem was that the data were in provincial level before 2002 and after 2002 it was in NUTS2 levels. These issues led this study to empirically test the effect of entrepreneurship on regional economic development in NUTS1 levels, since NUTS1 levels are covering a wide range of provinces, without leading the study to statistical misunderstandings or confusions.

In the first chapter, the background, aim, objectives and detailed framework of this study is given. In the second chapter, with two sections, the conceptual and theoretical framework of entrepreneurship and regional economic development is discussed. The case study is given in the third chapter, with the sections of data and methodology, firms and entrepreneurship in Turkey (given in 3 periods) and the effect of entrepreneurship on regional economic development in Turkey.

GİRİŞİMCİLİK AKTİVİTELERİ VE BÖLGESEL EKONOMİK BÜYÜME ARASINDAKİ NEDENSELLİK: TÜRKİYE ÖRNEĞİ

ÖZET

Ekonomi biliminin ilk dönemlerinden itibaren tartışma konusu olan rekabet, ekonomide itici güç olması nedeniyle, bölgesel ekonominin de ana konularından biri olmuştur. Ayni zamanda Schumpeter'in görüşlerinden bu yana girişimcilik ve rekabet, ekonomik büyümenin en önemli iki etkeni olarak kabul edilmiştir.

Yaklaşık 150 yıllık geçmişe sahip olan girişimcilik konusu, sürekli evrim geçirmiştir. Bu durum girişimcilik konusunun incelendiği ölçek, bilim dalı ve kapsam gibi birçok etkenden kaynaklanmaktadır. Girişimciliğin ilk tanımları değişimin ya da dönüşümün oncusu, kaynakları ürüne ya da hizmete dönüştürebilen kişi iken, son dönem tanımlar girişimcinin yenilikçi, risk alan, istihdam yaratan ve/veya ekonomik büyümeye katkısı olan yönünü on plana çıkarmaktadır.

Girişimciliğe (ve ayni zamanda ekonomik büyümeye) yönelik en temel teorik yaklaşım Joseph Schumpeter'in ortaya koyduğu 'Yaratıcı Yıkım' kavramıdır. Bu yaklaşıma göre girişimci pazara girerek, pazara yeni teknolojiler ya da kurumsal değişiklikler sunar. Pazardaki mevcut firmalar, girişimcinin pazara sunduğu bu değişikliklere ayak uyduramazlarsa kapanma tehlikesiyle karşı karşıya kalırlar. Bu değişikliklere ayak uyduran firmaların üretkenlikleri artar ve bu sayede ekonomik büyümeye katkıda bulunurlar.

Ekonomik büyümenin temel teorilerinden biri olan İçsel Büyüme Teorisi, ekonomik gelişmenin, yerelin ya da bölgenin kendi iç faktörleri sayesinde dışsal değil içsel olarak gerçekleştiğini savunur. Bu faktörlerden en önemli iki tanesi beşeri sermaye ve bilgidir. Bu bağlamda girişimci, içsel büyüme teorisinde, yaratıcı yıkım kavramında olduğu gibi temel öznedir. Girişimci yenilikçilik adına yaptığı yatırımlar, teknoloji transferi ya da bilgi yayılımları (spillovers) sayesinde ekonomik büyüme sağlar.

Yeni Ekonomik Coğrafya akımı genel olarak ekonomik aktivitelerin belirli bir alanda yoğunlaşmasını açıklar. Bu yaklaşıma göre ekonomik aktivitelerin belirli bir alanda yoğunlaşması; azalan maliyetler, büyük pazarlara ve işgücüne kolay erişim, dışsal ekonomiler, bilgi yayılımları gibi avantajlar sağlamaktadır. Bununla birlikte bu ekonomik yoğunlaşmalar pazarın doygunluğa ulaşması nedeniyle engelleyici faktör haline de gelebilir. Bu bağlamda girişimci, diğer teorilerde olduğu gibi ana aktör ya da ana aktörlerden biri değil fakat sürükleyici kuvvettir. Daha net açıklamak gerekirse, ekonomik yoğunlaşmanın sağladığı avantajlar yeni girişimciler için çekim nedeni olabilir, bu şekilde girişimci, surecin devam etmesini sağlayarak ekonomiye katkıda bulunabilir ya da pazar doygunluğu sebebiyle daha ileri yoğunlaşmaların engellenmesine sebep olabilir.

Girişimcilik, gerek istihdam yaratarak, gerek rekabeti artırarak, gerekse üretkenliği artırarak bir şekilde ekonomik büyümeye katkıda bulunmaktadır. Bu düşüncenin temelleri Schumpeter'in 'Yaratıcı Yıkım' teorisinde net bir şekilde açıklanmakla birlikte, yeni ekonomik coğrafya ya da içsel büyüme teorisinde girişimcinin (ya da firma oluşumunun) ekonomik büyümeye etkisi direkt olarak açıklanmamıştır.

Birçok ampirik çalışma bu konunun üzerinde çok durmazken, literatürde bölgesel gelişme ya da büyüme teorileri ile girişimcilik ilişkisini açıklamaya çalışan az sayıda kaynak bulunmaktadır. Ampirik çalışmalar genel olarak girişimciliğin bölgesel ekonomik büyümeye hangi koşullarda ya da zaman aralığında etki ettiğini bulmaya çalışırken, girişimcilik, ölçülebilir olması için firma oluşumu ya da kurulusu ile ölçümlenmektedir. Buna karşılık ekonomik büyümenin ölçümlenebilir elementleri ise gayrisafi milli hâsıla, gayrisafi katma değer, istihdam ve işsizlik rakamlarıdır.

Girişimciliğin, ya da ampirik çalışmalarda genel olarak ele alındığı üzere, firma oluşumunun, ekonomik büyüme üzerindeki etkisi genel olarak kısa ve uzun dönem etkiler olarak tartışılmaktadır. Kimi çalışmalar, bu iki etkiyi aynı örnek üzerinde gözlemlerken (Ashcroft ve Love, 1996; Foelster, 2000; Audretsch ve Fritsch, 2002), kimi çalışmalar belirli bir zaman aralığı ortaya koymuştur (Fritsch ve Mueller, 2006; Van Stel ve Suddle, 2007). Girişimciliğin ekonomik büyüme üzerine olan etkisi kısa dönemde istihdam artışı olarak tanımlanırken, uzun dönemde dışarı itilme (crowd-out) ya da yerini kaybetme (displacements) nedenleriyle gerçekleşen firma kapanışlarının yarattığı işsizlik, ya da istikrarlı büyüme gerçekleştiren firmaların yarattığı istihdam ya da üretkenlik artışı olarak belirtilmektedir.

Bu çalışmanın amacı, girişimciliğin Türkiye İstatistiki Bölge Birimleri Sınıflandırması (İBBS) Düzey 1 ölçeğinde bölgesel ekonomik büyümeye katkısını gözlemlemektir. Bu bağlamda çalışma dört bölümden oluşmaktadır. Birinci bölüm olan giriş bölümü, çalışmanın arka planı ve çalışma konusunun seçimine yönelik bilgiler, çalışmanın detaylı amacı, hedefleri ile çalışmanın yapısına ilişkin bilgiler sunmaktadır.

Çalışmanın ikinci bölümünde 2 kısım halinde kavramsal ve teorik çerçeve ele alınmıştır. Bu bölümün ilk bölümünde girişimcilik ve bölgesel ekonomik büyüme kavramları, ikinci bölümünde girişimcilik ve bölgesel ekonomik büyüme teorileri detaylı olarak anlatılmış, bölüm sonunda ise kavramsal ve teorik çerçeveyi bağlayan, ampirik çalışmalardan örnekler içeren sonuç bölümüne yer verilmiştir.

Türkiye örneğinin yer aldığı üçüncü bölüm 5 kısımdan oluşmaktadır. İlk kısımda araştırma tasarımına yer verilirken, ikinci kısımda veri ve yöntem anlatılmıştır. Türkiye'deki veri kısıtlamaları, veri ölçeği, illerin kuruluş tarihleri nedeni ile çalışma konusu geniş bir zaman diliminde incelenememiş, çalışma 1987-2001 arası ve 2004-2011 arası olmak üzere 2 dönem halinde ve İBBS Düzey 1 ölçeğinde incelenmiştir. Türkiye'de firma ve girişimciliğe yönelik politikaların, kalkınma planları çerçevesinde incelenmesine yer verilen 3. bölümde, politikalar 3 dönem (1965-1980, 1980, 1980-1995, 1995-2011) halinde incelenmiş, her dönem sonunda, o döneme ilişkin büyüme rakamlarına yer verilmiştir.

Çalışmanın çekirdeğini oluşturan ampirik çalışmaya 3.4 başlığında, 3 kısım halinde yer verilmiştir. Az önce bahsedilen veri kısıtlamaları nedeniyle ilk kısım 1987-2001 döneminde, ikinci kısım 2004-2011 döneminde, üçüncü kısım ise bölgesel ölçekte girişimciliğin ekonomik büyümeye katkısını incelmektedir. İlk dönem olan 1987-2001 dönemi için firma açılış, net giriş (açılan firma-kapanan firma) ve gayrisafi milli hâsıla değişkenleri kullanılırken, ikinci dönem olan 2004-2011 arası yıllar için firma açılış, kapanış, net giriş, gayrisafi katma değer, istihdam ve işsizlik rakamları kullanılmıştır. Bu bağlamda firma açılış, kapanış ve net giriş rakamları bağımsız değişkenler, gayrisafi milli hâsıla, gayrisafi katma değer, istihdam ve işsizlik rakamları bağımlı değişkenler (ekonomik büyümeyi ölçümleyen değişkenler) olarak kullanılmıştır. Yöntem olarak ampirik çalışmalarda değişkenler arasındaki nedensellik ya da etkiyi ölçmek için kullanılan Pearson Korelasyon yöntemi kullanılmıştır ve her dönem için bir bağımlı ve bir bağımsız değişken olmak üzere ikili kombinasyonlar test edilmiştir. Girişimciliğin ekonomik büyümeye katkısının hangi yıl aralığında oluştuğunu anlamak üzere, yıl aralıkları hesaba katılmıştır. Bu aşamada analiz hem reel rakamlar hem de büyüme oranları üzerinden testi içermektedir.

Üçüncü bölüm sonunda elde edilen ampirik bulgular ve muhtemel sebepleri tartışılmıştır.

Dördüncü bölüm olan sonuç bölümünde ise, çalışmanın bulguları, özgün değeri ve bulguların literatürdeki bulgularla karşılaştırmalarına yer verilmiştir. Bu bolum ayni zamanda gelecek dönem çalışmalar için önemli olabilecek noktaları da vurgulamaktadır.

1. INTRODUCTION

1.1. Motivation and Background of the Study

Entrepreneurship, a subject with its' many different variations of field of studies, has a past of over a century. While entrepreneurship is a subject for economic development since Schumpeter, its' effects are tested empirically only for the last two decades. On the other hand, it is a missing research field in Turkey, despite the various incentives and policies.

My motivation was, indeed a little personal, being in the middle of entrepreneurs known as Anatolian Tigers and being daughter of the two of them. There was nothing special about this until I start to have my master study in Regional Planning, after that I started to question if they have ever contributed to themselves (economically) and then if they have contributed to the regional or national economy. There were so many incentives for entrepreneurs or SMEs, but the entrepreneurs or firms, we know keep reserving their labor force or growing maximum 50 percent in 10 years and remains as SMEs.

Of course, this was not my only motivation. I think economy, is a major part in urban and regional science. Gathering this two different motivations together grounds this study. After realizing there was not any study in this interesting and special field, in the case of Turkey, so my interest grew up.

While entrepreneurship studies take a non- negligible part in regional studies, the theoretical framework of entrepreneurship in the regional economic development is not clearly defined, except creative destruction. This may caused by conceptual variety of entrepreneurship or may be it is just a theoretically underestimated part in regional economic development.

Since Marshall (1890), entrepreneurs' role in the economy or in the economic process, has been widely discussed. It can be said that entrepreneurship research is outlined and generally defined by three main traditions; Austrian, Chicago and German traditions. The Chicago Tradition, leaded by Knight and Schultz is mainly

based on human capital factors of entrepreneurship. While the Chicago tradition makes their point on assuming risk or not, the Austrian tradition points out the idea to have something to lose or not and the German tradition focuses on economic development. According to Schumpeter (1934), economic development is a dynamic process and the entrepreneur is the agent of it.

Later then the main traditions, entrepreneurship is defined more clearly in studies of different fields of researches. This led a huge profound knowledge, leading the issue to the confusion of the role of entrepreneurship in the economic development.

Barreto's (1989) explanation indicates the situation clearly:

> *'The entrepreneur is shorthand for uncertainty, imperfect information and the unknown. He operates in the shadowy world of intuition, ignorance and disequilibrium'.*

1.2. Aim and Objectives of the Study

The purpose of this thesis is, first to clarify the conceptual and theoretical framework of entrepreneurship with a special focus on the effect of entrepreneurship on regional economic growth. Then the effect of entrepreneurship on regional economic development is analyzed in the case of Turkey. Via these analyses, this thesis strives to answer the following questions:

- How entrepreneurship can be linked to economic development theories?
- Do firm formations affect employment in regions?
- Do firm formations affect gross domestic product in regions?
- Do firm formations affect gross value added in regions?
- Do firm closures affect unemployment?
- Do firm formations affect regional economic development different from net entry?

To accomplish these objectives, first a clarification of the conceptual issues about both entrepreneurship and economic development was needed. This clarification was also needed about the part of entrepreneurship in economic development theories. This clarification defines how or in which stage entrepreneurship effects economic

development. After these, a historical review of the firm or entrepreneurship policies about firms in Turkey was necessary. It was critical to analyze the empirical studies about the effects of entrepreneurship on regional economic development. There were 23 empirical studies founded via the literature survey, which clearly show how to measure entrepreneurship and the effects of it. With the light of those studies, this study tries to answer the questions given above.

1.3. Structure of the Study

This thesis built in four main chapters (**Figure 1.1**). First the introduction, which contains the motivation and background, the aim and objectives of the study and this part, the detailed structure of the study are given.

The second chapter, conceptual and theoretical framework, given in two sections: the conceptual framework and the theoretical framework. In the conceptual framework section, the entrepreneurship and regional economic development issues dealt separately. The main traditions' interpretations about entrepreneurship, the definitions of entrepreneurship according to different fields of study, information about how entrepreneurship issue and definitions developed and discussions are given. Then, the same procedure given for regional economic development. The theoretical framework section contains of three theories, which given in two parts: the creative destruction (CD) on one side and endogenous growth theory (EGT) and new economic geography (NEG) on the other side. As mentioned, while creative destruction defines the role of entrepreneur in economic process clearly, endogenous growth theory and new economic geography do not implicate this role clearly. In the final section of this chapter (**title 2.3**) a literature survey and summary about conceptual and theoretical issues about the field is given.

The third chapter contains the case study on Turkey. The case study dealt in four sections. First the research design is given. Then the data and methodology explained. In this section, the variables, the data gathering issues and the choice of scale explained detailed. It is essential for this study to observe the firm and entrepreneurship policies in Turkey to explain the meaning of the empirical results. Finally the effect of entrepreneurship on regional economic development in Turkey is given. For this, a three-step path followed for a two part data. Since the data was restricted, it was more correct to examine them in two parts. First, the binary

combinations of dependent and independent variables tested via correlation. Second, the binary combinations of growth rates of dependent variables and values independent variables are tested. The purpose of these two steps is to define the time lags, which indicates the period of the effect of entrepreneurship. Third, region specific correlation tests applied to the binary combinations of dependent and independent variables. The results given in this section detailed.

In the final chapter, the results and what they mean for understanding the effect of entrepreneurship on regional economic development presented. With this conclusion, brief recommendations for further studies are also given.

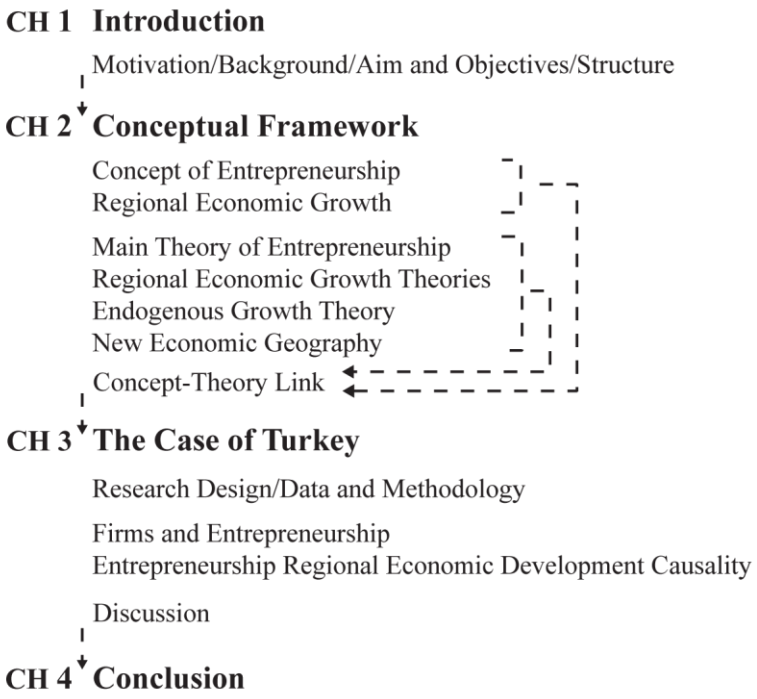

Figure 1. 1: Structure of the thesis.

1.4. Data and the Methodology

To explore the causality between entrepreneurship and regional economic growth empirically, first the literture survey was made. At this stage 23 empirical studies gathered which directly investigate the causality between entrepreneurship and economic growth or the effect of entrepreneurship on economic growth. These studies were examined about the way that they define entrepreneurship, about how they measure regional economic development (or growth), the models or statistical methods conducted, the variables they prefer and the scale of the empirical study.

While their methodologies vary into different methods, it is possible to say that correlation method grounds most of them. Therefore the investigation type of this study is mainly based on correlation. Likely to the methodologies, the definition of entrepreneurship varied into almost 10 different ways, which led this study to accept it as firm formation. Including the firm closure and net entry (firm formation-firm closure) it is aimed to find the actual entrepreneurship.

In those empirical studies, the economic growth is usually explained as GDP, GVA or employment growth. In this study, two of them (GVA or GDP and Employment) are covered as the dependent variables. There reason for using both GDP and GVA to explain the standarts of living, is the available data issue in Turkey. Unfortunately between the years of 1987 and 2001 the available data was GDP and between the years 2004 and 2011 the available data was GVA. This issue determined the two periods of this empirical study.

The independent variables are Firm Formation (FF), Net Entry (NE) and Firm Closure (FC), which was available between the years 1965 and 2013 in NUTS3 level.

The time series data used in this study is gathered from Turkish Statistical Instute (TSI) and the unit of analysis in this study is the NUTS1 level regions of Turkey. The data gathering problems, the legal regulations of administrative borders and the changes in provinces and the final statistical regulation in 2002 (as 3 digits NUTS) has limited this studies data gathering. The problem was that the data were in provincial level before 2002 and after 2002 it was in NUTS2 levels. Using the NUTS2 level data was leading this study in a statistical confusion, since before 2002 there were many times of provincial changes. Because of these issues, this study empirically tests the causality in NUTS1 levels, since NUTS1 levels are covering a wide range of provinces, without leading the study to some statistical misunderstandings or confusions.

In this study to measure the causality between firm formation and regional economic growth, correlation tests are applied in three stages. Every independent variables effect on dependent variables are mesaured by correlation(one-tailed) method by both numbers (stage 1) and growth rates (stage two) in order to understand the

maximum effect of this relation the time lags are considered. After these tests, region specific correlation tests are applied as stage 3.

While the IBM SPSS Statistics 20 is used both for calculating groth rates and correltaions, Microsoft Office Excel 2013 is used for basic cross-tabs.

2. CONCEPTUAL FRAMEWORK

This chapter is providing information about the conceptual approaches and theoretical background of entrepreneurship. In a large period, both historical and contemporary definitions are given. These definitions are mostly discussed in the conceptual framework, based on the traditions and the empirical studies that investigate the relation between entrepreneurship and regional economic development.

2.1. Conceptual Framework

2.1.1. Concept of entrepreneurship

Entrepreneurship, which is a part of different disciplines such as economics, management, history, sociology and even anthropology, has always been a discussion point. Either its definition as questioned as a human experience or the function of it or its part in the economic development has always been a research agenda.

Landström (2002) summarizes the entrepreneurship research and trends as 'swarms'. He states that knowledge about entrepreneurship seems developed with a certain chronological regularity and he gives four periods of these 'swarms'(**Figure 2.1**).

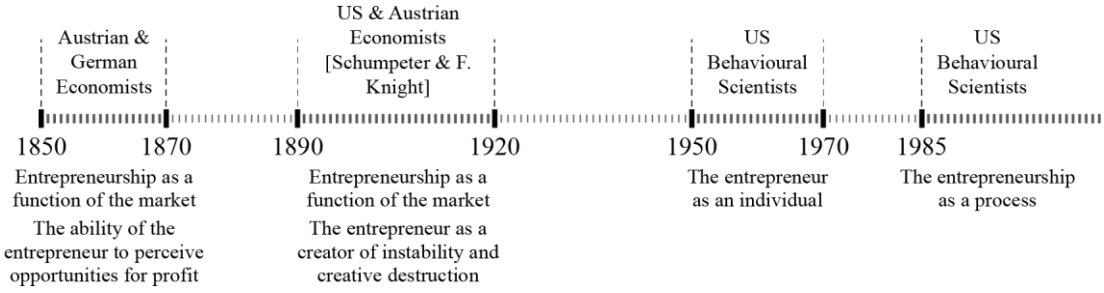

Figure 2. 1: Swarms of knowledge of entrepreneurship.

One of the well-known definition of entrepreneurship is given by Marshall (1890), emphasizing the innovative role as the entrepreneur and produces by focusing on the economic processes and innovative strategies. Knight (1921) and Schumpeter (1934),

on the other hand, focus on aspects that are more general. Knight (1921) defines the entrepreneur as risk taker and the one who deals with uncertainties, while Schumpeter (1934) defines the entrepreneur as the one who perceives the opportunities better than the other ones.

Even though Marshalls' contribution to the definition of entrepreneurship was one of the first contributions and one of the well-known ones, Cantillon's ideas on entrepreneurship might be foremost which was given in his early work (Essai sur la Nature du Commerce en Général) in 1755. Hébert and Link (1989) schematize this influence, which is mainly based on a historical fact and filiation, and three main traditions (**Figure 2.2**).

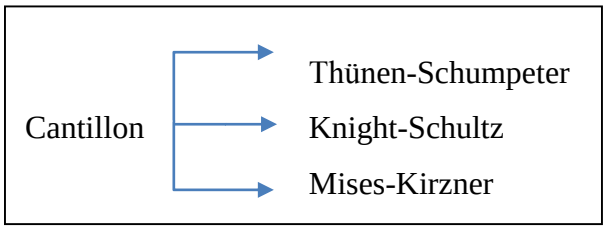

Figure 2. 2: Cantillons influence (Hébert & Link, 1989).

Cantillon generally defines entrepreneurs as risk-bearers or risk-takers in his early works. Hébert and Link (1989) narrate that Cantillon recognized three classes of economic agents and in addition that although Cantillon ostensibly placed the landowner at the top of the economic hierarchy, a close examination of his work reveals the entrepreneur as the central economic actor. These three classes are:

- landowners, who are financially independent
- entrepreneurs, who engage in market exchanges at their own risk in order to make a profit
- hirelings, who eschew active decision making in order to secure contractual guaranties of stable income (i.e., fixed wage contracts).

Cantillon explains that entrepreneur exercises business judgments in the face of uncertainty as entrepreneurs buy at a certain price to sell again at an uncertain price, with the difference being their profit or loss (Cantillon, 1999).

The German Tradition, which mainly directed by Thünen and Schumpeter generally focuses on economic development. According to Schumpeter (1934), economic development is a dynamic process and the entrepreneur is the agent of it. As

mentioned before, in this dynamic process, the entrepreneur is the person who innovates, who makes 'new combinations' in production (Schumpeter, 1934). A well-known theory of Schumpeter, ‘the creative destruction’, is the essence of economic development. In this theory, he accepts that development is a circular flow and it is a process defined by the carrying out of new combinations in production, which is accomplished by the agent, entrepreneur. Schumpeter (1934) also tried to make the entrepreneur a central figure in economic theory, however details of it will be given in the next section.

The Chicago Tradition, directed by Knight (1921) and Schultz (1975) is mainly based on human capital factors of the issue. Among others, Schultz (1921) is the one that grounds his ideas on criticizing the general notion of entrepreneurship idea on four basis (Schultz, 1975):

- The concept is usually restricted to businessmen,
- It does not take into account the differences in allocative abilities among entrepreneurs,
- The supply of entrepreneurship is not treated as a scarce resource, and
- Entrepreneurship is neglected whenever general equilibrium considerations dominate economic inquiry.

According to Hébert and Link (1989), Schultz's ideas ground on a major contribution to the concept of entrepreneurship as ‘the ability to deal with disequilibria’.

Schultz’s and Schumpeter’s ideas conflict at this very point. Schumpeter, as Cantillon, points out the function of the entrepreneur, in contrast Schultz takes account the human capital dimension of the issue by saying ‘Whether or not economic growth is deemed to be 'progress', it is a process beset with various classes of disequilibria’ (Schultz, 1975, p.832). According to Hébert and Link (1989) Schumpeter's entrepreneur ‘creates developmental disequilibria’. His function is not extended successfully to ‘all manner of other disequilibria’ including laborers who are reallocating their labor services, students, housewives, and consumers who are reallocating their resources, mainly in time.

Schultz's idea also conflict with Cantillon's, which is, the entrepreneur is a risk-bearer. According to Schultz not only the entrepreneurs are risk takers, as there are people who are not entrepreneurs and assume risk (Schultz, 1975).

Mises and Kirzner, the Austrian Tradition, generally define the main ability of entrepreneurship as alertness to profit opportunities. Kirzner (1973) bases his arguments on Mises's and Hayek's. According to Kirzner (1973), it is fundamental for an entrepreneur to be alerted in identifying and dealing with profit-making opportunities ('entrepreneurial alertness') Mises, which was the tutor of Kirzner, says 'There is a simple rule of thumb to tell entrepreneurs from non-entrepreneurs. The entrepreneurs are those on whom the incidence of losses on the capital employed falls.' (Von Mises, 1951). Kirzner (1973) emphasizes that if one has nothing to lose, there is no sense in which that person can be said to bear risk.

Hébert and Link (1989) define twelve distinct themes of entrepreneurship in the economic literature as dynamic and static themes (**Table 2.1**).

Table 2. 1: The dynamic and static themes of entrepreneurship.
(adapted from Hébert and Link (1989))

Dynamic themes (The entrepreneur is..)		**Static themes (The entrepreneur is..)**	
definition	**author**	**definition**	**author**
..person who assumes the risk associated with uncertainty.	Cantillon, Von Thünen, Mill, Hawley, Knight, Von Mises, Cole, Shackle	.. the person who supplies financial capital.	Smith, Bohm-Bawerk, Pigou, Von Mises
..an innovator.	Bentham, Von Thünen, Schmoller, Sombart, Weber, Schumpeter, Shakle	.. a manager or superintendent.	Say, Mill, Marshall, Menger
..a decision maker.	Cantillon, Menger, Marshall, Wieser, Amasa Walker, Francis Walker, Keynes, Von Mises, Cole, Schultz	.. the owner of an enterprise.	Quesnay, Wieser, Pigou, Hawley
.. an industrial leader.	Say, Saint-Simon, Amasa Walker, Francis Walker, Marshall, Wieser, Sombart, Weber, Schumpeter	.. an employer of factors of production.	Amasa Walker, Francis Walker, Wieser, Keynes
.. an organizer and coordinator of economic resources.	Say, Wieser, Sombart, Weber, Clark, Davenport, Schumpeter, Coase		
.. a contractor.	Bentham		
.. an allocator of resources among alternative uses.	Cantillon, Schultz		
.. an arbitrageur.	Cantillon, Walras, Kirzner		

While defining these themes as static and dynamic, they explain that the dynamic ones have any significant operational meaning and in the static ones the entrepreneur is a passive element because his actions merely constitute repetitions of past procedures and techniques already learned (Hébert & Link, 1989). The conclude that in dynamic themes 'the entrepreneur becomes a robust figure'(Hébert & Link, 1989).

Hébert and Link (1989), define the entrepreneur in a 'synthetic' way, as they say:

'This person has a comparative advantage in decision making, and makes decisions that run counter to the conventional wisdom either because he has better information or a different perception of events or opportunities. An entrepreneur must have the courage of his convictions and face the consequences of his actions, whether they produce profits or losses.'

Even the main traditions give an outline about the definition of entrepreneurship, its role in the economic growth, which was provided by different theoretical approaches causes confusion in definitions of entrepreneurship. Barreto (1989) explains this situation, as 'the entrepreneur is shorthand for uncertainty, imperfect information and the unknown. He operates in the shadowy world of intuition, ignorance and disequilibrium.'

While the main traditions discuss the function or the role of entrepreneurs in the economy, some of the authors discuss the size of it. Malecki (1993) states as 'At one level, entrepreneurship refers simply to small firms or enterprises, although entrepreneurship within giant corporations has also become part of the vocabulary.' giving reference from De Soto, Malecki (1993) explains that entrepreneurship can also emerge as informal activities without fully legal status, like selling food or drinks on the streets or providing informal transportation operations like taxi or bus.

In the entrepreneurship literature, entrepreneurship is also accepted as the new firms or SMEs. There has been also a conflict between small firms and large firms, and which one of them is the best for economic growth, since Schumpeter. Audretsch and Fritsch (2002) explain this conflict, which was triggered by Schumpeter as;

> *"In his earlier thinking, Schumpeter argued that the creative destruction triggered by the start-up of new firms and the displacement of the incumbents resulted in a superior economic performance, in terms of innovation and growth. However, Schumpeter reversed his view in his subsequent work*

(Schumpeter, 1942) by suggesting that large corporations in a stable environment are more conducive to innovation and growth."

Indeed, as Audretsch and Fritsch (2002) referred from Nelson and Winter (1982), this conflict or distinction are true in both ways in the terms of different technological regimes or different growth regimes. In the simplest way, new firms and (very) small firms grow systematically larger than large and established incumbents (Carree & Thurik, 2010). Landström (2008) states that, there were a major shift in the industrial structure in favor of small companies, a phenomenon that appeared not to be specific to the USA – it was a trend in most developed Western countries.

While there are various definitions of entrepreneurship, the way entrepreneurship held up in the empirical studies is much simpler. According to the examined 23 empirical studies[1] (between the years 1994 and 2013) which directly investigate the effect of entrepreneurship on regional economic growth, entrepreneurship phrases or with another saying the measurement of entrepreneurship in empirical studies vary into 10 definitions:

- Business ownership (Carree, van Stel, Thurik, & Wennekers, 2002, 2007)
- Entrepreneurship (Valliere & Peterson, 2009; F. G. B. van Oort, N. S., 2013)
- Firm birth (Zoltan Acs & Armington, 2004; Callejon & Segarra, 1999; Reynolds, 1994)
- New Business Formation (Ashcroft & Love, 1996; Fritsch & Mueller, 2006; Piergiovanni, 2012)
- Net entry (Dejardin, 2011; Piergiovanni, 2012)
- New firm creation (Wong, Ho, & Autio, 2005)
- New firm formation (Ashcroft & Love, 1996; Mueller, van Stel, & Storey, 2006; André Van Stel & Suddle, 2007)
- New firm start-ups (Audretsch & Fritsch, 2002; Fritsch, 1997; D. Audretsch & M. Keilbach, 2004; André van Stel & Storey, 2004)

[1] A detailed table of examined empirical studies is given in the appendix (**Table A.1**).

- Firm birth (Callejon & Segarra, 1999)
- Self Employed/Employment (Audretsch, Carree, & Thurik, 2001; André Van Stel, Carree, & Thurik, 2004; Fotopoulos, 2012)
- Turbulence[2] (Bosma & Nieuwenhuijsen, 2000)

Even though these definitions are much more simple than the general conceptual definitions, they are changing according to the authors' conceptual and theoretical approaches. Even though the authors express or measure entrepreneurship in different words, except self-employed/employment and turbulence notions, all the expressions represents new firm formation as it is and will be given in this study.

2.1.2. Regional economic growth

As the 'region' notion, which has different definitions according to different disciplines, the regional development or regional growth concepts vary historically. Main reasons of this change are the globalizing world and the post-war economies and the changing conditions of adaptation to the current economic system.

As entrepreneurship definitions, there is also a conflict about the content and meaning of economic development or as being in this thesis, economic growth. The notion of economic development or growth generally has different meanings as employment growth, Gross Value Added or Gross Domestic Product growth (Reynolds, 1994; Audretsch et al., 2001; Audretsch at al., 2004; Valliere et al., 2009).

One definition is given by the American Economic Development Council (AEDC) as the process of creating wealth through the use of all resources. But, this definition has criticisms about not clarifying the definition of wealth, if accumulation of wealth implies accumulation of real capital, such a process cannot be sustained in the long run due to the diminishing returns to capital and the focus on wealth creation ignores the distributional aspect of economic development (Mathur, 1999).

Theoretical backgrounds of economic development or growth lay down in almost two centuries. Both theoretical and spatial models and theories were released in this period that discussing whether the development notion or the economic growth. Only

[2] Turbulence is explained as entry and exit of firms in Bosma and Nieuwenhuijsen (2000).

four main and relatively most discussed ones are given under the terms of concept of this thesis. Three of these economic growth theories, the Endogenous Growth Theory, The Creative Destruction and New Economic Geography are explained in the concept of how or if they connect entrepreneurship and economic growth in the next section and more detailed theoretical backgrounds will be given in the next section.

The neoclassical theory, which has the main objective as profit maximization, has the critic about being exogenous, not covering the whole of the economy and accepting that all firms produce homogenous products so it is unrealistic in the 'real world' (Holcombe, 2009). Even though the neoclassical theory does not emphasize much about holistic economic growth, after the World War II and in the globalization process, most of the governments adopted the independence of market as it is a part of this theory.

In addition, the endogenous growth theory implicates that there is indefinite investment in human capital, which has spillover effects so, it reduces the return of capital accumulation. The endogenous growth theory basically emphases the importance of technology, knowledge and human capital in economic growth so the spatial production of knowledge occurs.

The creative destruction, which is a dynamic process, is accepted as the main theory that relates entrepreneurship and economic growth. This process simply causes closures or expanding or re-organization of the existing firms. This dynamic process also provides new technologies, adaptation to them and institutional changes and enhances the productivity.

Another growth theory, which is based on spatial economics, new economic geography, tries to explain the unequal spatial development. As Valliere and Peterson (2009) states;

> *"Krugman argues that economic growth in nations is driven by specific regional growth activity, and that regional geographic factors therefore play a significant role in enabling the economic activity that fuels this local growth (Krugman 1991a, 1991b, 1991c, 1994, 1995)."*

They explain the three parameters that drive the regional economic concentration as: increasing returns effects for participants in the local market, minimization of

transportation costs and the locality of demand for manufactured goods (Valliere and Peterson, 2009).

While theories conceptualize the economic development or growth in terms of productivity, technology or knowledge occured, minimizing the costs or dealing with the increasing returns, the empirical studies, by not classifying them in theories, give more simple outcomes of measurement of economic development or growth.

According to the examined 23 empirical studies (between the years 1994 and 2013) which directly investigate the effect of entrepreneurship on regional economic growth, measurement of economic growth varies into 3 themes of variable groups:

- Employment Change, Unemployment Rate or Employment Growth (Zoltan Acs & Armington, 2004; Ashcroft & Love, 1996; Audretsch et al., 2001; Audretsch & Fritsch, 2002; Fritsch, 1997; Fritsch & Mueller, 2006; Mueller et al., 2006; Piergiovanni, 2012; Reynolds, 1994; André Van Stel & Suddle, 2007; André Van Stel et al., 2004; André van Stel & Storey, 2004)
- GVA or GDP growth (Carree et al., 2002, 2007; Dejardin, 2011; Fotopoulos, 2012; Piergiovanni, 2012; Valliere & Peterson, 2009; André Van Stel et al., 2004; Wong et al., 2005)
- Productivity Growth, Regional Productivity, Regional Productivity Rate or Labor Productivity (D. B. Audretsch & M. Keilbach, 2004; Bosma & Nieuwenhuijsen, 2000; Callejon & Segarra, 1999; F. G. B. van Oort, N. S., 2013)

It is important at this stage to state that these measurements of course vary in the light of their studies' theoretical approaches, as were in the entrepreneurship part but they are given here without any theoretical classifications. Even though the measurements are given here without any theoretical classifications, it is essential to evaluate them with the theories given in next section.

2.2. Theoretical Background

If the behavioral or microeconomic theories of entrepreneurship are excluded, Schumpeter's Creative Destruction is accepted as the first theory of entrepreneurship. Another theory given in this section is endogenous growth theory, which is based on

the endogenous factors of economic growth. With the explanations of innovation and knowledge spillovers, endogenous growth theory is one of the most important theories of economic growth. Schumpeter's creative destruction is counted as one of the 'endogenous' approaches, since its' importance for entrepreneurship issue, it is dialed separately. As much as it is said that EGT explains economic growth through the accumulation and spillover of technological knowledge and the NEG explains development and the role of geographic structures in economics, it can be also said that they do not link the entrepreneurship with economic growth or development directly (**Figure 2.3**). Even though at the first sight NEG seems like it does not give much about entrepreneurship, it is possible to put a line since firms are the basis of clusters and spatial economics.

Acs and Varga (2004) explain this situation as 'this line of research is hampered because there is no entrepreneurship in growth theory and the role of technological change in entrepreneurship is not well worked out.' They further explain that EGT does not explain space in growth theory and NEG is missing the role of spatial structure in technological change (Acs and Varga, 2004).

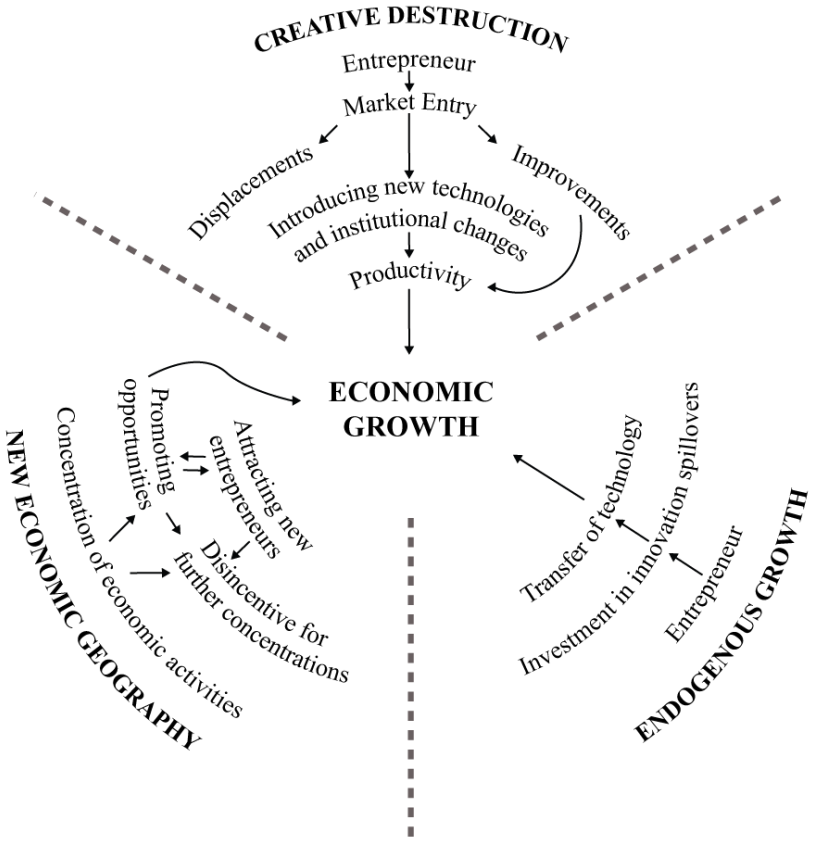

Figure 2. 3: Linking entrepreneurship and regional economic development.

It is possible to say that the entrepreneur is the main actor for economic growth in the theory of Creative Destruction and Endogenous Growth Theory, since it is the entrepreneur who invests in or introduces new technologies to the market and causes spillovers and enhances the economic growth (**Figure 2.3**). In New Economic Geography, basically, the concentration of economic activities promotes opportunities which may attract new entrepreneurs. These new entrepreneurs may cause disincentives for further concentrations or may support the whole process by supporting it like in the process of creative destruction. Following sections provides detailed information about these theories.

2.2.1. Main theory of entrepreneurship: creative destruction by Schumpeter

Schumpeter (1934) states that entrepreneurial innovation is the essence of capitalism and the disequilibrium of 'creative destruction', embodied in the new products, new production processes, new markets, new sources of raw materials and new forms of organizations. With the cause of the closures or expanding or re-organization of the existing firms, creative destruction is defined as a dynamic process which can be explained as providing new technologies, adaptation to them and institutional changes and enhancing the productivity.

From the Schumpeterian perspective, it is neither large firms nor small firms that are the drivers of new employment but the entrepreneurial ones. Entrepreneurial firms and individuals are not those who have the entrepreneurial spirit that is discussed as being a positive and fashionable asset by many people in non-entrepreneurial firms. The term entrepreneur needs to be reserved for those engaged in creating value through new products or approaches with a willingness to destroy the existing status quo through the creation and capturing of value that exists but has not yet been recognized (Schumpeter, 1934).

Schumpeter explains this process 'that incessantly revolutionizes the economic structure from within, destroying the old one and creating a new one' as it is the essential, central dynamic of capitalism (Schumpeter, 1942 (2010)). According to this theory, entrepreneurs develop innovations that make the traditional supply obsolete in a mechanical way. If established companies do not adapt to the emergence of new products or practices, their profits progressively decrease and they are eventually supplanted in the market (Acs & Audretsch, 2010). Bureau (2013)

referring to Swedberg (2006) explains this change, which is endogenous to capitalism, operates continuously, 'creative destruction constantly sweeps out old products, old enterprises, and old forms of organizations, replacing them with the new ones'.

Andersen, et al. (2006) explain the three distinct concepts of creative destruction by Sombart, Simon, and Schumpeter. They explain Sombart's vision on creative destruction, which can be counted as in the German Tradition, as the Sombart expresses the concept generally on the issues of 'destruction' and in some sense 'creative'.

On the other hand, on the basis of Simon's ideas on creative destruction, had the view that it was not the actual destruction of resources but the potential threat to the survival of firms that leads to the change of routine behavior (Andersen et al., 2006).

According to Simon's model of satisficing[3] behavior, firms follow given routines, as long as they are able to uphold a satisfactory performance. When firms can not follow these routines (may have been caused by competitive pressures) they start an innovative or imitative search for better routines (Andersen et al., 2006).

According to third concept discussed by Andersen et al. (2006), Schumpeter's creation was a relatively independent event and not the adaptive response to shortages or other pressures. They state the that for Schumpeter, the entrepreneur's innovation comes first, and it is its introduction into the system of economic routines that causes the destruction of old routines (Schumpeter, 1934; Andersen et al., 2006). Schumpeter's ideas on the basis of this analytical scheme of economic evolution, which is based on the notions of 'development' and 'cycles' as: initial equilibrium, innovation, renewed equilibrium through creative destruction and economic evolution as the process of creative destruction (Schumpeter, 1934; Andersen et al., 2006).

Andersen et al. (2006) deduce that Schumpeter's scheme of economic evolution demonstrates that he really had two related concepts. Selecting out of firms or their routines by the pressure from an innovation: 'Creative destruction' and 'the process

[3] The term satisficing, a portmanteau of satisfy and suffice, was introduced by Herbert A. Simon in 1956, although the concept was first posited in Administrative Behavior, published in 1947.

of creative destruction' is a combination of this kind of selection and the innovative activities that drives the process.

Gathering focus on the innovation side of Schumpeter's ideas, Norton (1992), states that innovation (the commercialization of an invention) is the driving force behind a dynamic capitalistic economy. The process of 'creative destruction', entrepreneurs, seek to develop and market inventions. If successful, demand for the entrepreneur's innovation (and for those of similar innovations) will rise; demand for the output of the oligopoly will fall (Norton, 1992). He summarizes the process by defining it as 'a never-ceasing process in a well-functioning capitalistic economy' as this process creates new wealth and destroys the old oligopolistic market structure and it results in the decline of older, established firms through new firm entry and growth. But, in time, the new firms themselves become part of an oligopolistic market structure and become targets for new entrepreneurs and new innovations which concludes to the idea of creative destruction is a never-ceasing process in a well-functioning capitalistic economy (Norton, 1992).

As Bosma et al. (2011) stated, many studies on competitiveness which tend to equate entrepreneurship with new firm formation and disregard the firm exit mechanism, are inspired by Schumpeter's (1942, 2010; 1934) work on the mechanisms of economic development, especially the role of entrepreneurship.

Giving reference from Porter (1990), Bosma et al. (2011) stress the importance of firm exit: firm exit reflects the selection mechanism that is a crucial outcome of the competition process and one of the causs of territorial competitiveness. The exits are important because resources are released that can be reallocated to more productive activities (Bosma et al., 2011). While Bosma et al. stresses the importance of firm exit they also point an important aspect related to firm exits which is the revolving door regime.

However, if new entrants are less efficient than the incumbents, the efforts involved in the mergence of entrants may even waste valuable resources. In the latter situation, entrepreneurship -measured as new firm formation- is not a driver of competitiveness at all. This situation has been identified in the literature as a revolving door regime: entrants have to exit relatively soon after start-up owing to an insufficient level of efficiency (Audretsch & Fritsch, 2002). This revolving door regime reflects a

situation with high entry rates, but with no subsequent improvement of either employment levels or productivity (Bosma et al., 2011).

Schubert (2013) defines creative destructions as an evolutionary change. Evolutionary change is an inherently turbulent, restless affair, generating unpredictable and potentially large redistributions of well-being. He explains these definitions in two steps, the fundamental impact of the competition and motivational basis of economic behavior. He further explains that giving reference to Haberler (1950) and Metcalfe (2001) that; the kind of 'development' Schumpeter is interested in does not reflect the impact of ordinary price competition, but 'competition from the new commodity' (Schumpeter, 1942), of what the impact is much more fundamental.

He explains the second step as the turbulent nature of evolutionary change relates to the motivational basis of economic behavior.

2.2.2. Endogenous growth theory

Endogenous growth models emphasize the importance of knowledge, knowledge spillovers and technological substitution in the process of economic growth, conceptually parallel to Schumpeter's early growth theory (Nijkamp, 2000).

The endogenous growth theory, which introduced to the literature by Lucas and Romer (1950), corners the endogenous factors of a region or an economy, which stimulates growth. One of these endogenous factors, as Nijkamp (2000) states, is knowledge and another factor, as Mathur (1999) also states, is human capital. Nijkamp also states that the importance of knowledge and the theoretical foundations of it as a learning mechanism for increasing productivity introduced by Arrow and Solow (2000). Even though endogenous growth theory introduces knowledge as one of the key factors of economic growth, Acs et al. (2004), criticizes the theory about not explaining how the knowledge spillovers occur.

Mathur (1999) explains Lucas's model as it defines human capital as it has both 'internal' and 'external productivity effect' that an individual's human capital increases not only his or her own productivity but also the productivity of other workers with any given skill level. Mathur defines the difference between Lucas and Romer models as in Romer's model the source of externality is the stock of knowledge. According to Romer's model growth of knowledge depends on human

capital and on the stock of knowledge, because all knowledge cannot be kept completely secret, productivity of human capital in knowledge production will provide larger the stock of knowledge (Mathur, 1999).

Mathur (1999) explains that, even in the extreme case in which all regions have access to the same stock of knowledge (no secrets at all), regions with a larger stock of human capital will produce a higher growth of knowledge—and, consequently, higher growth rate of output.

Acs and Varga (2004) clarify that the EGT explains economic growth through the accumulation of technological knowledge and the economy grows endogenously through the accumulation and spillover of this knowledge.

While EGT explains the economic growth through knowledge and human capital, it is not clearly defined that if entrepreneurship has a role in it.

Aghion and Howitt (1992) introduce an endogenous growth model which take into consideration Schumpeter's 'creative destruction'. As they explain this model assumes that individual innovations are sufficiently important to affect the entire economy. In this model define a period, which is between two successive innovations. They further explain that this period has two effects, first of them is the Schumpeterian creative destruction which firms are motivated by the prospect of (temporary) monopoly rents after a successful innovation is patented, a next innovation will again destroy these rents as the existing good is being made obsolete by the Schumpeterian entrepreneur (Carree & Thurik, 2010). The other effect is the general equilibrium effect, which is working through the wage of skilled labor. Aghion and Howitt (1992) state that higher wages in this period, will reduce the monopoly rents that can be gained by exclusive knowledge of how to produce the best product.

In their later work Aghion and Howitt (1998) extend their model to show that a more competitive market structure may contribute to the economic growth. As Carree and Thurik (2010) explains, Aghion and Howitt (1998) add capital to their model of creative destruction. In order to show that capital accumulation and innovation are complementary processes and equal partners in the growth process. This have contributed to the endogenous growth literature by connecting purposive, profit-

seeking investment in knowledge to the persons performing this task: entrepreneurs(Aghion and Howitt, 1992; 1998; Carree & Thurik, 2010).

Wennekers and Thurik (1999) explains the relationship between entrepreneurs and the endogenous growth theory by referring to Baumol (1993) and they also point out the long run rate of economic expansion, and claim that Baumol describes both the contribution of endogenous growth theory and the dilemma this theory is confronted with. They add that the suggestion of Baumol, where he explains the critical components (endogenous variables like capital investment and education) of a feedback process that affect productivity growth, but productivity growth, in turn, itself influences the value of these variables, after some lag which can be told about the exercise of entrepreneurship, investment in innovation, and the magnitude of activity directed to the transfer of technology that are influenced by past productivity growth achievements and they also, in their turn, influence future growth (Baumol, 1993).

Wennekers and Thurik (1999) criticize the endogenous growth theory about focusing explicit attention on the intermediate variables (human) capital formation and innovation but remaining entrepreneurship largely implicit and not shedding light on the underlying conditions of the entrepreneurial activity needed for (human) capital formation and innovation. Another, more general, critic is given by Carree and Thurik (2010) about the disappearing role of entrepreneurship, as it disappeared from economic theory is that it played no role in the neoclassical growth model developed by Solow, 1970. They criticize this model the technological improvements being exogenous and therefore being independent of economic incentives. Economic growth in the traditional growth models is achieved by capital accumulation and exogenous technological progress, both of which leave little room for any entrepreneurial role whatsoever (Carree & Thurik, 2010). Carre and Thurik (2010) also state that it is not common for endogenous growth models to explicitly address the issue of entrepreneurship as driving force of technological and economic development.

2.2.3. New economic geography

In the simplest form, New Economic Geography explains the spatial distribution of economic activities. Krugman (1998) explains NEG through two aspects: 'centripetal' and 'centrifugal' forces.

The centripetal forces are the three classic Marshallian sources of external economies, as a large local market would create both 'backward linkages' and 'forward linkages', easy access to labor market and creating external economies (Krugman, 1998). He further explains that 'backward linkages' as sites with good access to large markets are preferred locations for the production of goods subject to economies of scale and 'forward linkages' as a large local market supports the local production of intermediate goods, lowering costs for downstream producers'. He also defines the easy access to the labor market as 'an industrial concentration supports a thick local labour market, especially for specialized skills, so that employees find it easier to find employers and vice versa.' and creating external economies as 'a local concentration of economic activity may create more or less pure external economies via information spillovers'.

Krugman (1998) points out that the centrifugal forces 'a bit less standard, but represent a useful breakdown'. He further explains that the immobile factors like land, natural resources and people (in the international context) miliate against concentration of production. Krugman (1998) gives more details about these disincentive aspects may be caused by both from the supply side (some production must go to where the workers are) and by the demand side (dispersed factors create a dispersed market, and some production will have an incentive to locate close to the consumers). He remaks that the concentrations of economic activity generate increased demand for local land, driving up land rents and thereby providing a disincentive for further concentration.

Eckey at al (2004) point out that the standard model of NEG shows that, even when two regions have absolutely identical location conditions, agglomeration and deglomeration processes can occur and they remark the question of 'whether the suppositions made in the model depict human behaviour appropriately and comprehensively'. While they state that the 'suggested behaviour patterns of utility, income and profit maximization are in line with neo-classical arguments. In this

sense, appropriate objections cannot be made against the NEG model, but against neo-classics in general.', they criticize the NEG model with 'more serious ogbejtions' generally about firms behaviours':

- The decisions of households and firms are not referred to an inter-temporal decision calculus, characteristic of modern consumption and investment theory.
- Firms set their prices by a mark-up of costs, without paying attention to the reactions of competitors.
- Firms produce respectively only one good. There are no "economies of scope".
- Despite fixed costs firms remain totally mobile. "Sunk costs" are not compatible with the model.

Unlikely the other theories like Creative Destruction or Endogenous Growth Theory, the entrepreneur is a missing actor in New Economic Geography. Therefore this missing is not meaning the whole dissapearince of the entrepreneur but just overlooked. Meaning, while that concentration of the economic activities (which NEG explains) enables the decreasing of the costs, easy access to large markets and labor market, external economies and information spillovers, it is also attracting entrepreneurs. This may conclude (as NEG explains) as disincentive for further concentration or improvement of the exsisting conditions and opportunuties (as NEG) explains. Unlikely the other theories entrepreneurship is not a main actor but certainly may be a promotive or a driving force.

2.3. Linking Conceptual and Theoretical Framework

As entrepreneurship discussed in the terms of firm level, industry, regional and national contexts, all of them are relevant at the point of connecting entrepreneurship to the economic growth. As mentioned before, in this section the Creative Destruction notion, the Endogenous Growth Theory and the New Economic Geography held in terms of their attempt how they handle the relation between entrepreneurship and economic growth.

Schumpeter (1934) states that entrepreneurial innovation is the essence of capitalism and the disequilibrium of 'creative destruction', embodied in the new products, new production processes, new markets, new sources of raw materials and new forms of organizations. As mentioned before, creative destruction is a dynamic process, which causes closures or expanding or re-organization of the existing firms. This dynamic process also provides new technologies, adaptation to them and institutional changes and enhances the productivity.

Bosma et Al. (2011) explains the creative destruction process by simply:

> '*Entrepreneurs introduce new combinations embodied in new firms. These innovative entrants enforce incumbents either to adapt to the new efficiency standard or to exit the industry. As a consequence, a new situation emerges in which the productivity of the industry has improved. This improvement is brought about by innovative entrants who are more productive than the average incumbent and by the exit of less productive incumbents via the competition process. These exits are important because resources are released that can be reallocated to more productive activities. The productivity gains might be reinforced if incumbents are able to improve their productivity.'*

The endogenous growth theory explains the role that local innovation plays in economic growth. Unlike neoclassical theory, where innovation and technological change is assumed to be exogenous, this perspective treats innovation endogenously, arising directly from conditions in the local market This endogenous growth arises from local investments in the creation of new knowledge on the part of profit-motivated private agents (Valliere & Peterson, 2009). It is entrepreneurship that drives the exchange of constrained spillover knowledge, as regions with more entrepreneurship have more growth in labor productivity (D. Audretsch & M. Keilbach, 2004).

In the New Economic Geography, as mentioned before, regional concentration of economic activity is driven by three parameters: increasing returns effects for participants in the local market, minimization of transportation costs and the locality of demand for manufactured goods (Valliere & Peterson, 2009). Even though NEG doesn't seem like explaining the direct link to the entrepreneurship, as explained in

the previous section, it is possible to say that entrepreneurs may be driving force of the concentration of economic activities.

Wennekers and Thurik (1999) summarizes the role of entrepreneurship in several fields of research (**Table 2.2**):

Table 2. 2: Assesment of the role of entrepreneurship, drawn from several fields of research (Wennekers & Thurik, 1999).

Field of Literature	Specific Domain	Competition	Innovation	Firm start-ups	Importance of Entrepreneurship for economic growth
Historical Views	Schumpeter / Baumol	++	+++	+	++
	Neo-classicals	++	+	0	+
	Austrians	++	+	0	++
Endogenous growth theory		+	+++	0	+
Economic history		++	+++	+	+++
Management literature		+	+++	++	++
Industrial economics	Porter	+++	+++	++	+++
Evolutionary economics	Eliasson	+++	+++	+++	+++

0 Not present in the writings
\+ Implicitly present in the writings
++ Explicitly present in the writings
+++ Pivotal element in the writings

To only give an explanation for the small and large firm distinction given in the previous section, giving reference from Coffey and Polèse, Malecki states the relation between economic growth and entrepreneurship by explaining that entrepreneurs are able to response to the skills of local workers and to the local values imbedded in both production and consumption patterns and routines and more flexible in production, while the large organizations are not (Malecki, 1993). However, this issue will not be held in this thesis, since the firm births or death is taken into account in most of the empirical studies, not the firm sizes.

The measurements of economic development or growth in the empirical studies were given in the previous chapter. There were three types of measurements: Employment related variables, GVA or GDP growth and Productivity related variables.

Reynolds (1994) who prefers the employment related variables, explains that there are two major sources of job gains, the creation of new business units and the expansion of existing business units. He further explains that economic growth is affected directly by regional characteristics and the turbulence among business entities (autonomous firms and branches). In addition he explains 'Turbulence among the business entities is, in turn, expected to be affected by regional characteristics.'(Reynolds, 1994). He schematizes these thoughts as (**Figure 2.4**):

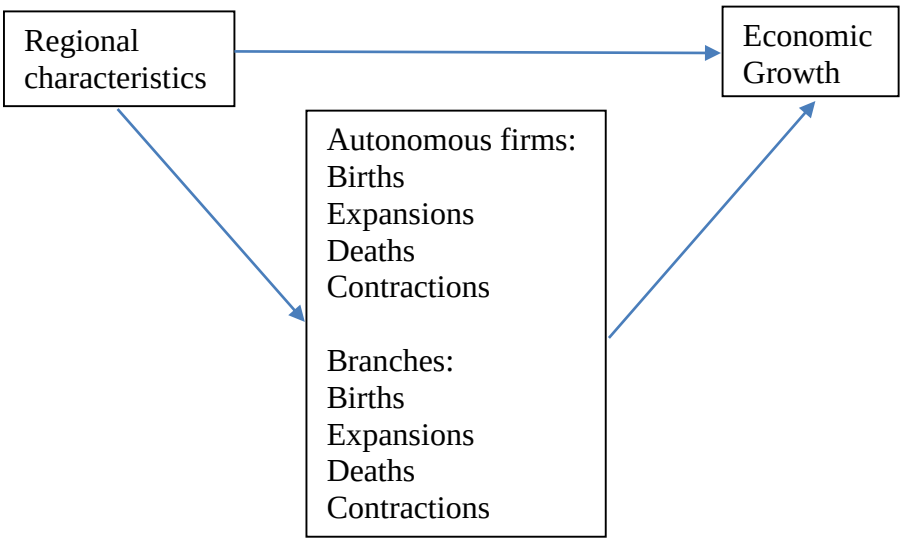

Figure 2. 4: Model: regional characteristics/business votality/economic change (Reynolds, 1994).

Fritsch (1997) explains the effect of new firms on employment, stating that their contribution depends on their characteristics, in four groups which first two of them are direct and the other two is indirect effects as he defines. The first group consists of the new firms, which have to leave the market after only a short time so that their contribution to regional job supply is rather temporary. The second group consists of the firms, which start small only very few of the new firms generate substantial numbers of jobs. He further explains that the third group is consequential as depends on the consequences of new comers for incumbents. At this point, he states that:

> *If successful entry of newcomers forces incumbent firms to leave the market, or if entries are mainly induced by established firms assigning specific activities or jobs to other businesses, the effect of startups on regional job supply will be relatively limited. Moreover, to the extent that entries are associated with changes in the division of labor between establishments, this might result in rationalization effects and cause a reduction of employment. However, if such reorganization leads to an*

increase in regional competitiveness one should expect a positive impact on regional growth and employment, at least in the long-run.

Fritsch (1997) explains the fourth group as consequential as the third one: the impact of new firms on regional employment may depend on the extent the newcomers receive their inputs from inside or from outside that region, the degree the new establishments supply inputs to the regional economy that have been bought from outside beforehand, the dependence of the successful entry influences the regional economy in other ways as by reinforcing agglomeration economies or diseconomies.

In his empirical findings, Fritsch (1997), states that for the case of West Germany, during the period of analysis, new firms obviously have been far less important for regional employment than is commonly assumed.

Audretsch et al. (2001), in a different way try to link self employment rates to unemployment rates. He explains that the literature uses micro level data and shows that small firms grow faster than large firms.

This suggests that, at the macro or country level, a larger presence of small firms contributes positively to economic performance as well. Self-employment rates represent a specific measure of the presence of small and very small firms in an economy. However, it is not clear that higher self-employment rates automatically lead to improved economic performance.

While conceptualizing effects in two ways as 'refugee' effect (a (positive) effect of unemployment on self-employment) and 'entrepreneurial effect (a (negative) effect of self-employment on unemployment), Audretsch et al. finds empirical evidence on the 'refugee' effect.

In another study, Audretsch and Fritsch (2002) gets two different findings as for the first period (1980s) the impact of new firm formations has no significant impact on employment change and for the second period (1990s) the regions with a higher start-up rate exhibit higher growth rates. They explain this difference relies on two different growth regimes.

On the other hand, Zoltan Acs and Armington (2004), in the context of an endogenous growth model with a particular emphasis on knowledge spillovers, empirically prove by counting economic growth as employment growth that higher

rates of entrepreneurial activity were strongly associated with faster growth of local economies.

André van Stel and Storey (2004), in a similar way with Audretsch and Fritsch (2002) find no evidence that changes in new firm formation rates in the 1980-83 period explained changes in employment 1984–91. Contrary, they find evidence that only later in the decade that increased rates of new firm formation nationally appear to lead to job creation. They also explain this conflict is caused by the national public policy, which focused on raising new firm formation as a key strategy for creating jobs and lowering unemployment.

Another study of van Stel with Suddle (2007) which investigates the relation between new firm formation and regional employment in industry level and by using Almon lag, has findings of the maximum effect of new businesses on regional development is reached after about 6 years. As van Stels' previous study, this study has also taken time lags into consideration. Similarly to Van Stel and Suddle (2007), Fritsch and Mueller (2006) also uses Almon lags and in addition they define regions according to their labor productivity as low, medium and high. They have evidence of the effect of new business formation on employment growth tends to be considerably more pronounced in regions with a high density of economic activity and also evidence of a clear difference in the effects according to the level of regional labor productivity as the higher the regional productivity level is, the larger the positive-employment effects are.

Mueller et al. (2006) in their empirical study introduces 'wrong type of entrepreneurship' and states that countries with higher rates of new firm formation has also higher rates of employment growth and lower rates of new firm formation has lower rates or zero impact on employment growth.

Summarizing the empirical studies, it is possible to say that there is certain pattern in findings of the studies, which published after 2000. They all have evidence on both positive impacts, negative impacts or no effects of entrepreneurial activities on employment growth at all. Two of them explain these conflicts in Germany and Great Britain cases (Audretsch & Fritsch, 2002; André van Stel & Storey, 2004) as it is caused by different growth regimes or policies. One other Germany case study (Fritsch & Mueller, 2006) explains these conflicts in terms of productivity levels of

labor force and determines best time lag for the subject of matter using Almon lags as André Van Stel and Suddle (2007) explained the Netherlands case. Mueller et al. (2006) explains the conflicts in Great Britain, according to the rates of new firm formations. In the same way, Zoltan Acs and Armington (2004) explains their findings on rates of entrepreneurial activities.

Coming back to measurements of economic development or growth, Carree et al. (2002) by hypothesizing an 'equilibrium', find evidence for the relationship between the rate of business ownership and per capita income that is U-shaped. They explain the U-shaped pattern has the property that there is a level of economic development with a "minimum" business ownership rate. They find the rate of business ownership in OECD countries, influence economic growth through deviations from the equilibrium rate. In their later, 'revisited' study, Carree et.al. (2007) states that for the business ownership being below its 'equilibrium' rate, there appears to be a significant negative effect on economic growth.

André Van Stel et al. (2004) investigates the impact of the Total Entrepreneurial Activity (TEA) rate on economic growth and find that there is an impact but not a simple linear one of the TEA rate on GDP-growth. In addition they find a significant non-linear effect: the TEA rate has a negative effect for the relatively poor countries, while it has a positive effect for the relatively rich countries.

Wong et al. (2005) investigate firm formation and technological innovation as separate determinants of growth by using four TEA rates (high growth potential TEA, necessity TEA, opportunity TEA and overall TEA). They have findings of insignificance of overall TEA, suggesting that the existence of entrepreneurial activities that do not contribute to growth. They claim that this is consistent with previous findings of Audretsch et al. (2001) by meaning the 'refugee' effect. They also state that these findings may be interpreted as supporting the proposition by Carree et al. (2002) that it is the deviation of entrepreneurship levels from the equilibrium rate that influences economic growth, and not just the existence of entrepreneurial activities. In their findings of the four types of entrepreneurship, only high growth potential entrepreneurship found to have a significant impact on economic growth.

In a similar way and by extending the model of Wong et al. (2005) and using same variables and sample size, Valliere and Peterson (2009) finds that in developed countries, a significant portion of economic growth rates can be attributed to high-expectation entrepreneurs exploiting national investments in knowledge creation and regulatory freedom. However, in emerging countries this effect is absent.

Dejardin (2011) proves the positive impact of entrepreneurship on economic performance at the firm level by industries. He states that the emerging picture is different at the regional and national levels and, more specifically, when economic performance measured through the capacity of the aggregated economy to create new value. He further explains that the results for manufacturing suggest negative relationships between firm net entry and economic growth or, more probably, autoregressive relationships in the growth process. As for services, statistical significance appears to support the conclusion that net entry may have positive lagged effects on regional economic growth and the results for GDP growth in the services industry, although rather weak, are by and large consistent with previous findings, that there is a positive impact of net entry on economic growth.

Fotopoulos (2012) has findings on non-parametric regression of self-employment rates on GDP per capita effect is positive. In additionally he states that, self-employment rates in excess of what the level of economic development would have predicted have positive effects on regional economic growth and thereby, no evidence for penalty of having too much of self-employment has been produced.

For the last measurement of growth, productivity related variables are considered in the light of the empirical studies by Bosma and Nieuwenhuijsen (2000), D. B. Audretsch and M. Keilbach (2004) and F. G. van Oort and Bosma (2013).

Callejon and Segarra (1999) investigate the significant part of new firms contribute to improve total factor productivity by adopting modern technology that is embodied in the last vintage equipment they use. They found evidence has been found that exits, as well as entries, impact positively on total factor productivity and this positive effect of exit on the productive efficiency is compatible with the dynamic approaches that associate business mobility with the process of innovation, and with asymmetries in information among agents.

Similarly, Bosma and Nieuwenhuijsen (2000) take entry and exit rates into account as they define it as 'Turbulance' and investigates whether turbulence contributes to the growth of the total factor productivity (TFP) in regions. They find evidence at macro level that turbulence contributes to the growth of the TFP. They explain further details for distinction of industries. In the service sector, they found that turbulence affects the TFP growth in a region but this effect of turbulence does not occur immediately. In contrary, they find no TFP effect of turbulence was found for manufacturing but they explain as the model provides estimates of the direct effect of turbulence on TFP so the possibility of a long-term effect cannot be ruled out.

D. Audretsch and M. Keilbach (2004) state that economic knowledge emerges from a selection process across the generally available body of knowledge, actively driven by economic agents. They suggest that entrepreneurship is an important mechanism in driving that selection process hence in creating diversity of knowledge, which in turn serves as a mechanism facilitating the spillover of knowledge. In their empirical findings, they prove that entrepreneurship enhances growth through regions with higher levels of entrepreneurship exhibit stronger growth in labor productivity. They furthermore explain this finding as the start-up of a new firm contributes to diversity by attempting to commercialize knowledge and a greater amount of entrepreneurship expected to be associated with more diversity and therefore higher growth.

F. G. van Oort and Bosma (2013) provide empirical findings in the basis of agglomeration economies as they find confirmation for the importance of both types of early-stage entrepreneurship and patenting activity in explaining regional variation in labor productivity. In addition, they find that the impact of growth-oriented entrepreneurship and patenting activity is complementary to an important part of the urbanization economies effects and in contrary they find no evidence for the effect of innovation-oriented entrepreneurship or entrepreneurs who do not expect to grow. They state that an interesting finding was also that regions with high levels of low-growth-oriented entrepreneurship (that is, early-stage entrepreneurs expecting to generate at most one job apart from their own over the next 5 years) were also associated with higher levels of labor productivity.

3. THE CASE OF TURKEY

3.1. Prefatory Remarks

The purpose of this study is to explore empirically whether entrepreneurship affects regional economic development or not. In other words, in this study, the causality between entrepreneurship and regional economic growth in Turkey is investigated. The time series data used in this study is gathered from Turkish Statistical Instute (TSI) at NUTS1 level.

While examined empirical studies accepted entrepreneurship in 10 different ways, in this study it is accepted as firm formation. Including the firm closure and net entry (firm formation-firm closure) it is aimed to find the actual entrepreneurship.

For the purpose of this study, correlation analysis for data covering NUTS1 regions in Turkey in two periods as between 1987 and 2001 and between 2004 and 2011 has been applied.

The economic growth is usually explained as GDP, GVA or employment growth. In this study, we are covering the two of them (GVA or GDP and Employment) as the dependent variables, which are used for explaining economic development, are:

- Gross Domestic Product (GDP (per capita)) is the value of total output produced in an economy which is given in the 1987-2001 time period for this thesis.
- Gross Value Added (GVA (per capita)) is the value of goods or services produced in an economy which is given in the 2004-2011 time period for this study. Generally GVA plus the taxes on products, minus the subsidies on products gives the GDP. But in this study neither the taxes nor the subsidies is taken into consideration.
- Employment (EMP) is the labour force employed which is given in the 2004-2011 time period for this study.

- Unemployment (UNEMP) is the labour force unemployed (but looking for a job) which is given in the 2004-2011 time period for this study.

The reason for using both GDP and GVA to explain the standarts of living, is the available data issue in Turkey. Unfortunately between the years of 1987 and 2001 the available data was GDP and between the years 2004 and 2011 the available data was GVA. This issue determined the two periods of this empirical study.

The independent variables are Firm Formation (FF) and Firm Closure (FC), which was available between the years 1965 and 2013 in NUTS3 level. Net Entry, the third and last independent variable is Net Entry (NE) which is calculated as following:

$$\boldsymbol{Net\ Entry = Firm\ Formation - Firm\ Closure}$$

In this study to measure the effect of firm formation on regional economic growth, correlation tests are applied in three stages (**Figure 3.1**). Every independent variables effect on dependent variables are mesaured by correlation (one-tailed) method by both numbers (stage 1) and growth rates (stage 2) in order to understand the maximum effect of this relation the time lags are considered. After these tests, region specific correlation tests are applied as stage 3.

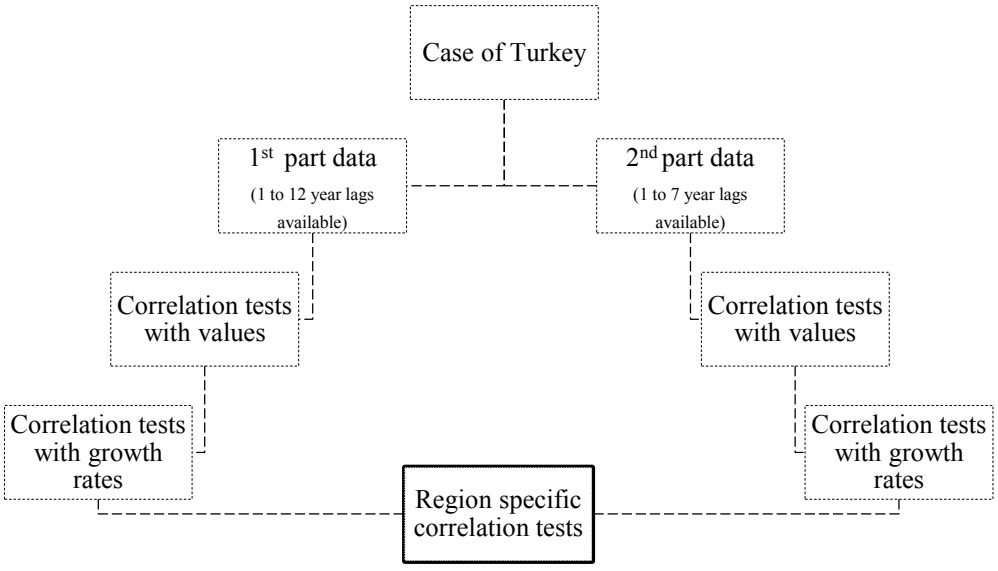

Figure 3. 1: Steps of the analyses.

Unfortunately it was not possible to include sectoral stuctures in this empirical study. It is believed that including sectoral structures of regions might have helped to

explain more about the effect of entrepreneurship on regional economic development.

As mentioned, during the literature survey, 23 empirical studies (which directly investigate the effect of entrepreneurship on regional economic development) were examined about the way that they define entrepreneurship, about how they measure regional economic development (or growth), the models or statistical methods conducted, the variables they took into consideration and the scale of the empirical study. While their methodologies vary into different methods, it is possible to say that correlation method grounds most of them. Therefore this analysis is mainly based on correlation.

Correlation is a common method to measure and describe the relation between two variables including the dependency, where the value of '1' is total positive correlation, the value of '0' is no correlation, and the value of '-1' is total negative correlation. In this study the Pearson Correlation Coefficients method is used. The correlated variables are given in the following table (**Table 3.1**):

Table 3. 1: Dependent and independent variables and combinations for correlation tests.

		Dependent variables			
		GDP	GVA	EMP	UNEMP
Independent variables	FF	+	+	+	
	FC				+
	NE	+	+	+	

To define the time lag that entrepreneurship effects regional economic development, the correlation tests are applied with 1 to 12 years time lags as data alowed (time lags tested for 12 years for data between 1987 and 2001 and 7 years for data between 2004-2011) (**Table 3.2**).

Table 3. 2: Available data.

Data	**Available Data**	**1965 - 1979**	**1980**	**1981 - 1984**	**1985**	**1986**	**1987-1989**	**1990**	**1991-1994**	**1995**	**1996-1999**	**2000**	**2001**	**2002-2003**	**2004-2006**	**2007-2009**	**2010 - 2011**	**2012**	**2013**
FF	1965-2009																		
FC	1965-2010																		
GDP	1987-2001																		
GVA	2004-2011																		
EMP	2004-2012																		
UNEMP	2004-2012																		

Also simple cross-tabs are used to interpret the conditions and results. While the IBM SPSS Statistics 20 is used both for calculating groth rates and correltaions, Microsoft Office Excel 2013 is used for basic cross-tabs.

The data gathering problems, the legal regulations of administrative borders and the changes in provinces (in 1989 Aksaray, Bayburt, Karaman and Kırıkkale; in 1990 Batman and Şırnak; in 1991 Bartın; in 1992 Ardahan and Iğdır; in 1995 Yalova, Karabük and Kilis; in 1996 Osmaniye and in 1999 Düzce become a province) and the final statistical regulation in 2002 (as 3 digits NUTS) has limited this study in order to work at a different scale. The problem was that the data were in provincial level before 2002 and after 2002 it was in NUTS2 levels. Using the NUTS2 level data was leading this study in a statistical confusion, since before 2002 there were 6 times of provincial changes and gathering some neighbour disticts together to generate provinces and the data was not defined suitable for these changes. These issues led this study to empirically test the effect of entrepreneurship on regional economic development in NUTS1 levels, since NUTS1 levels are covering a wide range of provinces, without leading the study to some statistical misunderstandings or underestimations.

3.2. Firms and Entrepreneurship in Turkey

With the beginning of planned era, after 1963, with several different policies given in the five year development plans, Turkeys' policies about entrepreneurship has constantly evolved according to the economic and political situations of the country. While there were only policies about firm sizes at the beginning, Turkey's entrepreneurship policies are changed into more complex and detailed policies including the legal regulations and various institutions. With the introduction of different types of incentives, many crises affected firm formation and firm closure rates. Accepting Turkey as a developing country, it will be more correct to observe net entry rates than the firm formation rates. Regional disparities were always a matter of subject since early years of the establishment of the Republic of Turkey. In the first two 5 Year Development Plans, region notion was not clearly discussed. Even in the third plan, regional disparities issue was not discussed, but the usage of local sources for the industrialization process was giving signs about regional policies were induced in the next plans.

After 1980s, with the effect of political and economic tension and adopted neoliberal policies, regional policies were re-defined. Instead of central government based development, the development process became local based, where local institutions and actors were important. Based on these issues, it will be more correct to observe firms, net entry and growth rates between NUTS1 regions in 3 periods as 1965-1980, 1980-1995 and 1995- 2011 via five year development plans. On the other hand, the institutions and definitions are changed through the planned era. Just as the conceptual issues of entrepreneurship in the literature, the definitions about entrepreneurs in the development plans are mixed with the firm and SME notions (**Figure 3.2**).

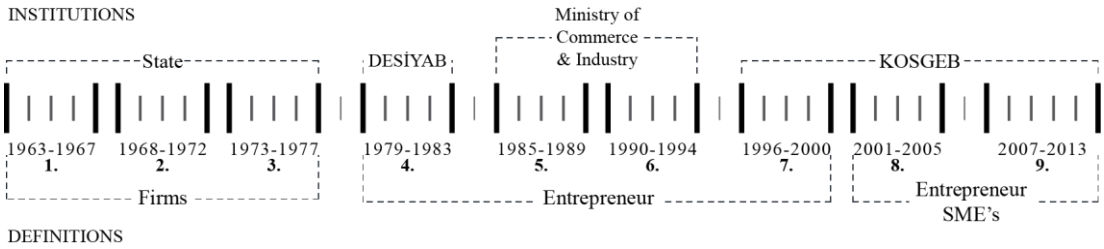

Figure 3. 2: The institutions and definitions among different time periods.

While there is no special institution for entrepreneurs (but the state) in the first three development plan, since the fourth plan there were different institutions, but always with the state initiative (**Figure 3.2**). With the politicy changes at the 80s, the institution for entrepreneurs was DESIYAB (State Industry and Labour Investment Bank). After 1985, until 1995 there was not special insitution was in charge for entrepreneurs but the Ministry of Commerce and Indusrty. After 1996 KOSGEB (Small and Medium Enterprises Development Organzation) started to support the entrepreneurs.

3.2.1. First period: 1965-1980

In the first development plan (1963-1967), the policies about entrepreneurs (or it will be more correct to call them firms, as given in the plans), were more likely to be concerned about the sizes. In this term, most of the firms are small and usually family firms. On this basis, most of the private investments were in Istanbul and more than the half of the whole revenue from industry was gained from Istanbul. While revenue from industry mostly gained from west coast cities like Istanbul, Izmir, Bursa, Aydın or Eskişehir, public investments were mostly in the

underdeveloped regions. Besides the public investments, there were also tax reductions for the private investors in those regions (DPT, 1963).

Main firm policy of this plan was leading small companies to incorporations in order to increase the productivity. Another important policy of this plan was establishing consultancy firms and investment banks for financing and consulting new firms. Main agency in this term was the Chamber of Commerce and Industry. It was their duty to organize seminars and education programs about technical issues and project development, publishing journals and organizing exhibitions for sharing sectoral information and ideas (DPT, 1963).

In the second development plan (1968-1972) the scale issue of firms was still ongoing, but besides that the sectors of firms was more clearly defined. In this plan, also spatial decisions was given about the location of firms: the new established firms which have the flow of good between each other would be placed in special industrial districts with the infrastructural opportunities. Therefore, it was observed that established firms had increased their capital and new firms had established with more capital than the other term. Another important policy of this plan was the incentives like tax reduction for exporting firms. It was mentioned before that the first plan had policies about the establishment of consultancy firms, in the second plan, this policy had renewed as consultancy and engineering firms in order to serve new firms in terms of education, science, and research issues (DPT, 1966).

In the third plan (1973-1977), decrease of the foreign-source dependency and industrialization policies were prominent. In this plan most of the policies were not conducted for the next five years, but the next 15 years. The participation attempts to the European Economic Community obligated the industrialization process and modernization in agriculture to start. Main policy of this term was the usage of all resources for the industrialization process. The balance between public investments (56%) and public investments (44%) were renewed according to the new industrialization policy (DPT, 1972). Firm policies were like the previous two development plans, that the scattered firms, the subnormal capacity usage and the financing issues were affecting the economy and the economy of firms in themselves. Also personal and family entrepreneurs were affected from the short-term loans of the financial institutions and banks. Another important initiative of this plan was the organized industrial areas (DPT, 1972).

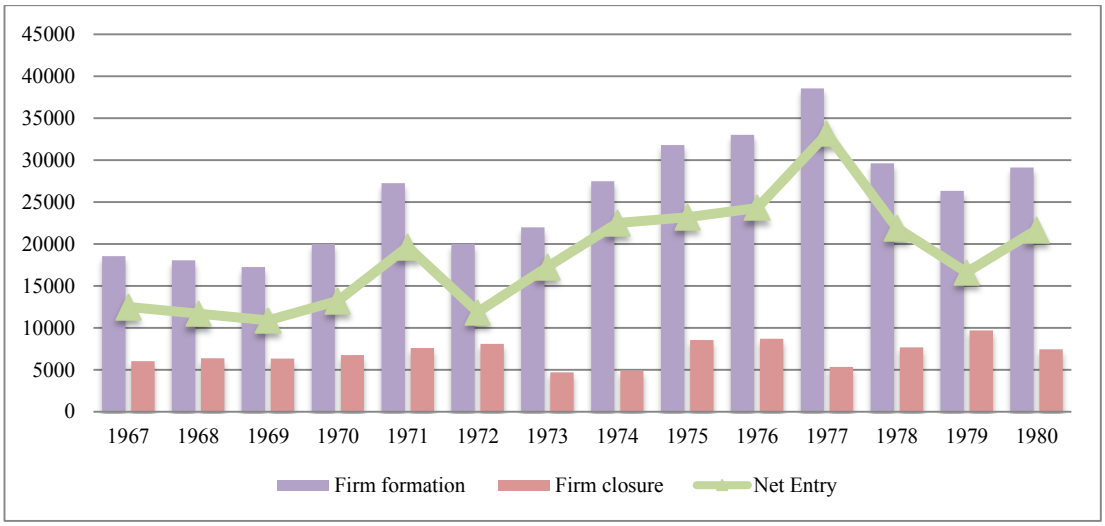

Figure 3. 3: Total Firm Formation, Firm Closure and Net Entry Between 1967-1980.

The first period mentioned (1965-1980), with the Figure 3.3 can be explained by the political tensions in Turkey. Since there is no GDP or GVA data for these years, only the growth of the total net entry rates is used. As it can be seen from the Figure 3.3 clearly, there is a remarkable change in net entry rates after the year 1972 until 1977. With the beginning of political tensions at the end of 1970s, a clear decline at the net entry rates can be observed.

3.2.2. Second period: 1980-1995

The first 4 five year development plans were based on the mixed economy model and suggested a balanced development. The fourth plan which prepared for the years between 1979-1983, the responsible institution for firms and entrepreneurs was the State Industrial Employee and Investment Bank (DESİYAB). The duties of this institution were defining the sectors for entrepreneurs, preparing the feasibility reports, project development and legal and educational advising for entrepreneurs. The main concern about the investments was the technological, integrated public investments for the main sectors and private investments (entrepreneurship) were in the position of supporting these main sectors as sub-sectors (DPT, 1978).

Therefore, as well as the incentives continued for entrepreneurs (especially the exporting firms) defined detailed in scope of sector, capacity, technology and capital; new incentives for cooperatives was announced. Cooperatives were a tool for connecting the firms in their sectors. Another important policy of this plan was the regional policies like developing the agro-industries in rural areas (DPT, 1978).

Foreign direct investments were first introduced in this plan as research and technological advising firms. With the introduction of foreign direct investments, the investments for neighboring countries with market potential started.

In the fifth development plan (1985-1989) the institution for entrepreneurs was a new formation under the Ministry of Commerce and Industry. In this term, the liberalization of imports started and the incentives for exporting firms continued. With the liberalization of imports the protection of local firms and increasing the competitiveness of local firms became an important policy (DPT, 1984). In this plan, the locational choices of organized industrial areas were started to defined in the Regional Development Schemes and the specialized industrial areas issue held on detailly. The firm creations in these specialized industrial areas were supported by incentives (DPT, 1984).

After the fifth plan, the policies about firms or entrepreneurs became undetailed except their sectors. In the sixth development plan (1990-1994), the main concern was the location of them and developing small industrial areas around the organized or specialized industrial areas for finishing industries. The incentives for engineering and consultancy firms continued and new incentives for architectural firms were prepared (DPT, 1989).

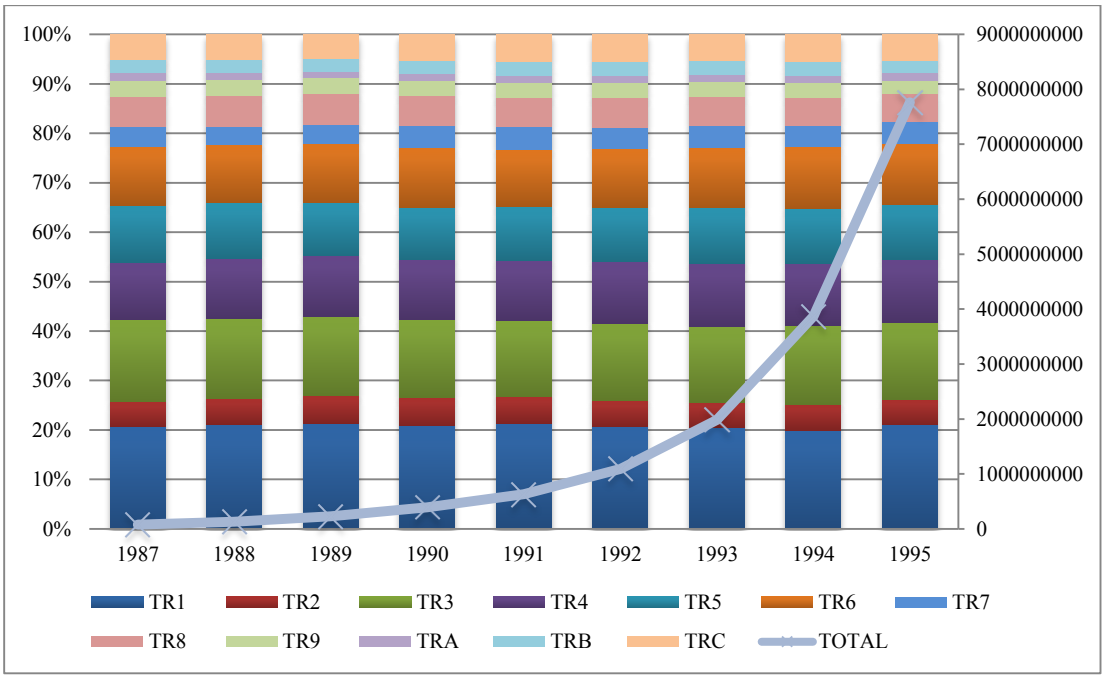

Figure 3. 4: GDP share of the Regions Between 1988-1995.

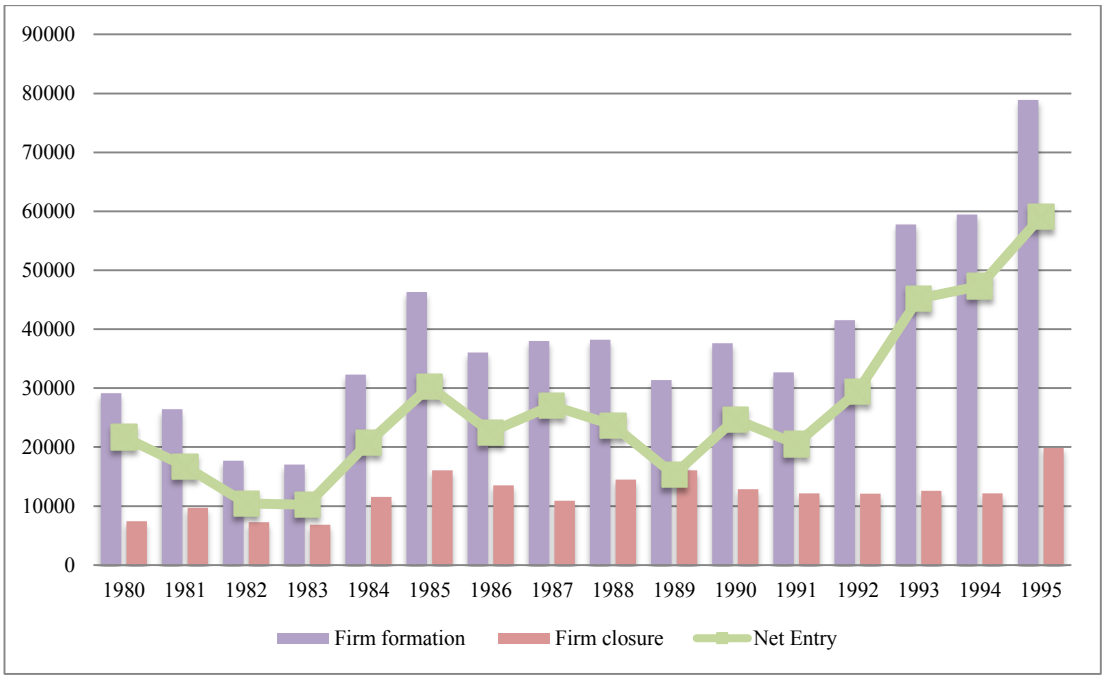

Figure 3. 5: Total Firm Formation, Firm Closure and Net Entry Between 1980-1995.

In the second period (1980-1995) it is hard to explain the available GDP data (**Figure 3.4**) and NE rates (**Figure 3.5**) combined. While the negative values of growth of the total NE rates in the years 1981 and 1982 could be explained with the political tensions, there is no specific political tensions to explain the other negative values of the years 1986, 1988, 1989. Also there isn't any reflections in the GDP growth rates, neither in the total rate nor in the regional rates.

3.2.3. Third period: 1995-2011

With the seventh development plan (1996-2000), a new institution for entrepreneurs was introduced for supporting entrepreneurs with project development, education issues, financially, technologically and organizationally: Small and Medium Enterprises Development Organization (KOSGEB) (DPT, 1995). With the establishment of KOSGEB new projects for entrepreneurs in the priority development areas prepared. Also new incentives were set up for the entrepreneurs who invest in the organized and small industrial areas in the priority development areas. In this terms R&D firms had special incentives. With this firm the protection policy of local firms has almost ended and new competition policies about developing the local firms, increasing the foreign investments share in economy and developing the relations between foreign and local firms policies came up. At the

end of 6th plans term, there were 37 organized industrial areas; this number has increased to 81 with the ending of 7th plan (DPT, 1995).

In the year 1999, 99,9% of industrial firms was SMEs. 55,9% of the employment was covered by SMEs and 24,2% of the added value was produced by SMEs (DPT, 1995). Even though SMEs had such important place in the Turkish economy, the rate of the loans given to SMEs was only 5%. The eighth development plan was a solution for the capital problems for SMEs. New policies for increasing the competitiveness of SMEs are presented: financial supports, supports of employment, loan, energy and tax reductions (DPT, 1995).

The 2001 crisis' effects were taken into consideration in ninth development plan (2007-2013). While the eighth plan (2001-2005) suggested the development of high added value sectors, the ninth suggested developing R&D and innovation. New policies about the collaboration of universities and industrial firms suggested and new sector based organized industrial areas were introduced for local development (DPT, 2000). In this term, entrepreneurship became a tool for local development and new collaboration projects between state, private investors, universities and NGOs started to develop entrepreneurship (DPT, 2000).

With the year 2012 SMEs were covering the 99,9% of total new entries. 76% of employment, 54% of added value, 56% of investments, 56% of production and 60% of exports were covered by SMEs (DPT, 2013). Unlikely to the 1999 data, by the year 2012, 25% of the loans were used by SMEs (DPT, 2013). While SMEs, or we can say entrepreneurs, becoming more important in the economy, innovativeness, productivity and employment creation issues of entrepreneurs started to be discussed.

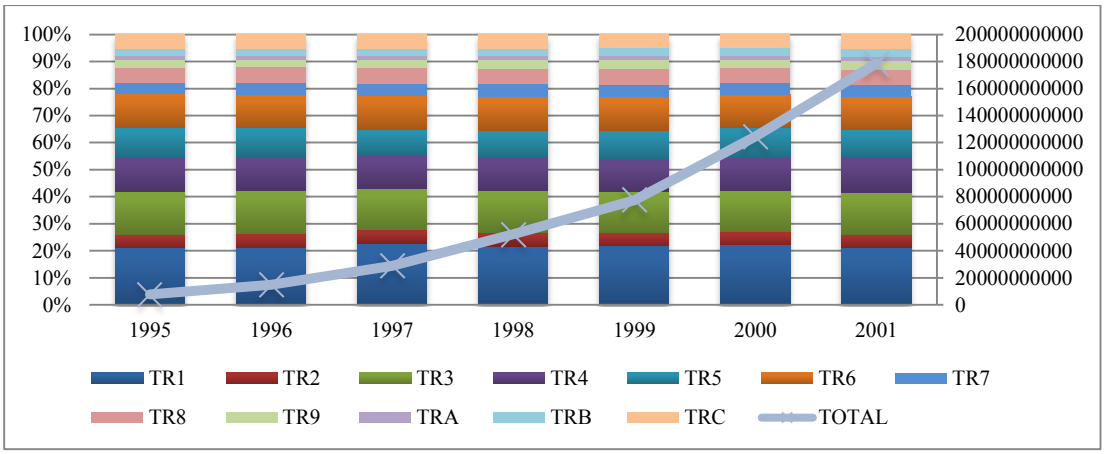

Figure 3. 6: GDP shares of the Regions Between 1995-2001.

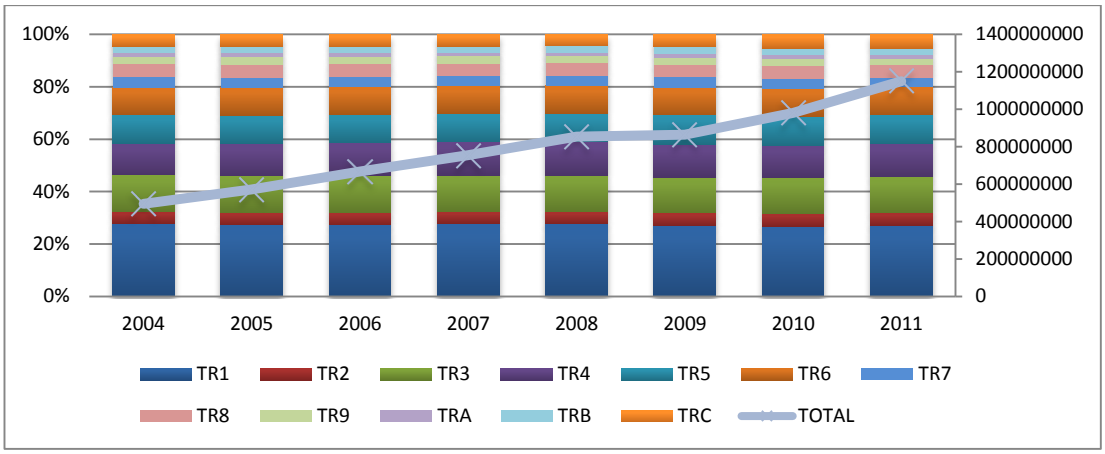

Figure 3. 7: GVA shares of the Regions Between 2004-2011.

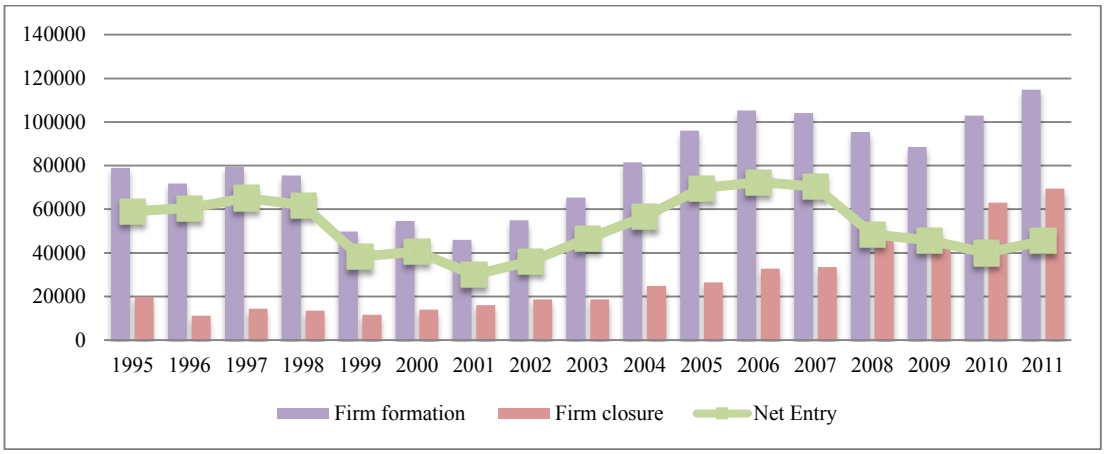

Figure 3. 8: Total Firm Formation, Firm Closure and Net Entry Between 1995-2011.

The third period (1996-2011) mainly has two clear effects: the earthquake in 1999 and the global financial crisis began in 2007. Unlikely the second period, these two major incidents can be observed both in the GDP or GVA growth rates (**Figure 3.6 and 3.7**) and with the NE rates (**Figure 3.8**).

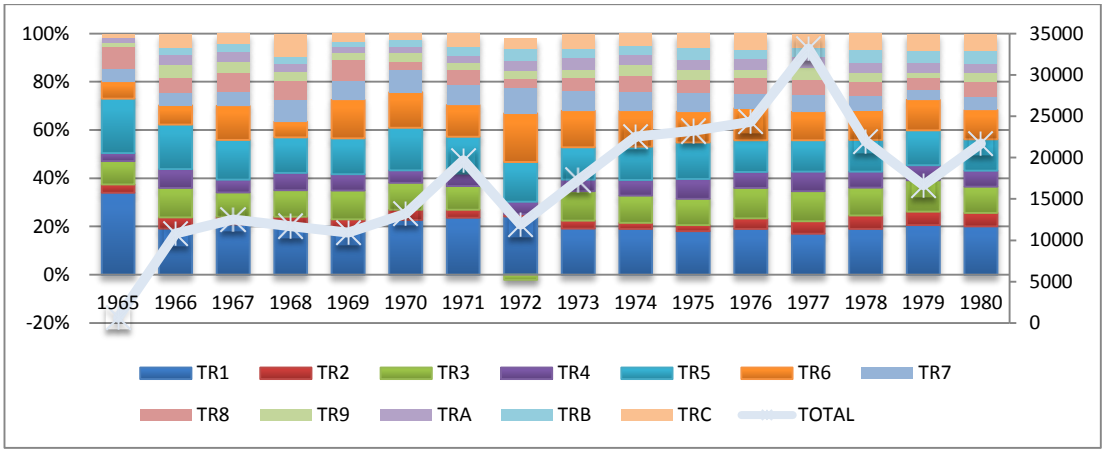

Figure 3. 9: Share of Net Entry Rates Between 1965-1980.

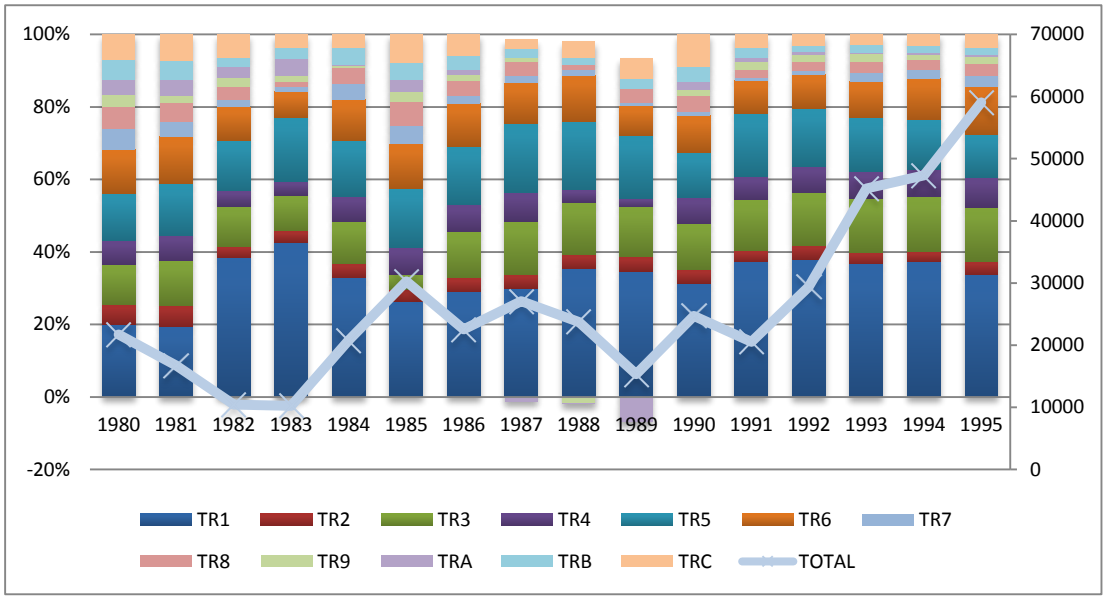

Figure 3. 10: Share of Net Entry Rates Between 1980-1995.

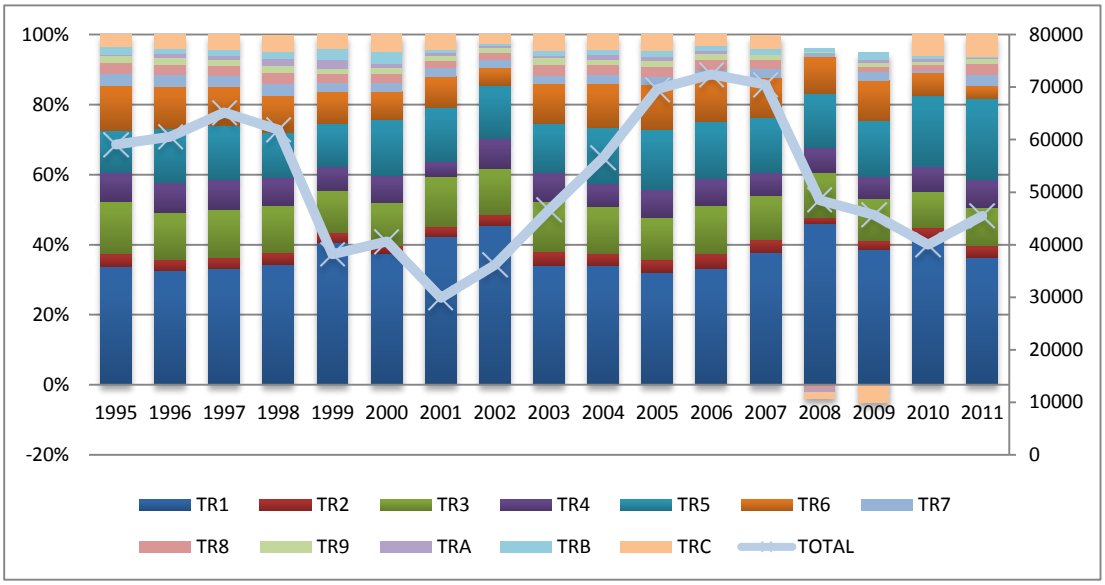

Figure 3. 11: Share of Net Entry Rates Between 1995-2011.

As it can seen from the three figures (**Figure 3.9, 3.10** and **3.11**) given above, the share of net entry rates clearly reflects the regional disparities. The Istanbul Region (TR1), the Aegean Region (TR3-İzmir-Manisa-Aydın), the West Anatolia Region (TR5-Ankara&Konya) and the Mediterranean Region (TR6-Antalya&Adana&Hatay) were covering most of the net entry rates in the first period. In the second period, four regions performances does not change graphically but it can said that with the second and third period, the disparities among regions get more obvious.

3.3. The Effect of Entrepreneurship on Regional Economic Development in Turkey

While the first part data (between 1987 and 2001 years) only tested the relation between NE&GDP, FF&GDP, the second part data (2004-2011) tested the relation between NE&GVA, FF&GVA, NE&EMP, FF&EMP and FC&UNEMP. Correlation tests both applied to values and growth rates of dependent variables (see Table 3.1). All dependent variables tested by correlation method with binary combinations according to the time lags. The data between 1987 and 2011 were tested from 1 to 12 year time lags and the data from 2004 to 2011 were testes from 1 to 7 years (see Figure 3.2).

The second part data resulted same as the first part: all correlation tests were significant at 0.01 level and above the value of 0,7. These results lead to test the dependent variables with growth rates. Just a few of these tests resulted significant at 0.01 or 0.05 level. These results are also given in the appendix with significant values highlighted. Unfortunately, neither the first part nor the second part or the test by values or test by growth rates gave any impressions about a considerable time lag or lags.

While correlation tests with growth rates didn't give any considerable results for time lags, the tests with values gave impressions about time lags. Both parts of the data (first part and the second part) has signs of the causality after 4 years.

3.3.1. The effects in time: first part data (1987-2001)

The data between 1987 and 2011 were tested from 1 to 12 year time lags and all correlation tests were significant at 0.01 level and above the value of 0,8. Since there is two combinations of data (FF&GDP and NE&GDP) could be correlted for this period, it is expected tha the both values should be in the range of 0,9 and 1. Since the data year is limited, it is expected to observe 1 year data less in every time lag (**Figure 3.13**). The two figures given below (**Figure 3.12** and **3.13**) shows these explanations. As it can be observed from the Figure 3.12, the FF effect on GDP is equal for almost evey time lag. But when the NE effect on GDP is observed, the time lags of 4 years comes to the forefront.

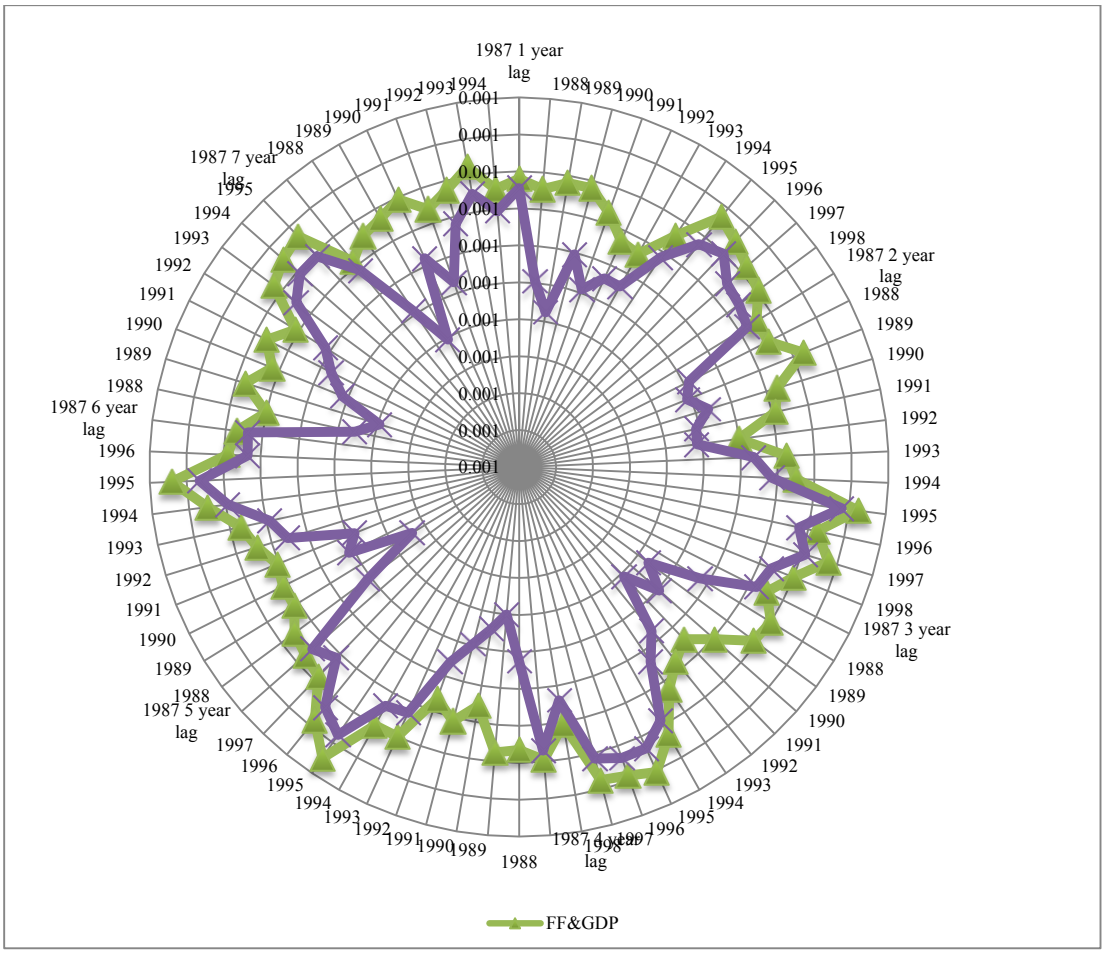

Figure 3. 12: Radar chart of the time lag correlation results rates for the first period.

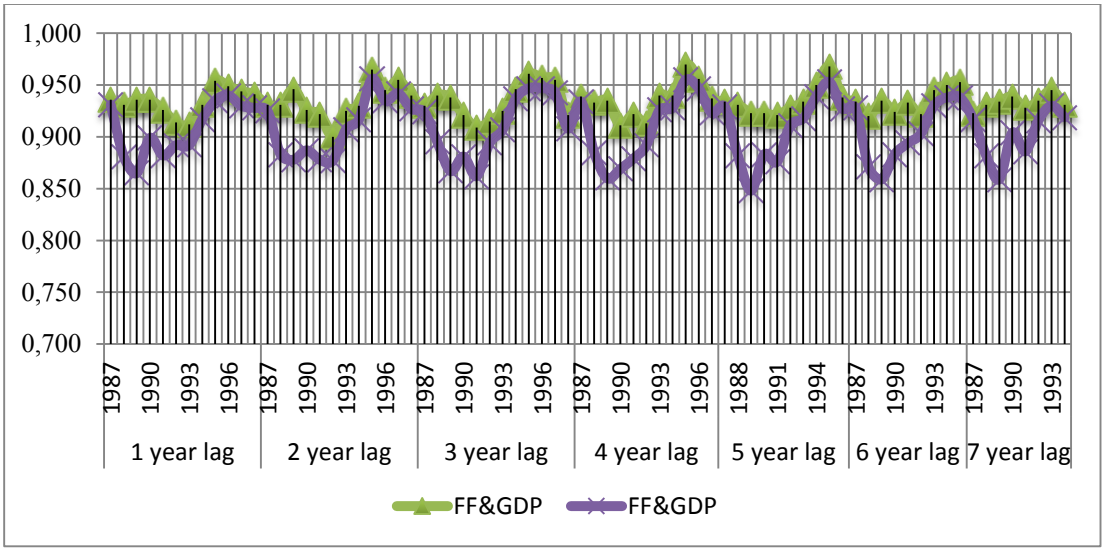

Figure 3. 13: Lines of the time lag correlation results for the first period.

3.3.2. The effects in time: second part data (2004-2011)

The figure given below gives the frequency of correlation results for variable conbinations which are considering two year time lags between the years 2004 and

2011. The results are explaining the strongeness of the relations. As it can be seen from the Figure 3.14 and 3.15, the effect of NE on GVA and the effect of FF on GVA are the strongest effects above the others. While FF effect on EMP and the FC effect on UNEMP resulted almost in the same scatters, the effect of NE on EMP ranged wider then the others, which means it has less strong effect then in the others.

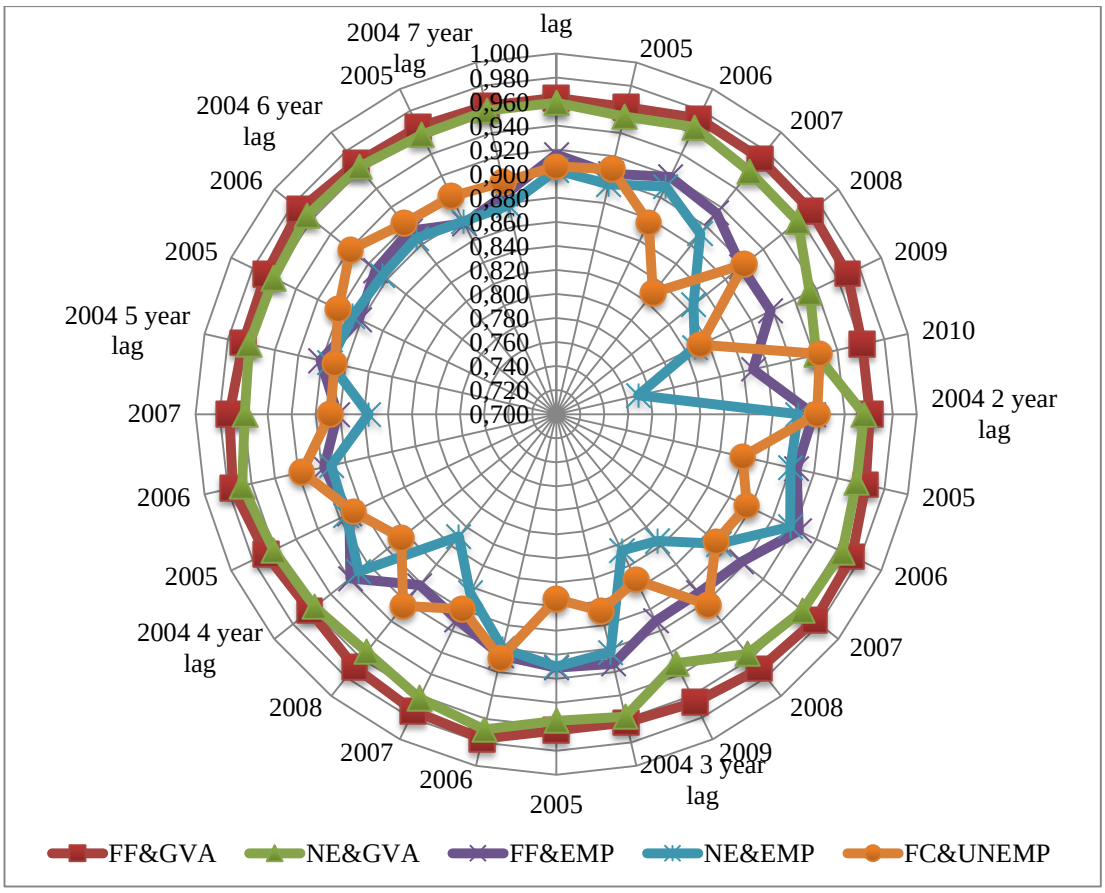

Figure 3. 14: Radar chart of the time lag correlation results rates for the second period.

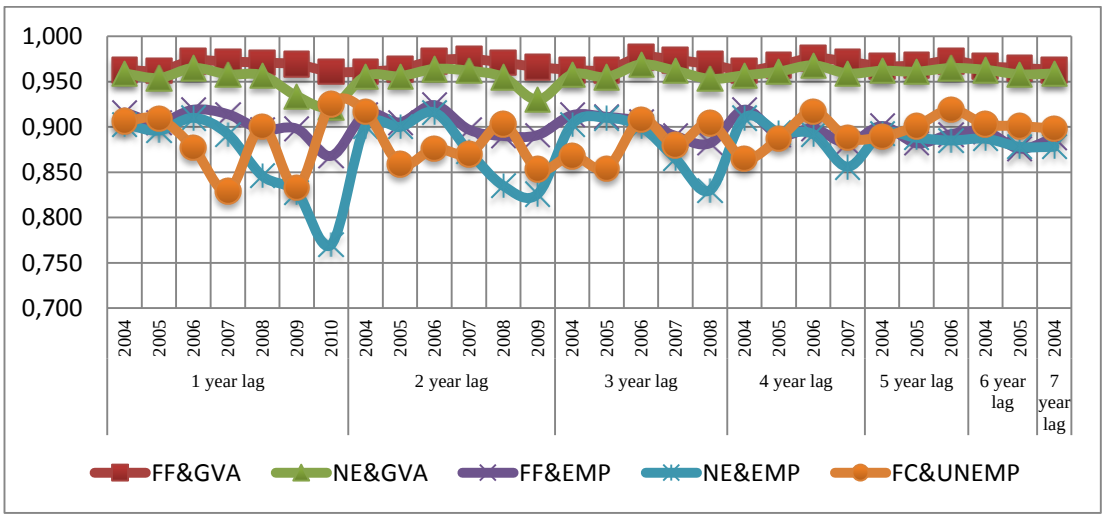

Figure 3. 15: Lines of the time lag correlation results for the second period.

The effect of NE on GVA and the effect of FF on GVA are the strongest effects above the others, while FF effect on EMP are relatively stronger then the NE effect on EMP and FC on UNEMP range, meaning it has less strong effect then in the others.

While the first part of the data resulted as 4 year time lags, the second part of the data resulted similar: it is possible to talk about 4 year time lags.

3.3.3. Effects of entrepreneurship on regional economic growth at the NUTS1 level

After the test given such these results, region specific correlation tests were applied with the same combinations as previous tests. In addition in specific regions (TR2, TR5, TR8 and TRA) there were no significant results for the regular combinations applied as previous tests, so additional FF&UNEMP, NE&UNEMP and FC&EMP combinations of tests were applied. While TR2 and TR5 responded them, TR8 and TRA did not respond significantly any of these tests (**Table 3.3**).

Table 3. 3: Region specific correlation test results: significant results.

	FF& GDP	NE& GDP	FF& GVA (+)	FF& EMP (+)	NE& EMP (+)	FC& UNEMP (+)	FF& EMP (-)	NE& GVA (-)	FF& UNEMP (-)	NE& UNEMP (-)	FC& EMP (+)
TR1											
TR2											
TR3											
TR4											
TR5											
TR6											
TR7											
TR8											
TR9											
TRA											
TRB											
TRC											

The significant correlation tests results are given above, as seen, tests resulted significant both positive and negative correlations, unlikely the first and second part data correlation tests resulted.

The FF and EMP correlated significantly positive in TR1, TR7, TRB and TRC, same as the FF and GVA correlations (**Figure 3.16**). Meaning that firm formation in those regions both cause employment and gross value added creation in other words, contribute to the regional economic growth.

Figure 3. 16: Significant tests results for FF and EMP (+) and FF and GVA (+) correlations.

When FF and EMP correlation results significantly positive, the FC and UNEMP correlation is expected to result also significantly positive. The regional economic structure puts a difference at this point, only in TRC region (**Figure 3.17**) resulted significantly positive for the FC and UNEMP correlation. This may mean that in the regions, which resulted positive for FF and EMP correlation tests and at the same time not responded for FC and UNEMP test (TR7 and TRB) can tolerate the unemployment population caused by the firm closures. In this case TRC region cannot tolerate these job loses with the existing firms capacities' or may not have enough firm formation.

Figure 3. 17: Significant tests results for FC and UNEMP (+) correlation.

While GDP tests did not give any significant results, NE and EMP correlated positive significant in TR3, TR6 and TRC regions (**Figure 3.18**). Same regions also correlated significantly negative for the NE and GVA test (**Figure 3.18**). These results mean that separately from the firm closure rates, firm formation creates employment in these regions but not enough for enhance gross value added.

Figure 3. 18: Significant tests results for NE and EMP (+) and NE and GVA (-) correlations.

Another significant negative test result was gathered from FF and EMP correlation for the region TR9 (**Figure 3.19**). This result is also the only response achieved from TR9 region. This result may caused by the types of firms (formated) or technologies that these (formated) firms use.

Figure 3. 19: Significant tests results for FF and EMP (-) correlation.

As mentioned, some regions, TR2, TR5, TR8 and TRA gave no significant results, so additional FF and UNEMP, NE and UNEMP and FC and EMP combinations of tests were applied. Again, TR8 and TRA did not respond any of them either. The important outcomes of these tests were surely the FF and UNEMP and NE and UNEMP tests: the significant results were (-). TR5 resulted significantly negative for FF&UNEMP and TR2, TR3, TR4 and TRC resulted significantly negative for NE&UNEMP (**Figure 3.20**). For the case of these regions, as mentioned, not responding previous tests, but responding the FF and UNEMP or NE and UNEMP tests may mean that firm formation in these regions is not enough for creating jobs, at the same time it reduces the unemployment.

Figure 3. 20: Significant tests results for FF&UNEMP and NE&UNEMP (-) correlations.

These results are clearly pointing out a regional diversification about the regions' response to the firm formations and firm closures.

3.4. Discussion

At the beginning of this chapter, it is mentioned that entrepreneurship has different empirical measurement criteria. In this thesis, it is accepted as firm formation and to measure the effects on regionl growth more clearly, net entry is added to the correlation tests.

The data between 1987 and 2011 were tested from 1 to 12 year time lags and the data from 2004 to 2011 were tested from 1 to 7 years lags, both by values of the dependent and independent variables and by values of the independent variables and growth rates of the dependent variables. The methodology defined wider in 3.1.

According to the correlation tests results with values, it is possible to say that entrepreneurship affected regional economic development after 4 years.

The outcomes of the region specific correltaion tests gave impressions about regions' response for firm formation and net entry. As it can also be seen in the table 3.3, while TR1 and TR7, TR2 and TR4, TR3 and TR6, responded to firm formation or net entry similarly to each other, TR5, TRB and TRC has no similarities to each other or to other regions (**Figure 3.21**). There was no significant test results observed for TR8 and TRA regions for firm formation, net entry or firm closure, but this may not mean that this regions has similarities to each other.

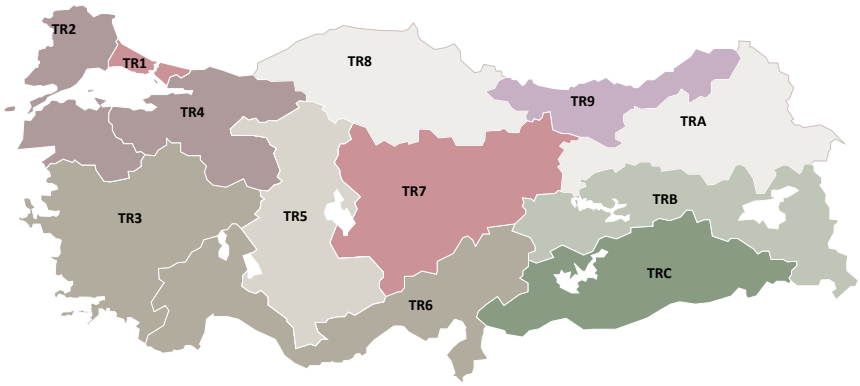

Figure 3. 21: Regional disparities according to region specific correlation tests.

Finding out that TR1 and TR7 regions responded similarly in the case of causality between entrepreneurship (firm formation) and regional economic growth was indeed surprising considering the firm formation shares they have: TR1 regions' firm formation decuples TR7 regions' firm formation. This result can be concluded that not the quantitiy but the quality or sectors of firms matters.

As expected, TR2 and TR4 as being geographically neighbours to the TR1 region, which is the heartbeat of the Turkey's economy, and two coastal-tourism based regions; TR3 and TR6 showed similarities in causality between entrepreneurship and regional economic growth.

All these results mean that this issue needs to be tested more detailed, including the sectoral structures, wages or maybe even the investments with maybe a more complex method in order to investigate this causalities deeper.

4. CONCLUSION

With the purpose of finding the effect of entrepreneurship on regional economic development in the case of Turkeys' NUTS1 regions, this thesis had some challenges. Entrepreneurship has several meanings conceptually, as well as it also has different measurement issues empirically. While there is only one clear theory about entrepreneurship (Creative Destruction), there were no insights of links with other economic growth theories (EGT and NEG in this thesis). As explained in Chapter 2, Aghion and Howitt (1992), Baumol (1993) and Wennekers and Thurik (1999) had attempts to explain the entrepreneurship in Endogenous Growth Theory.

It is obvious that entrepreneur is the main actor of Creative Destruction and it is possible to say the same for Endogenous Growth Theory. It is a little bit harder to say this in New Economic Geography; while at first, the firms who actually generate the concentration of economic activities and with the opportunities and advantages that this concentration provides, may attract new entrepreneurs, which may conclude the cycle of this whole process. Owing to this, it is possible to say that entrepreneurs are promotive or driving force for the economic process.

As given, the data were tested for two different periods; between 1987 and 2011 were tested from 1 to 12 year time lags and the data from 2004 to 2011 were tested from 1 to 7 years, both by values of the dependent and independent variables and by values of the independent variables and growth rates of the dependent variables.

It was surprising that the correlation tests with values of dependent variables, measuring time lags gave highly significant values, the tests with the growth rates of dependent variables didn't give very clear results. This may mean that entrepreneurship (firm formation) help regions to preserve their performances but not enough to develop further. According to the correlation tests results with values, it is possible say that the causality between entrepreneurship and regional economic development occurs after 4 years, for both between the years 1987 and 2001 and the years between 2004 and 2011. This conlusion matches with some of the empirical studies in the contemporary studies.

The region specific tests gave both positive and negative significant results. This led us to understand the similarities in regional characteristics. It is possible to say that, unlikely to the studies of as Audretsch and Fritsch (2002), van Stel and Storey (2004) and Mueller et al. (2006) observed. As Audretsch et al. (2001), Carree et al. (2002), Van Stel et al. (2004) and Carree et.al. (2007), the causality between firm formation (or net entry) and regional economic growth is both observed in employment and gross domestic product or gross value added.

The unique part of this study was definitely the empirical study: this case had been never tested in the case of Turkey. At this point this thesis contributes literature in the way of attampting to explain the entrepreneurships' effect on regional economic growth in the cae of Turkey.

Of course, this study had a few challenges: first, the wide literature including economics, management, history, sociology and anthropology. This wider research area causes confusion at the point of empirical studies. One may ask whether is it correct to measure entrepreneurship only as firm formation? This study does not give distinctions about definitions of different disciplines, but certainly clarifies about how regional science defines and measures it. Only the last two decades' studies had attampts to link entrepreneurship to regional science empirically. Second, theoretical linking between entrepreneurship and economic growth theories. And last, the data gathering issues in Turkey. It was essential to include the sectoral data to this study, in order to attribute meaning to the regional diversification of regions' responces to entrepreneurship.

For further researches, my humbly suggestions are: testing this issue with more sophisticated methodologies and more detailed data (as given above) and considering sectoral structures, wages and the investments.

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APPENDICES

Table A.37: Region specific correlation tests for TRB (second part data).
Table A.38: Region specific correlation tests for TRC (first part data).
Table A.39: Region specific correlation tests for TRC (second part data).

Table A. 1: Examined empirical studies.

Author	Publ. Year	Title	Publi. Type	Journal/ Institute / Source	Data Year	Method	Case	Scale	Time lag	Sample Size	Identification of Ent.	Variables	Sector	Measurement of Growth	Growth
P. Reynolds	1994	Autonomous Firm Dynamics And Economic-Growth In The United-States, 1986-1990	Journal Article	Regional Studies	1989-1990	linear regression modeling	USA	Labor Market Areas	+	382	Firm birth	business births, business deaths, job changes	Manufacturing, business services, all other sectors	Employment Growth	(+,-)
B. L. Ashcroft, J. H.	1996	Firm births and employment change in the British counties: 1981-89	Journal Article	Papers in Regional Science	1981-1989	factor-demand model	Great Britain	County		64	New firm formation		-	Employment Change	+
M. Fritsch	1997	New firms and regional employment change	Journal Article	Small Business Economics	1986-1989	correlation coefficients	West Germany	Region	-	75	New firm start-ups	Entry rate, Employment Change	Manufacturing, services, all sectors	Employment Change	-
M. S. Callejon, A.	1999	Business dynamics and efficiency in industries and regions: The case of Spain	Journal Article	Small Business Economics	1980-1992	ordinary least squares (OLS)	Spain	Region	+	-	New firm, firm birth	Gross entry rate, Gross exit rate, Net entry rate, Rate of turnover, Rate of volatility	Manufacturing	Regional Productivity	+
N. Bosma, H. Nieuwenhuijsen	2000	Turbulence and productivity in the Netherlands	Journal Article	Small Business Research and Consultancy, Ministry of Economic Affairs, Netherlands	1988-1996	ordinary least squares (OLS)	Netherlands	Region	-	40	Turbulence*	production growth, productivity growth, employment,	Manufacturing, services	Productivity Growth	(+,-)

Table A.1 cont'd

Author	Publ. Year	Title	Publi. Type	Journal/ Institute / Source	Data Year	Method	Case	Scale	Time lag	Sample Size	Identification of Ent.	Variables	Sector	Measurement of Growth	Growth
D. C. Audretsch, M.A. Thurik, A.R.	2001	Does Entrepreneurship reduce Unemployment?	Report	Tinbergen Institute	1974-2002	vector auto-regression (VAR)	OECD Countries	Country	+	23	Self Employed	Unemployment Rate, Self-Employment Rate	-	Unemployment Rate	-
D. B. F. Audretsch, Michael	2002	Growth Regimes over Time and Space	Journal Article	Regional Studies	1983-1998	Markow chain model	West Germany	Region	+	74	New firm start-ups	Start-up rate, Closure rate, Turbulence rate, Net entry rate, Volatility rate, Employment change, Share of employment in establishments, Unemployment rate, Population density	-	Employment Change	(+,-)
M. S. Carree, AndréThurik, RoyWennekers, Sander	2002	Economic Development and Business Ownership: An Analysis Using Data of 23 OECD Countries in the Period 1976–1996	Journal Article	Small Business Economics	1976-1996	two-equation model	OECD Countries	country	+	23	Business ownership	self employment/business ownership, GDP, unemployment rate, labor income shrare, population	-	GDP Growth	+
A. C. Van Stel, Martin Thurik, Roy	2004	The effect of entrepreneurship on national economic growth: an analysis using the GEM database	Report	Max Planck Institute of Economics	1999-2003	model	GEM 2002	Country	+	36	Self Employed	TEA, GCR, GDP, GNI	-	GDP Growth	(+,-)

Table A.1 cont'd

Author	Publ. Year	Title	Publi. Type	Journal / Institute/ Source	Data Year	Method	Case	Scale	Time lag	Sample Size	Identification of Ent.	Variables	Sector	Measurement of Growth	Growth
A. S. van Stel, David J.	2004	The link between firm births and job creation: Is there a Upas Tree effect?	Report	Max Planck Institute of Economics	1980-1998	ordinary least squares (OLS)	Great Britain	Region	+	60	New firm start-ups	Employment Growh, Start-up Rate, Wage Growth, Population Density	-	Employment Growth	(+,-)
D. K. Audretsch, Max	2004	Entrepreneurship and regional growth: an evolutionary interpretation	Journal Article	Journal of Evolutionary Economics	1989-1992	Three-stage least squares (3SLS)	Germany	Region	+	327	Entrepreneurship	GVA, Physical Capital, Labor, R&D Activity, Human Capital, Entrepreneurship Capital,	-	Labor Productivity	+
Z. A. Acs, Catherine	2004	Employment Growth and Entrepreneurial Activity in Cities	Journal Article	Regional Studies	1991-1996	regression model	USA	Labor Market Areas	-	394	Firm birth	Entrepreneurial activity, Share of proprietors, Business specialization, Business density, Basic human capital, Higher human capital, Higher human capital	Business services, Distributive, Extractive, Local market, Manufacturing, Retail trade	Employment Growth	+
P. K. Wong, Yuen PingAutio, Erkko	2005	Entrepreneurship, Innovation and Economic Growth: Evidence from GEM data	Journal Article	Small Business Economics	1997-2003	Cobb-Douglas Production Function	GEM countries	Country	+	37	New firm creation	GDP growth, GDP per worker, Capital growth per worker, new firm creation, TEA, technological innovation intensity	-	GDP Growth	(+,-)

Table A.1 cont'd

Author	Publ. Year	Title	Publi. Type	Journal / Institute/	Data Year	Method	Case	Scale	Time lag	Sample Size	Identification of Ent.	Variables	Sector	Measurement of Growth	Growth
M. M. Fritsch, Pamela	2006	The Effect of New Business Formation on Regional Development over Time. The Case of Germany	Report	Max Planck Institute of Economics	1983-2002	Almon Method	Germany	Region	+	74	New Business Formation	Start-up rate(start-up/workforce), Employment Change,	-	Employment Growth	(+,-)
P. v. S. Mueller, André Storey, David J.	2006	The effects of new firm formation on regional development over time: The case of Great Britain	Report	Max Planck Institute of Economics	1980-2003	Huber-White Robust, Almon Method, FE regression	Great Britain	Region	+	60	New firm formation	New firm formation rate(New VAT registrations), Population density, Hourly wages, Employment Change	-	Employment Growth	(+,-)
A. S. Stel, Kashifa	2007	The impact of new firm formation on regional development in the Netherlands	Journal Article	Small Business Economics	1988–2002	Almon Method	Netherlands	Region	+	40	New firm formation	Employment Growth, Start-up Rate, Wage Growth, Population Density	Manufacturing, Construction, Trade, Transport and communication, Services	Employment Change	+
M. S. Carree, AndréThurik, RoyWennekers, Sander	2007	The relationship between economic development and business ownership revisited	Journal Article	Entrepreneurship & Regional Development	1980-2004	two-equation model	OECD	country	+	23	Business ownership	self employment/business ownership, GDP, unemployment rate, labor income share, population	-	GDP Growth	-

Table A.1 cont'd

Author	Publ. Year	Title	Publi. Type	Journal/ Institute/ Source	Data Year	Method	Case	Scale	Time lag	Sample Size	Identification of Ent.	Variables	Sector	Measurement of Growth	Growth
D. P. Valliere, Rein	2009	Entrepreneurship and economic growth: Evidence from emerging and developed countries	Journal Article	Entrepreneurship & Regional Development	2004-2005	Cobb-Douglas Production Function	GEM 2005	Country	+	44	Entrepreneurship	GEM variables	-	GDP Growth	(+,-)
M. Dejardin	2011	Linking net entry to regional economic growth	Journal Article	Small Business Economics	1982-1996	seemingly unrelated regressions (SUR), generalized method of moments (GMM)	Belgium	Districts	-	43	Entrepreneurship	Net entry rate(net entry/stock of firms), GVA, GDP	Manufacturing, services	GDP Growth	+
G. Fotopoulos	2012	Nonlinearities in regional economic growth and convergence: the role of entrepreneurship in the European union regions	Journal Article	Annals of Regional Science	1999-2004	Semiparametric regression	Europe	Region	-	197	Entrepreneurship		-	GDP Growth	+
R. C. Piergiovanni, Martin A. Santarelli, Enrico	2012	Creative industries, new business formation, and regional economic growth	Journal Article	Small Business Economics	2001-2006	regression model	Italy	Region	-	103	New Business Formation, Net entry	Employment growth, GVA, Registered design, New brand names, Creative firm rates, Stock of patents, Net entry rate	Manufacturing, creative industries	Employment Growth, GVA growth	+

Table A.1 cont'd

Author	Publ. Year	Title	Publi. Type	Journal/ Institute/ Source	Data Year	Method	Case	Scale	Time lag	Sample Size	Identification of Ent.	Variables	Sector	Measurement of Growth	Growth
F. G. B. van Oort, Niels S.	2013	Agglomeration economies, inventors and entrepreneurs as engines of European regional economic development	Journal Article	Annals of Regional Science	2001-2006	two-stage least squares (2SLS)	Europe	Region	-	111	Entrepreneurship	Labour productivity, Employment density, Specialization, Patent activity, Entreprneurship (Low, high growth expectation), Entreprneurship (innovation), Share tertiary education	-	Regional Productivity Rate	+

Table A. 2: Correlation results for the time lags for the first part data (NE&GDP).

		GDP_87	GDP_88	GDP_89	GDP_90	GDP_91	GDP_92	GDP_93	GDP_94	GDP_95	GDP_96	GDP_97	GDP_98	GDP_99	GDP_00	GDP_01
NE_87	Pearson Correlation	.932**	.931**	.925**	.924**	.934**	.929**	.928**	.917**	.925**	.921**	.922**	.924**	.938**	.940**	.918**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
NE_88	Pearson Correlation	.888**	.885**	.881**	.883**	.895**	.885**	.882**	.871**	.882**	.880**	.890**	.886**	.901**	.902**	.876**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
NE_89	Pearson Correlation	.869**	.869**	.865**	.865**	.878**	.867**	.860**	.848**	.859**	.859**	.870**	.865**	.879**	.880**	.854**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
NE_90	Pearson Correlation	.883**	.887**	.884**	.884**	.899**	.887**	.881**	.869**	.883**	.883**	.904**	.893**	.903**	.903**	.885**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
NE_91	Pearson Correlation	.883**	.886**	.880**	.879**	.894**	.882**	.878**	.862**	.879**	.876**	.894**	.886**	.901**	.902**	.877**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
NE_92	Pearson Correlation	.896**	.900**	.896**	.895**	.909**	.897**	.892**	.877**	.894**	.892**	.911**	.903**	.916**	.917**	.893**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
NE_93	Pearson Correlation	.909**	.913**	.909**	.910**	.922**	.911**	.905**	.892**	.907**	.907**	.926**	.918**	.930**	.930**	.908**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
NE_94	Pearson Correlation	.916**	.920**	.917**	.919**	.930**	.919**	.914**	.901**	.917**	.917**	.937**	.928**	.939**	.938**	.919**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Table A.2 cont'd

		GDP_87	GDP_88	GDP_89	GDP_90	GDP_91	GDP_92	GDP_93	GDP_94	GDP_95	GDP_96	GDP_97	GDP_98	GDP_99	GDP_00	GDP_01
NE_95	Pearson Correlation	.932**	.936**	.935**	.937**	.945**	.935**	.931**	.921**	.935**	.935**	.956**	.947**	.955**	.953**	.938**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
NE_96	Pearson Correlation	.926**	.928**	.924**	.926**	.937**	.929**	.927**	.914**	.928**	.925**	.940**	.935**	.947**	.947**	.927**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
NE_97	Pearson Correlation	.922**	.925**	.920**	.922**	.934**	.925**	.922**	.909**	.923**	.921**	.936**	.930**	.942**	.943**	.923**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
NE_98	Pearson Correlation	.902**	.907**	.904**	.906**	.919**	.907**	.902**	.888**	.905**	.904**	.928**	.917**	.928**	.927**	.908**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
NE_99	Pearson Correlation	.846**	.854**	.852**	.854**	.869**	.854**	.847**	.830**	.852**	.851**	.884**	.869**	.880**	.879**	.857**
	Sig. (2-tailed)	.001	.000	.000	.000	.000	.000	.001	.001	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
NE_00	Pearson Correlation	.867**	.873**	.867**	.868**	.886**	.873**	.868**	.850**	.869**	.866**	.889**	.879**	.893**	.895**	.870**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
NE_01	Pearson Correlation	.860**	.863**	.859**	.861**	.876**	.861**	.854**	.838**	.857**	.857**	.882**	.870**	.884**	.884**	.859**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.001	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
** Correlation is significant at the 0.01 level (2-tailed).																

Table A. 3: Correlation results for the time lags for the first part data (FF&GDP).

		GDP_87	GDP_88	GDP_89	GDP_90	GDP_91	GDP_92	GDP_93	GDP_94	GDP_95	GDP_96	GDP_97	GDP_98	GDP_99	GDP_00	GDP_01
FF_87	Pearson Correlation	.938**	.936**	.931**	.930**	.939**	.934**	.934**	.923**	.932**	.929**	.933**	.932**	.946**	.947**	.925**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
FF_88	Pearson Correlation	.936**	.935**	.931**	.931**	.940**	.933**	.931**	.920**	.931**	.929**	.936**	.933**	.947**	.947**	.926**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
FF_89	Pearson Correlation	.939**	.939**	.936**	.936**	.946**	.938**	.935**	.923**	.935**	.934**	.944**	.940**	.951**	.952**	.932**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
FF_90	Pearson Correlation	.926**	.927**	.924**	.925**	.936**	.926**	.921**	.911**	.923**	.924**	.939**	.931**	.940**	.940**	.923**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
FF_91	Pearson Correlation	.928**	.929**	.924**	.924**	.935**	.926**	.922**	.909**	.922**	.921**	.933**	.928**	.941**	.942**	.920**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
FF_92	Pearson Correlation	.917**	.919**	.915**	.916**	.928**	.918**	.914**	.900**	.915**	.913**	.928**	.922**	.935**	.935**	.913**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
FF_93	Pearson Correlation	.929**	.931**	.927**	.928**	.938**	.928**	.924**	.912**	.925**	.925**	.940**	.934**	.945**	.945**	.925**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
FF_94	Pearson Correlation	.931**	.934**	.931**	.932**	.942**	.933**	.929**	.917**	.931**	.930**	.946**	.940**	.950**	.950**	.931**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12

Table A.3 cont'd

		GDP_87	GDP_88	GDP_89	GDP_90	GDP_91	GDP_92	GDP_93	GDP_94	GDP_95	GDP_96	GDP_97	GDP_98	GDP_99	GDP_00	GDP_01
FF_95	Pearson Correlation	.955**	.956**	.954**	.956**	.962**	.954**	.951**	.943**	.954**	.954**	.965**	.961**	.970**	.968**	.953**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
FF_96	Pearson Correlation	.939**	.940**	.937**	.939**	.948**	.940**	.939**	.928**	.940**	.937**	.949**	.945**	.957**	.956**	.938**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
FF_97	Pearson Correlation	.937**	.938**	.934**	.937**	.947**	.939**	.937**	.926**	.938**	.936**	.948**	.944**	.955**	.955**	.937**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
FF_98	Pearson Correlation	.917**	.921**	.918**	.920**	.932**	.921**	.917**	.904**	.920**	.919**	.940**	.931**	.941**	.940**	.921**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
FF_99	Pearson Correlation	.869**	.876**	.875**	.877**	.891**	.876**	.870**	.855**	.875**	.874**	.904**	.890**	.901**	.900**	.879**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
FF_00	Pearson Correlation	.893**	.897**	.893**	.895**	.909**	.897**	.894**	.880**	.896**	.894**	.916**	.906**	.919**	.919**	.896**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
FF_01	Pearson Correlation	.913**	.916**	.914**	.916**	.927**	.916**	.913**	.900**	.916**	.914**	.935**	.926**	.937**	.936**	.917**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
** Correlation is significant at the 0.01 level (2-tailed).																

Table A. 4: Correlation results for the time lags for the first part data (NE&GDP growth rate).

		GDP_1 GR_88	GDP_2 GR_89	GDP_3 GR_90	GDP_4 GR_91	GDP_5 GR_92	GDP_6 GR_93	GDP_7 GR_94	GDP_8 GR_95	GDP_9 GR_96	GDP_10 GR_97	GDP 11 GR_98	GDP_12 GR_99
@NE_87	Pearson Correlation	,139	,126	-,289	-,264	-,298	-,194	-,274	,077	,115	,043	-,249	-,237
	Sig. (1-tailed)	,333	,348	,181	,204	,173	,273	,194	,406	,361	,447	,218	,229
	N	12	12	12	12	12	12	12	12	12	12	12	12
@NE_88	Pearson Correlation	,107	-,238	-,195	-,262	-,174	-,227	,077	,102	,059	-,199	-,164	,099
	Sig. (1-tailed)	,371	,228	,272	,205	,294	,239	,406	,376	,427	,267	,305	,379
	N	12	12	12	12	12	12	12	12	12	12	12	12
@NE_89	Pearson Correlation	-,371	-,281	-,304	-,286	-,335	-,121	-,051	-,084	-,317	-,288	-,090	-,288
	Sig. (1-tailed)	,118	,188	,168	,184	,143	,354	,438	,398	,158	,182	,390	,182
	N	12	12	12	12	12	12	12	12	12	12	12	12
@NE_90	Pearson Correlation	,240	,120	,151	,092	,485	.589*	,478	,163	,058	,445	,115	
	Sig. (1-tailed)	,226	,355	,320	,389	,055	,022	,058	,307	,429	,074	,361	
	N	12	12	12	12	12	12	12	12	12	12	12	
@NE_91	Pearson Correlation	-,071	,048	-,083	,386	,398	,349	,036	,042	,484	,009		
	Sig. (1-tailed)	,413	,441	,399	,108	,100	,133	,455	,448	,056	,489		
	N	12	12	12	12	12	12	12	12	12	12		
@NE_92	Pearson Correlation	,121	-,063	,472	,488	,425	,115	,076	.545*	,072			
	Sig. (1-tailed)	,354	,423	,061	,054	,084	,360	,407	,033	,412			
	N	12	12	12	12	12	12	12	12	12			
@NE_93	Pearson Correlation	-,175	.582*	.508*	,410	,064	,036	.616*	,034				
	Sig. (1-tailed)	,293	,024	,046	,093	,421	,456	,017	,459				
	N	12	12	12	12	12	12	12	12				
@NE_94	Pearson Correlation	.725**	.634*	,480	,176	,104	.538*	,155					
	Sig. (1-tailed)	,004	,013	,057	,293	,374	,036	,316					
	N	12	12	12	12	12	12	12					
@NE_95	Pearson Correlation	,151	,136	-,305	-,271	,056	-,318						
	Sig. (1-tailed)	,319	,337	,168	,197	,432	,157						
	N	12	12	12	12	12	12						
@NE_96	Pearson Correlation	-,002	-,409	-,295	-,013	-,383							
	Sig. (1-tailed)	,498	,093	,176	,484	,110							
	N	12	12	12	12	12							
@NE_97	Pearson Correlation	-.654*	-,355	,027	-,465								
	Sig. (1-tailed)	,010	,129	,467	,064								
	N	12	12	12	12								
@NE_98	Pearson Correlation	-,019	,483	-,020									
	Sig. (1-tailed)	,476	,056	,475									
	N	12	12	12									
@NE_99	Pearson Correlation	,471	-,045										
	Sig. (1-tailed)	,061	,445										
	N	12	12										
@NE_00	Pearson Correlation	-.518*											
	Sig. (1-tailed)	,042											
	N	12											

Table A. 5: Correlation results for the time lags for the first part data (FF&GDP growth rate).

		GDP_1GR_88	GDP_2GR_89	GDP_3GR_90	GDP_4GR_91	GDP_5GR_92	GDP_6GR_93	GDP_7GR_94	GDP_8GR_95	GDP_9GR_96	GDP_10GR_97	GDP_11GR_98	GDP_12GR_99
FF_87	Pearson Correlation	,088	,108	-,280	-,268	-,318	-,188	-,277	,093	,137	,081	-,219	-,200
	Sig. (1-tailed)	,393	,369	,189	,200	,157	,279	,192	,387	,335	,401	,247	,266
	N	12	12	12	12	12	12	12	12	12	12	12	12
FF_88	Pearson Correlation	,104	-,288	-,270	-,328	-,215	-,284	,046	,089	,048	-,230	-,200	,066
	Sig. (1-tailed)	,373	,182	,198	,149	,251	,185	,443	,392	,441	,236	,267	,420
	N	12	12	12	12	12	12	12	12	12	12	12	12
FF_89	Pearson Correlation	-,347	-,286	-,318	-,241	-,306	-,032	,018	-,014	-,255	-,224	-,019	-,228
	Sig. (1-tailed)	,134	,183	,157	,225	,167	,461	,478	,483	,212	,242	,477	,238
	N	12	12	12	12	12	12	12	12	12	12	12	12
FF_90	Pearson Correlation	,151	,066	,128	,067	,484	.619*	,462	,136	,036	,430	,086	
	Sig. (1-tailed)	,320	,420	,346	,418	,055	,016	,065	,337	,456	,081	,395	
	N	12	12	12	12	12	12	12	12	12	12	12	
FF_91	Pearson Correlation	-,060	,085	-,045	,445	,496	,379	,058	,031	,497	,028		
	Sig. (1-tailed)	,426	,397	,445	,074	,051	,112	,429	,462	,050	,466		
	N	12	12	12	12	12	12	12	12	12	12		
FF_92	Pearson Correlation	,166	-,023	.512*	.542*	,433	,117	,073	.557*	,079			
	Sig. (1-tailed)	,303	,472	,045	,034	,080	,359	,411	,030	,403			
	N	12	12	12	12	12	12	12	12	12			
FF_93	Pearson Correlation	-,158	.601*	.533*	,393	,042	,012	.599*	,014				
	Sig. (1-tailed)	,312	,019	,037	,103	,448	,485	,020	,482				
	N	12	12	12	12	12	12	12	12				
FF_94	Pearson Correlation	.735**	.641*	,450	,144	,082	.525*	,126					
	Sig. (1-tailed)	,003	,012	,071	,328	,400	,040	,348					
	N	12	12	12	12	12	12	12					
FF_95	Pearson Correlation	,160	,066	-,368	-,321	,010	-,382						
	Sig. (1-tailed)	,310	,420	,120	,155	,488	,110						
	N	12	12	12	12	12	12						
FF_96	Pearson Correlation	-,033	-,437	-,321	-,044	-,413							
	Sig. (1-tailed)	,460	,078	,154	,446	,091							
	N	12	12	12	12	12							
FF_97	Pearson Correlation	-.661**	-,370	,019	-,473								
	Sig. (1-tailed)	,010	,118	,477	,060								
	N	12	12	12	12								
FF_98	Pearson Correlation	-,031	,485	-,025									
	Sig. (1-tailed)	,461	,055	,469									
	N	12	12	12									
FF_99	Pearson Correlation	,496	-,029										
	Sig. (1-tailed)	,051	,464										
	N	12	12										
FF_00	Pearson Correlation	-.515*											
	Sig. (1-tailed)	,043											
	N	12											

Table A. 6: Correlation results for the time lags for the second part data (NE&GVA).

		GVA_04	GVA_05	GVA_06	GVA_07	GVA_08	GVA_09	GVA_10	GVA_11
NE_04	Pearson Correlation	.962**	.959**	.956**	.958**	.957**	.962**	.963**	.959**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
NE_05	Pearson Correlation	.958**	.956**	.954**	.956**	.955**	.961**	.961**	.958**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
NE_06	Pearson Correlation	.968**	.965**	.963**	.965**	.964**	.969**	.968**	.965**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
NE_07	Pearson Correlation	.962**	.959**	.956**	.959**	.958**	.962**	.962**	.959**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
NE_08	Pearson Correlation	.958**	.955**	.952**	.956**	.955**	.957**	.955**	.953**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
NE_09	Pearson Correlation	.939**	.935**	.932**	.936**	.936**	.938**	.934**	.930**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
NE_10	Pearson Correlation	.922**	.919**	.918**	.920**	.920**	.924**	.923**	.922**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
NE_11	Pearson Correlation	.897**	.893**	.894**	.895**	.895**	.901**	.897**	.897**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
** Correlation is significant at the 0.01 level (2-tailed).									

Table A. 7: Correlation results for the time lags for the second part data (FF&GVA).

		GVA_04	GVA_05	GVA_06	GVA_07	GVA_08	GVA_09	GVA_10	GVA_11
FF_04	Pearson Correlation	.966**	.963**	.961**	.963**	.962**	.967**	.967**	.963**
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	,000	,000
	N	12	12	12	12	12	12	12	12
FF_05	Pearson Correlation	.966**	.964**	.962**	.964**	.963**	.968**	.968**	.965**
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	,000	,000
	N	12	12	12	12	12	12	12	12
FF_06	Pearson Correlation	.976**	.973**	.972**	.973**	.973**	.977**	.976**	.973**
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	,000	,000
	N	12	12	12	12	12	12	12	12
FF_07	Pearson Correlation	.975**	.973**	.971**	.973**	.972**	.975**	.974**	.972**
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	,000	,000
	N	12	12	12	12	12	12	12	12
FF_08	Pearson Correlation	.972**	.969**	.967**	.970**	.969**	.971**	.971**	.969**
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	,000	,000
	N	12	12	12	12	12	12	12	12
FF_09	Pearson Correlation	.969**	.966**	.964**	.967**	.966**	.969**	.969**	.966**
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	,000	,000
	N	12	12	12	12	12	12	12	12
FF_10	Pearson Correlation	.964**	.960**	.958**	.961**	.960**	.963**	.963**	.961**
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	,000	,000
	N	12	12	12	12	12	12	12	12
FF_11	Pearson Correlation	.966**	.963**	.961**	.963**	.962**	.966**	.966**	.963**
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	,000	,000
	N	12	12	12	12	12	12	12	12

**. Correlation is significant at the 0.01 level (2-tailed).

Table A. 8: Correlation results for the time lags for the second part data (NE&EMP).

		EMP_ 04	EMP_ 05	EMP_ 06	EMP_ 07	EMP_ 08	EMP_ 09	EMP_ 10	EMP_ 11
NE_04	Pearson Correlation	.887**	.903**	.901**	.903**	.910**	.893**	.887**	.878**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
NE_05	Pearson Correlation	.877**	.895**	.896**	.900**	.910**	.894**	.888**	.878**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
NE_06	Pearson Correlation	.891**	.908**	.907**	.910**	.916**	.900**	.892**	.885**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
NE_07	Pearson Correlation	.870**	.888**	.885**	.886**	.892**	.873**	.865**	.856**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
NE_08	Pearson Correlation	.845**	.867**	.866**	.864**	.870**	.846**	.835**	.830**
	Sig. (2-tailed)	.001	.000	.000	.000	.000	.001	.001	.001
	N	12	12	12	12	12	12	12	12
NE_09	Pearson Correlation	.835**	.858**	.864**	.865**	.868**	.845**	.828**	.826**
	Sig. (2-tailed)	.001	.000	.000	.000	.000	.001	.001	.001
	N	12	12	12	12	12	12	12	12
NE_10	Pearson Correlation	.791**	.807**	.801**	.802**	.817**	.792**	.781**	.770**
	Sig. (2-tailed)	.002	.001	.002	.002	.001	.002	.003	.003
	N	12	12	12	12	12	12	12	12
NE_11	Pearson Correlation	.765**	.778**	.771**	.774**	.791**	.768**	.754**	.745**
	Sig. (2-tailed)	.004	.003	.003	.003	.002	.003	.005	.005
	N	12	12	12	12	12	12	12	12
** Correlation is significant at the 0.01 level (2-tailed).									

Table A. 9: Correlation results for the time lags for the second part data (FF&EMP).

		EMP_04	EMP_05	EMP_06	EMP_07	EMP_08	EMP_09	EMP_10	EMP_11
FF_01	Pearson Correlation	.899**	.916**	.914**	.913**	.919**	.901**	.895**	.888**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
FF_02	Pearson Correlation	.889**	.907**	.905**	.905**	.911**	.891**	.882**	.876**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
FF_03	Pearson Correlation	.907**	.922**	.919**	.919**	.924**	.906**	.898**	.892**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
FF_04	Pearson Correlation	.888**	.905**	.905**	.907**	.914**	.897**	.890**	.882**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
FF_05	Pearson Correlation	.883**	.902**	.903**	.906**	.914**	.897**	.890**	.882**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
FF_06	Pearson Correlation	.896**	.914**	.914**	.916**	.923**	.906**	.898**	.891**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
FF_07	Pearson Correlation	.880**	.899**	.897**	.898**	.905**	.884**	.874**	.868**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
FF_08	Pearson Correlation	.878**	.897**	.895**	.894**	.902**	.881**	.872**	.865**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
FF_09	Pearson Correlation	.875**	.894**	.891**	.891**	.899**	.879**	.871**	.863**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
FF_10	Pearson Correlation	.864**	.882**	.879**	.878**	.887**	.865**	.857**	.849**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
FF_11	Pearson Correlation	.867**	.886**	.883**	.883**	.892**	.871**	.862**	.855**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
** Correlation is significant at the 0.01 level (2-tailed).									

Table A. 10: Correlation results for the time lags for the second part data (FC&UNEMP).

		UNEMP_04	UNEMP_05	UNEMP_06	UNEMP_07	UNEMP_08	UNEMP_09	UNEMP_10	UNEMP_11
FC_04	Pearson Correlation	.919**	.906**	.917**	.868**	.865**	.889**	.903**	.898**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
FC_05	Pearson Correlation	.912**	.895**	.909**	.859**	.854**	.887**	.901**	.901**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
FC_06	Pearson Correlation	.923**	.911**	.923**	.877**	.876**	.908**	.917**	.919**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
FC_07	Pearson Correlation	.887**	.869**	.881**	.830**	.829**	.870**	.880**	.888**
	Sig. (2-tailed)	.000	.000	.000	.001	.001	.000	.000	.000
	N	12	12	12	12	12	12	12	12
FC_08	Pearson Correlation	.920**	.904**	.933**	.924**	.901**	.900**	.903**	.904**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
FC_09	Pearson Correlation	.841**	.821**	.862**	.868**	.836**	.842**	.833**	.853**
	Sig. (2-tailed)	.001	.001	.000	.000	.001	.001	.001	.000
	N	12	12	12	12	12	12	12	12
FC_10	Pearson Correlation	.928**	.914**	.928**	.883**	.878**	.913**	.927**	.925**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
FC_11	Pearson Correlation	.918**	.912**	.925**	.880**	.883**	.921**	.930**	.925**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	12	12	12	12	12	12	12	12
** Correlation is significant at the 0.01 level (2-tailed).									

Table A. 11: Correlation results for the time lags for the second part data (NE&GVA growth rate).

		GVA_1 GR_05	GVA_2 GR_06	GVA_3 GR_07	GVA_4 GR_08	GVA_5 GR_09	GVA_6 GR_10	GVA_7 GR_11
@NE_04	Pearson Correlation	-,276	,069	,207	,064	-,239	-,297	-,086
	Sig. (1-tailed)	,193	,415	,260	,422	,227	,174	,395
	N	12	12	12	12	12	12	12
		GVA_1GR_06	GVA_2GR_07	GVA_3GR_08	GVA_4GR_09	GVA_5GR_10	GVA_6GR_11	
@NE_05	Pearson Correlation	,463	.576*	,332	-,066	-,198	,055	
	Sig. (1-tailed)	,065	,025	,146	,420	,268	,432	
	N	12	12	12	12	12	12	
		GVA_1GR_07	GVA_2GR_08	GVA_3GR_09	GVA_4GR_10	GVA_5GR_11		
@NE_06	Pearson Correlation	,265	,053	-,308	-,382	-,169		
	Sig. (1-tailed)	,203	,435	,165	,110	,300		
	N	12	12	12	12	12		
		GVA_1GR_08	GVA_2GR_09	GVA_3GR_10	GVA_4GR_11			
@NE_07	Pearson Correlation	-,261	-,460	-,429	-,245			
	Sig. (1-tailed)	,207	,066	,082	,221			
	N	12	12	12	12			
		GVA_1GR_09	GVA_2GR_10	GVA_3GR_11				
@NE_08	Pearson Correlation	-,355	-,376	-,218				
	Sig. (1-tailed)	,129	,114	,248				
	N	12	12	12				
		GVA_1GR_10	GVA_2GR_11					
@NE_09	Pearson Correlation	-,431	-,064					
	Sig. (1-tailed)	,081	,421					
	N	12	12					
		GVA_1GR_11						
@NE_10	Pearson Correlation	,461						
	Sig. (1-tailed)	,066						
	N	12						

Table A. 12: Correlation results for the time lags for the second part data (FF&GVA growth rate).

		GVA_1GR_05	GVA_2GR_06	GVA_3GR_07	GVA_4GR_08	GVA_5GR_09	GVA_6GR_10	GVA_7GR_11
FF_04	Pearson Correlation	-,274	,070	,213	,072	-,245	-,312	-,097
	Sig. (1-tailed)	,194	,414	,253	,411	,222	,162	,383
	N	12	12	12	12	12	12	12
		GVA_1GR_06	GVA_2GR_07	GVA_3GR_08	GVA_4GR_09	GVA_5GR_10	GVA_6GR_11	
FF_05	Pearson Correlation	,458	.577*	,336	-,088	-,220	,036	
	Sig. (1-tailed)	,067	,025	,143	,393	,246	,455	
	N	12	12	12	12	12	12	
		GVA_1GR_07	GVA_2GR_08	GVA_3GR_09	GVA_4GR_10	GVA_5GR_11		
FF_06	Pearson Correlation	,266	,051	-,320	-,390	-,173		
	Sig. (1-tailed)	,202	,438	,155	,105	,295		
	N	12	12	12	12	12		
		GVA_1GR_08	GVA_2GR_09	GVA_3GR_10	GVA_4GR_11			
FF_07	Pearson Correlation	-,263	-,489	-,460	-,267			
	Sig. (1-tailed)	,204	,053	,066	,201			
	N	12	12	12	12			
		GVA_1GR_09	GVA_2GR_10	GVA_3GR_11				
FF_08	Pearson Correlation	-,351	-,344	-,159				
	Sig. (1-tailed)	,131	,137	,311				
	N	12	12	12				
		GVA_1GR_10	GVA_2GR_11					
FF_09	Pearson Correlation	-,247	,145					
	Sig. (1-tailed)	,219	,326					
	N	12	12					
		GVA_1GR_11						
FF_10	Pearson Correlation	,457						
	Sig. (1-tailed)	,067						
	N	12						

Table A. 13: Correlation results for the time lags for the second part data (NE&EMP growth rate).

		EMP_1GR_05	EMP_2GR_06	EMP_3GR_07	EMP_4GR_08	EMP_5GR_09	EMP_6GR_10	EMP_7GR_11
@NE_04	Pearson Correlation	,332	,395	,405	,436	,211	,250	,204
	Sig. (1-tailed)	,146	,102	,096	,078	,255	,216	,263
	N	12	12	12	12	12	12	12
		EMP_1GR_06	EMP_2GR_07	EMP_3GR_08	EMP_4GR_09	EMP_5GR_10	EMP_6GR_11	
@NE_05	Pearson Correlation	,348	,397	,417	,120	,186	,155	
	Sig. (1-tailed)	,134	,101	,089	,356	,282	,316	
	N	12	12	12	12	12	12	
		EMP_1GR_07	EMP_2GR_08	EMP_3GR_09	EMP_4GR_10	EMP_5GR_11		
@NE_06	Pearson Correlation	,362	,194	-,257	-,042	-,022		
	Sig. (1-tailed)	,124	,272	,210	,449	,473		
	N	12	12	12	12	12		
		EMP_1GR_08	EMP_2GR_09	EMP_3GR_10	EMP_4GR_11			
@NE_07	Pearson Correlation	-,090	-.517*	-,180	-,157			
	Sig. (1-tailed)	,390	,043	,287	,313			
	N	12	12	12	12			
		EMP_1GR_09	EMP_2GR_10	EMP_3GR_11				
@NE_08	Pearson Correlation	-.650*	-,190	-,122				
	Sig. (1-tailed)	,011	,277	,352				
	N	12	12	12				
		EMP_1GR_10	EMP_2GR_11					
@NE_09	Pearson Correlation	,033	,097					
	Sig. (1-tailed)	,460	,383					
	N	12	12					
		EMP_1GR_11						
@NE_10	Pearson Correlation	-,026						
	Sig. (1-tailed)	,468						
	N	12						

Table A. 14: Correlation results for the time lags for the second part data (FF&EMP growth rate).

		FF_04	EMP_1GR_05	EMP_2GR_06	EMP_3GR_07	EMP_4GR_08	EMP_5GR_09	EMP_6GR_10	EMP_7GR_11
FF_04	Pearson Correlation	1	,351	,420	,426	,455	,229	,257	,216
	Sig. (1-tailed)		,132	,087	,084	,068	,237	,210	,250
	N	12	12	12	12	12	12	12	12
		FF_05	EMP_1GR_06	EMP_2GR_07	EMP_3GR_08	EMP_4GR_09	EMP_5GR_10	EMP_6GR_11	
FF_05	Pearson Correlation	1	,346	,390	,398	,095	,161	,140	
	Sig. (1-tailed)		,135	,105	,100	,385	,309	,332	
	N	12	12	12	12	12	12	12	
		FF_06	EMP_1GR_07	EMP_2GR_08	EMP_3GR_09	EMP_4GR_10	EMP_5GR_11		
FF_06	Pearson Correlation	1	,352	,187	-,273	-,051	-,024		
	Sig. (1-tailed)		,131	,280	,195	,438	,471		
	N	12	12	12	12	12	12		
		FF_07	EMP_1GR_08	EMP_2GR_09	EMP_3GR_10	EMP_4GR_11			
FF_07	Pearson Correlation	1	-,074	-.528*	-,205	-,170			
	Sig. (1-tailed)		,409	,039	,261	,299			
	N	12	12	12	12	12			
		FF_08	EMP_1GR_09	EMP_2GR_10	EMP_3GR_11				
FF_08	Pearson Correlation	1	-.638*	-,157	-,114				
	Sig. (1-tailed)		,013	,313	,363				
	N	12	12	12	12				
		FF_09	EMP_1GR_10	EMP_2GR_11					
FF_09	Pearson Correlation	1	,161	,143					
	Sig. (1-tailed)		,308	,328					
	N	12	12	12					
		FF_10	EMP_1GR_11						
FF_10	Pearson Correlation	1	,043						
	Sig. (1-tailed)		,447						
	N	12	12						

Table A. 15: Correlation results for the time lags for the second part data (FC&UNEMP growth rate).

		FC_04	UNEMP_1GR_05	UNEMP_2GR_06	UNEMP_3GR_07	UNEMP_4GR_08	UNEMP_5GR_09	UNEMP_6GR_10	UNEMP_7GR_11
FC_04	Pearson Correlation	1	-,114	-,170	-,410	-,309	-,134	-,182	-,237
	Sig. (1-tailed)		,362	,298	,093	,164	,339	,285	,229
	N	12	12	12	12	12	12	12	12
FC_05	Pearson Correlation	1	-,129	-,486	-,409	-,038	-,129	-,211	
	Sig. (1-tailed)		,344	,055	,093	,454	,344	,256	
	N	12	12	12	12	12	12	12	
		FC_06	UNEMP_1GR_07	UNEMP_2GR_08	UNEMP_3GR_09	UNEMP_4GR_10	UNEMP_5GR_11		
FC_06	Pearson Correlation	1	-.613*	-,418	,102	-,058	-,193		
	Sig. (1-tailed)		,017	,088	,377	,429	,274		
	N	12	12	12	12	12	12		
		FC_07	UNEMP_1GR_08	UNEMP_2GR_09	UNEMP_3GR_10	UNEMP_4GR_11			
FC_07	Pearson Correlation	1	,124	,437	,383	,194			
	Sig. (1-tailed)		,351	,078	,109	,273			
	N	12	12	12	12	12			
		FC_08	UNEMP_1GR_09	UNEMP_2GR_10	UNEMP_3GR_11				
FC_08	Pearson Correlation	1	,360	,123	-,127				
	Sig. (1-tailed)		,125	,351	,347				
	N	12	12	12	12				
		FC_09	UNEMP_1GR_10	UNEMP_2GR_11					
FC_09	Pearson Correlation	1	-,461	-,450					
	Sig. (1-tailed)		,066	,071					
	N	12	12	12					
		FC_10	UNEMP_1GR_11						
FC_10	Pearson Correlation	1	-,315						
	Sig. (1-tailed)		,159						
	N	12	12						

Table A. 16: Region specific correlation tests for TR1 (first part data).

		FF	@NE	GDP
FF	Pearson Correlation	1	.998**	.227
	Sig. (1-tailed)		.000	.208
	N	15	15	15
@NE	Pearson Correlation	.998**	1	.190
	Sig. (1-tailed)	.000		.249
	N	15	15	15
GDP	Pearson Correlation	.227	.190	1
	Sig. (1-tailed)	.208	.249	
	N	15	15	15
** Correlation is significant at the 0.01 level (1-tailed).				

Table A. 17: Region specific correlation tests for TR1 (second part data).

		FF	@NE	GVA	EMP	FC	UNEMP
FF	Pearson Correlation	1	-.103	.837**	.952**	.784*	.008
	Sig. (2-tailed)		.807	.010	.000	.021	.985
	N	8	8	8	8	8	8
@NE	Pearson Correlation	-.103	1	-.451	-.260	-.699	-.638
	Sig. (2-tailed)	.807		.262	.534	.054	.089
	N	8	8	8	8	8	8
GVA	Pearson Correlation	.837**	-.451	1	.911**	.883**	.462
	Sig. (2-tailed)	.010	.262		.002	.004	.249
	N	8	8	8	8	8	8
EMP	Pearson Correlation	.952**	-.260	.911**	1	.847**	.100
	Sig. (2-tailed)	.000	.534	.002		.008	.813
	N	8	8	8	8	8	8
FC	Pearson Correlation	.784*	-.699	.883**	.847**	1	.404
	Sig. (2-tailed)	.021	.054	.004	.008		.321
	N	8	8	8	8	8	8
UNEMP	Pearson Correlation	.008	-.638	.462	.100	.404	1
	Sig. (2-tailed)	.985	.089	.249	.813	.321	
	N	8	8	8	8	8	8
** Correlation is significant at the 0.01 level (2-tailed).							
* Correlation is significant at the 0.05 level (2-tailed).							

Table A. 18: Region specific correlation tests for TR2 (first part data).

		FF	@NE	GDP
FF	Pearson Correlation	1	.949**	-.069
	Sig. (2-tailed)		.000	.807
	N	15	15	15
@NE	Pearson Correlation	.949**	1	-.114
	Sig. (2-tailed)	.000		.685
	N	15	15	15
GDP	Pearson Correlation	-.069	-.114	1
	Sig. (2-tailed)	.807	.685	
	N	15	15	15
** Correlation is significant at the 0.01 level (2-tailed).				

Table A. 19: Region specific correlation tests for TR2 (second part data).

		FF	FC	@NE	GVA	EMP	UNEMP
FF	Pearson Correlation	1	.179	.457	.337	.387	-.248
	Sig. (2-tailed)		.671	.255	.414	.343	.554
	N	8	8	8	8	8	8
FC	Pearson Correlation	.179	1	-.793*	.928**	.767*	.624
	Sig. (2-tailed)	.671		.019	.001	.026	.098
	N	8	8	8	8	8	8
@NE	Pearson Correlation	.457	-.793*	1	-.630	-.453	-.717*
	Sig. (2-tailed)	.255	.019		.094	.259	.045
	N	8	8	8	8	8	8
GVA	Pearson Correlation	.337	.928**	-.630	1	.935**	.539
	Sig. (2-tailed)	.414	.001	.094		.001	.168
	N	8	8	8	8	8	8
EMP	Pearson Correlation	.387	.767*	-.453	.935**	1	.320
	Sig. (2-tailed)	.343	.026	.259	.001		.440
	N	8	8	8	8	8	8
UNEMP	Pearson Correlation	-.248	.624	-.717*	.539	.320	1
	Sig. (2-tailed)	.554	.098	.045	.168	.440	
	N	8	8	8	8	8	8
* Correlation is significant at the 0.05 level (2-tailed).							
** Correlation is significant at the 0.01 level (2-tailed).							

Table A. 20: Region specific correlation tests for TR3 (first part data).

		FF	@NE	GDP
FF	Pearson Correlation	1	.988**	-.044
	Sig. (2-tailed)		.000	.876
	N	15	15	15
@NE	Pearson Correlation	.988**	1	-.016
	Sig. (2-tailed)	.000		.955
	N	15	15	15
GDP	Pearson Correlation	-.044	-.016	1
	Sig. (2-tailed)	.876	.955	
	N	15	15	15
** Correlation is significant at the 0.01 level (2-tailed).				

Table A. 21: Region specific correlation tests for TR3 (second part data).

		FF	FC	@NE	GVA	EMP	UNEMP
FF	Pearson Correlation	1	.411	.192	.400	.400	-.420
	Sig. (2-tailed)		.312	.648	.327	.326	.300
	N	8	8	8	8	8	8
FC	Pearson Correlation	.411	1	-.816*	.930**	.901**	.506
	Sig. (2-tailed)	.312		.014	.001	.002	.200
	N	8	8	8	8	8	8
@NE	Pearson Correlation	.192	-.816*	1	-.747*	-.716*	-.811*
	Sig. (2-tailed)	.648	.014		.033	.046	.015
	N	8	8	8	8	8	8
GVA	Pearson Correlation	.400	.930**	-.747*	1	.812*	.535
	Sig. (2-tailed)	.327	.001	.033		.014	.172
	N	8	8	8	8	8	8
EMP	Pearson Correlation	.400	.901**	-.716*	.812*	1	.421
	Sig. (2-tailed)	.326	.002	.046	.014		.299
	N	8	8	8	8	8	8
UNEMP	Pearson Correlation	-.420	.506	-.811*	.535	.421	1
	Sig. (2-tailed)	.300	.200	.015	.172	.299	
	N	8	8	8	8	8	8
* Correlation is significant at the 0.05 level (2-tailed).							
** Correlation is significant at the 0.01 level (2-tailed).							

Table A. 22: Region specific correlation tests for TR4 (first part data).

		FF	@NE	GDP
FF	Pearson Correlation	1	.953**	.031
	Sig. (2-tailed)		.000	.912
	N	15	15	15
@NE	Pearson Correlation	.953**	1	-.049
	Sig. (2-tailed)	.000		.862
	N	15	15	15
GDP	Pearson Correlation	.031	-.049	1
	Sig. (2-tailed)	.912	.862	
	N	15	15	15
** Correlation is significant at the 0.01 level (2-tailed).				

Table A. 23: Region specific correlation tests for TR4 (second part data).

		FF	FC	@NE	GVA	EMP	UNEMP
FF	Pearson Correlation	1	.570	.477	.419	.472	-.286
	Sig. (1-tailed)		.070	.116	.151	.119	.246
	N	8	8	8	8	8	8
FC	Pearson Correlation	.570	1	-.450	.938**	.909**	.357
	Sig. (1-tailed)	.070		.131	.000	.001	.192
	N	8	8	8	8	8	8
@NE	Pearson Correlation	.477	-.450	1	-.548	-.458	-.693*
	Sig. (1-tailed)	.116	.131		.080	.127	.028
	N	8	8	8	8	8	8
GVA	Pearson Correlation	.419	.938**	-.548	1	.986**	.542
	Sig. (1-tailed)	.151	.000	.080		.000	.083
	N	8	8	8	8	8	8
EMP	Pearson Correlation	.472	.909**	-.458	.986**	1	.465
	Sig. (1-tailed)	.119	.001	.127	.000		.123
	N	8	8	8	8	8	8
UNEMP	Pearson Correlation	-.286	.357	-.693*	.542	.465	1
	Sig. (1-tailed)	.246	.192	.028	.083	.123	
	N	8	8	8	8	8	8
** Correlation is significant at the 0.01 level (1-tailed).							
* Correlation is significant at the 0.05 level (1-tailed).							

Table A. 24: Region specific correlation tests for TR5 (first part data).

		FF	@NE	GDP
FF	Pearson Correlation	1	.981**	.011
	Sig. (2-tailed)		.000	.968
	N	15	15	15
@NE	Pearson Correlation	.981**	1	.033
	Sig. (2-tailed)	.000		.907
	N	15	15	15
GDP	Pearson Correlation	.011	.033	1
	Sig. (2-tailed)	.968	.907	
	N	15	15	15
** Correlation is significant at the 0.01 level (2-tailed).				

Table A. 25: Region specific correlation tests for TR5 (second part data).

		FF	FC	@NE	GVA	EMP	UNEMP
FF	Pearson Correlation	1	.442	.640	.416	.337	-.777*
	Sig. (2-tailed)		.273	.087	.306	.415	.023
	N	8	8	8	8	8	8
FC	Pearson Correlation	.442	1	-.407	.900**	.909**	-.436
	Sig. (2-tailed)	.273		.317	.002	.002	.280
	N	8	8	8	8	8	8
@NE	Pearson Correlation	.640	-.407	1	-.348	-.436	-.417
	Sig. (2-tailed)	.087	.317		.399	.280	.304
	N	8	8	8	8	8	8
GVA	Pearson Correlation	.416	.900**	-.348	1	.993**	-.411
	Sig. (2-tailed)	.306	.002	.399		.000	.311
	N	8	8	8	8	8	8
EMP	Pearson Correlation	.337	.909**	-.436	.993**	1	-.347
	Sig. (2-tailed)	.415	.002	.280	.000		.399
	N	8	8	8	8	8	8
UNEMP	Pearson Correlation	-.777*	-.436	-.417	-.411	-.347	1
	Sig. (2-tailed)	.023	.280	.304	.311	.399	
	N	8	8	8	8	8	8
* Correlation is significant at the 0.05 level (2-tailed).							
** Correlation is significant at the 0.01 level (2-tailed).							

Table A. 26: Region specific correlation tests for TR6 (first part data).

		FF	@NE	GDP
FF	Pearson Correlation	1	.976**	.090
	Sig. (1-tailed)		.000	.374
	N	15	15	15
@NE	Pearson Correlation	.976**	1	-.095
	Sig. (1-tailed)	.000		.368
	N	15	15	15
GDP	Pearson Correlation	.090	-.095	1
	Sig. (1-tailed)	.374	.368	
	N	15	15	15
** Correlation is significant at the 0.01 level (1-tailed).				

Table A. 27: Region specific correlation tests for TR6 (second part data).

		FF	FC	@NE	GVA	EMP	UNEMP
FF	Pearson Correlation	1	.234	.151	.089	.201	-.535
	Sig. (1-tailed)		.289	.361	.417	.317	.086
	N	8	8	8	8	8	8
FC	Pearson Correlation	.234	1	-.926**	.904**	.925**	.118
	Sig. (1-tailed)	.289		.000	.001	.001	.391
	N	8	8	8	8	8	8
@NE	Pearson Correlation	.151	-.926**	1	-.884**	-.862**	-.327
	Sig. (1-tailed)	.361	.000		.002	.003	.214
	N	8	8	8	8	8	8
GVA	Pearson Correlation	.089	.904**	-.884**	1	.985**	.416
	Sig. (1-tailed)	.417	.001	.002		.000	.153
	N	8	8	8	8	8	8
EMP	Pearson Correlation	.201	.925**	-.862**	.985**	1	.338
	Sig. (1-tailed)	.317	.001	.003	.000		.206
	N	8	8	8	8	8	8
UNEMP	Pearson Correlation	-.535	.118	-.327	.416	.338	1
	Sig. (1-tailed)	.086	.391	.214	.153	.206	
	N	8	8	8	8	8	8
** Correlation is significant at the 0.01 level (1-tailed).							

Table A. 28: Region specific correlation tests for TR7 (first part data).

		FF	FC	@NE	GDP
FF	Pearson Correlation	1	-.070	.956**	-.072
	Sig. (2-tailed)		.805	.000	.797
	N	15	15	15	15
FC	Pearson Correlation	-.070	1	-.359	-.652**
	Sig. (2-tailed)	.805		.189	.008
	N	15	15	15	15
@NE	Pearson Correlation	.956**	-.359	1	.124
	Sig. (2-tailed)	.000	.189		.661
	N	15	15	15	15
GDP	Pearson Correlation	-.072	-.652**	.124	1
	Sig. (2-tailed)	.797	.008	.661	
	N	15	15	15	15
** Correlation is significant at the 0.01 level (2-tailed).					

Table A. 29: Region specific correlation tests for TR7 (second part data).

		FF	FC	@NE	GVA	EMP	UNEMP
FF	Pearson Correlation	1	.658*	-.274	.788*	.876**	.431
	Sig. (1-tailed)		.038	.256	.010	.002	.143
	N	8	8	8	8	8	8
FC	Pearson Correlation	.658*	1	-.904**	.772*	.527	.565
	Sig. (1-tailed)	.038		.001	.012	.090	.072
	N	8	8	8	8	8	8
@NE	Pearson Correlation	-.274	-.904**	1	-.540	-.177	-.477
	Sig. (1-tailed)	.256	.001		.084	.337	.116
	N	8	8	8	8	8	8
GVA	Pearson Correlation	.788*	.772*	-.540	1	.755*	.568
	Sig. (1-tailed)	.010	.012	.084		.015	.071
	N	8	8	8	8	8	8
EMP	Pearson Correlation	.876**	.527	-.177	.755*	1	.382
	Sig. (1-tailed)	.002	.090	.337	.015		.176
	N	8	8	8	8	8	8
UNEMP	Pearson Correlation	.431	.565	-.477	.568	.382	1
	Sig. (1-tailed)	.143	.072	.116	.071	.176	
	N	8	8	8	8	8	8
* Correlation is significant at the 0.05 level (1-tailed).							
** Correlation is significant at the 0.01 level (1-tailed).							

Table A. 30: Region specific correlation tests for TR8 (first part data).

		FF	FC	@NE	GDP
FF	Pearson Correlation	1	.131	.910**	-.230
	Sig. (1-tailed)		.320	.000	.205
	N	15	15	15	15
FC	Pearson Correlation	.131	1	-.291	-.271
	Sig. (1-tailed)	.320		.146	.164
	N	15	15	15	15
@NE	Pearson Correlation	.910**	-.291	1	-.108
	Sig. (1-tailed)	.000	.146		.351
	N	15	15	15	15
GDP	Pearson Correlation	-.230	-.271	-.108	1
	Sig. (1-tailed)	.205	.164	.351	
	N	15	15	15	15
** Correlation is significant at the 0.01 level (1-tailed).					

Table A. 31: Region specific correlation tests for TR8 (second part data).

		FF	FC	@NE	GVA	EMP	UNEMP
FF	Pearson Correlation	1	.002	.351	.580	.517	-.582
	Sig. (2-tailed)		.996	.394	.132	.190	.130
	N	8	8	8	8	8	8
FC	Pearson Correlation	.002	1	-.936**	.664	.638	.268
	Sig. (2-tailed)	.996		.001	.072	.089	.522
	N	8	8	8	8	8	8
@NE	Pearson Correlation	.351	-.936**	1	-.417	-.415	-.456
	Sig. (2-tailed)	.394	.001		.304	.307	.256
	N	8	8	8	8	8	8
GVA	Pearson Correlation	.580	.664	-.417	1	.860**	.007
	Sig. (2-tailed)	.132	.072	.304		.006	.988
	N	8	8	8	8	8	8
EMP	Pearson Correlation	.517	.638	-.415	.860**	1	-.107
	Sig. (2-tailed)	.190	.089	.307	.006		.801
	N	8	8	8	8	8	8
UNEMP	Pearson Correlation	-.582	.268	-.456	.007	-.107	1
	Sig. (2-tailed)	.130	.522	.256	.988	.801	
	N	8	8	8	8	8	8
** Correlation is significant at the 0.01 level (2-tailed).							

Table A. 32: Region specific correlation tests for TR9 (first part data).

		FF	FC	@NE	GDP
FF	Pearson Correlation	1	-.206	.895**	-.012
	Sig. (2-tailed)		.462	.000	.966
	N	15	15	15	15
FC	Pearson Correlation	-.206	1	-.621*	-.233
	Sig. (2-tailed)	.462		.013	.402
	N	15	15	15	15
@NE	Pearson Correlation	.895**	-.621*	1	.097
	Sig. (2-tailed)	.000	.013		.732
	N	15	15	15	15
GDP	Pearson Correlation	-.012	-.233	.097	1
	Sig. (2-tailed)	.966	.402	.732	
	N	15	15	15	15
** Correlation is significant at the 0.01 level (2-tailed).					
* Correlation is significant at the 0.05 level (2-tailed).					

Table A. 33: Region specific correlation tests for TR9 (second part data).

		FF	FC	@NE	GVA	EMP	UNEMP
FF	Pearson Correlation	1	.188	.305	.410	-.881**	-.551
	Sig. (2-tailed)		.657	.463	.313	.004	.157
	N	8	8	8	8	8	8
FC	Pearson Correlation	.188	1	-.878**	.878**	-.348	-.243
	Sig. (2-tailed)	.657		.004	.004	.398	.562
	N	8	8	8	8	8	8
@NE	Pearson Correlation	.305	-.878**	1	-.651	-.091	-.033
	Sig. (2-tailed)	.463	.004		.080	.830	.939
	N	8	8	8	8	8	8
GVA	Pearson Correlation	.410	.878**	-.651	1	-.542	-.217
	Sig. (2-tailed)	.313	.004	.080		.166	.605
	N	8	8	8	8	8	8
EMP	Pearson Correlation	-.881**	-.348	-.091	-.542	1	.192
	Sig. (2-tailed)	.004	.398	.830	.166		.648
	N	8	8	8	8	8	8
UNEMP	Pearson Correlation	-.551	-.243	-.033	-.217	.192	1
	Sig. (2-tailed)	.157	.562	.939	.605	.648	
	N	8	8	8	8	8	8
** Correlation is significant at the 0.01 level (2-tailed).							

Table A. 34: Region specific correlation tests for TRA (first part data).

		FF	FC	@NE	GDP
FF	Pearson Correlation	1	-.307	.701**	.299
	Sig. (1-tailed)		.133	.002	.140
	N	15	15	15	15
FC	Pearson Correlation	-.307	1	-.894**	-.228
	Sig. (1-tailed)	.133		.000	.207
	N	15	15	15	15
@NE	Pearson Correlation	.701**	-.894**	1	.311
	Sig. (1-tailed)	.002	.000		.129
	N	15	15	15	15
GDP	Pearson Correlation	.299	-.228	.311	1
	Sig. (1-tailed)	.140	.207	.129	
	N	15	15	15	15
** Correlation is significant at the 0.01 level (1-tailed).					

Table A. 35: Region specific correlation tests for TRA (second part data).

		FF	FC	@NE	GVA	EMP	UNEMP
FF	Pearson Correlation	1	-.197	.454	.034	.153	-.152
	Sig. (2-tailed)		.639	.258	.937	.718	.720
	N	8	8	8	8	8	8
FC	Pearson Correlation	-.197	1	-.963**	.485	-.536	.385
	Sig. (2-tailed)	.639		.000	.223	.171	.346
	N	8	8	8	8	8	8
@NE	Pearson Correlation	.454	-.963**	1	-.431	.529	-.391
	Sig. (2-tailed)	.258	.000		.286	.178	.338
	N	8	8	8	8	8	8
GVA	Pearson Correlation	.034	.485	-.431	1	-.062	.938**
	Sig. (2-tailed)	.937	.223	.286		.885	.001
	N	8	8	8	8	8	8
EMP	Pearson Correlation	.153	-.536	.529	-.062	1	-.142
	Sig. (2-tailed)	.718	.171	.178	.885		.738
	N	8	8	8	8	8	8
UNEMP	Pearson Correlation	-.152	.385	-.391	.938**	-.142	1
	Sig. (2-tailed)	.720	.346	.338	.001	.738	
	N	8	8	8	8	8	8
** Correlation is significant at the 0.01 level (2-tailed).							

Table A. 36: Region specific correlation tests for TRB (first part data).

		FF	FC	@NE	GDP
FF	Pearson Correlation	1	.341	.948**	.308
	Sig. (2-tailed)		.214	.000	.264
	N	15	15	15	15
FC	Pearson Correlation	.341	1	.024	.729**
	Sig. (2-tailed)	.214		.931	.002
	N	15	15	15	15
@NE	Pearson Correlation	.948**	.024	1	.081
	Sig. (2-tailed)	.000	.931		.774
	N	15	15	15	15
GDP	Pearson Correlation	.308	.729**	.081	1
	Sig. (2-tailed)	.264	.002	.774	
	N	15	15	15	15
** Correlation is significant at the 0.01 level (2-tailed).					

Table A. 37: Region specific correlation tests for TRB (second part data).

		FF	FC	@NE	GVA	EMP	UNEMP
FF	Pearson Correlation	1	.868**	-.680*	.866**	.951**	.307
	Sig. (1-tailed)		.003	.032	.003	.000	.230
	N	8	8	8	8	8	8
FC	Pearson Correlation	.868**	1	-.954**	.865**	.926**	.299
	Sig. (1-tailed)	.003		.000	.003	.000	.236
	N	8	8	8	8	8	8
@NE	Pearson Correlation	-.680*	-.954**	1	-.756*	-.795**	-.257
	Sig. (1-tailed)	.032	.000		.015	.009	.269
	N	8	8	8	8	8	8
GVA	Pearson Correlation	.866**	.865**	-.756*	1	.935**	.541
	Sig. (1-tailed)	.003	.003	.015		.000	.083
	N	8	8	8	8	8	8
EMP	Pearson Correlation	.951**	.926**	-.795**	.935**	1	.339
	Sig. (1-tailed)	.000	.000	.009	.000		.206
	N	8	8	8	8	8	8
UNEMP	Pearson Correlation	.307	.299	-.257	.541	.339	1
	Sig. (1-tailed)	.230	.236	.269	.083	.206	
	N	8	8	8	8	8	8
** Correlation is significant at the 0.01 level (1-tailed).							
* Correlation is significant at the 0.05 level (1-tailed).							

Table A. 38: Region specific correlation tests for TRC (first part data).

		FF	FC	@NE	GDP
FF	Pearson Correlation	1	.290	.987**	.208
	Sig. (2-tailed)		.295	.000	.457
	N	15	15	15	15
FC	Pearson Correlation	.290	1	.130	.431
	Sig. (2-tailed)	.295		.645	.109
	N	15	15	15	15
@NE	Pearson Correlation	.987**	.130	1	.142
	Sig. (2-tailed)	.000	.645		.613
	N	15	15	15	15
GDP	Pearson Correlation	.208	.431	.142	1
	Sig. (2-tailed)	.457	.109	.613	
	N	15	15	15	15
** Correlation is significant at the 0.01 level (2-tailed).					

Table A. 39: Region specific correlation tests for TRC (second part data).

		FF	FC	@NE	GVA	EMP	UNEMP
FF	Pearson Correlation	1	.245	.073	.924**	.879**	.180
	Sig. (1-tailed)		.279	.432	.001	.002	.335
	N	8	8	8	8	8	8
FC	Pearson Correlation	.245	1	-.949**	.377	.212	.829**
	Sig. (1-tailed)	.279		.000	.178	.307	.005
	N	8	8	8	8	8	8
@NE	Pearson Correlation	.073	-.949**	1	-.087	.069	-.795**
	Sig. (1-tailed)	.432	.000		.419	.436	.009
	N	8	8	8	8	8	8
GVA	Pearson Correlation	.924**	.377	-.087	1	.816**	.412
	Sig. (1-tailed)	.001	.178	.419		.007	.155
	N	8	8	8	8	8	8
EMP	Pearson Correlation	.879**	.212	.069	.816**	1	.077
	Sig. (1-tailed)	.002	.307	.436	.007		.428
	N	8	8	8	8	8	8
UNEMP	Pearson Correlation	.180	.829**	-.795**	.412	.077	1
	Sig. (1-tailed)	.335	.005	.009	.155	.428	
	N	8	8	8	8	8	8
** Correlation is significant at the 0.01 level (1-tailed).							

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