

Facoltà di Economia  
Università di Roma "Tor Vergata"  
Anno accademico 2014/15  
Secondo semestre

Corso di Laurea di II Livello  
**SCIENZE ECONOMICHE**

Corso:

**Economia Regionale**

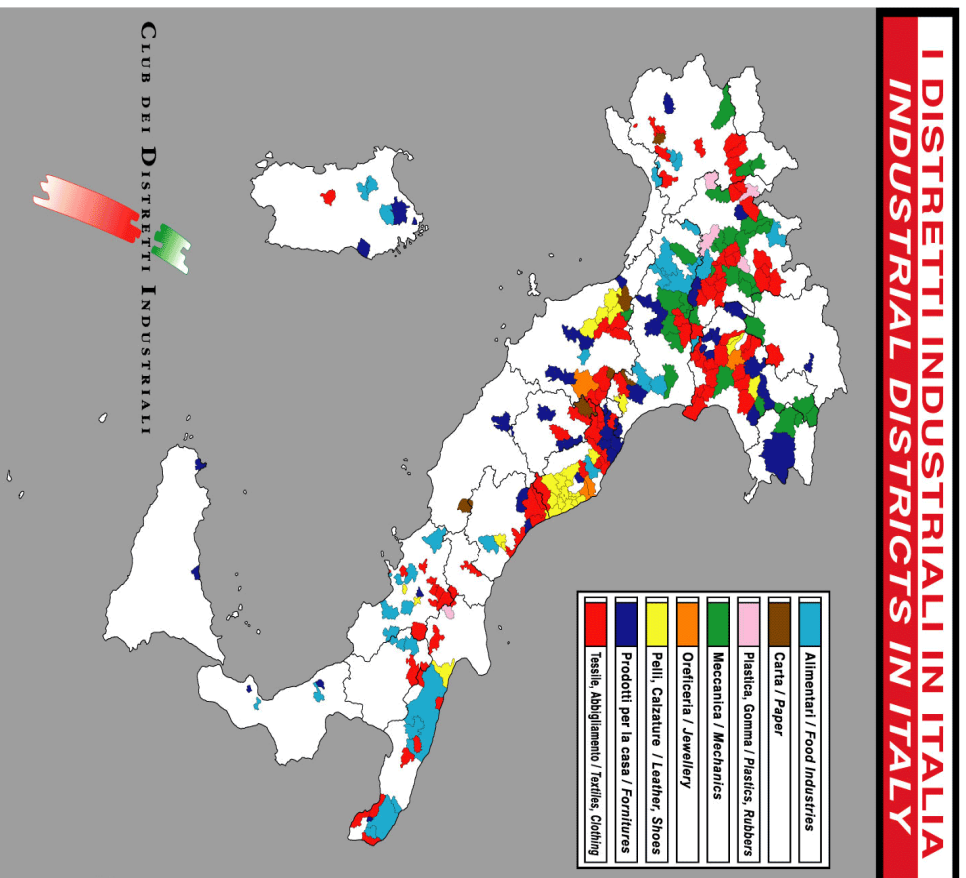
Docente

Prof. Riccardo Cappellin

### LEZIONE 3

## IL PROCESSO DI SVILUPPO NEI SISTEMI PRODUTTIVI LOCALI

Riccardo Cappellin, Corso di Economia Regionale, Università di Roma "Tor Vergata"



**Il peso dei distretti è decisamente crescente** nel tempo ed in particolare negli anni settanta e ottanta. Se si definisce la soglia dimensionale della piccola impresa in 100 addetti (cfr. Brusco e Paba 1997), la quota dell'occupazione industriale nei distretti è triplicata passando dal 10% nel 1951 al 32% nel 1991.

Questo fenomeno è dovuto a **tre componenti**: 1) la crescita del numero delle aree che possono essere definite come distretti, 2) la crescita/diminuzione dell'occupazione nei distretti sopravvissuti e infine 3) la scomparsa di taluni distretti.

Tra i distretti attivi nel 1991, la percentuale dei più antichi, quelli che risultavano già nel 1951, è del 16%, pari a 37 distretti. **Molti distretti esistenti negli anni '50 sono successivamente scomparsi**, rappresentando probabilmente delle mere aggregazioni di piccole imprese non efficienti, la gran parte delle localizzate nelle regioni meridionali del paese.

Mentre gli addetti di tutta l'industria manifatturiera italiana dal 1981 al 1991 sono diminuiti del 10,36%, nello stesso periodo, **l'occupazione manifatturiera nei distretti è aumentata**.

Inoltre **il peso della grande impresa nei distretti è diminuito**, dato che alcuni settori (meccanica), dove la grande impresa era prevalente nei primi decenni del dopoguerra, sono diventati via via dominati dalle piccole imprese.

Oltre ai "distretti industriali" in senso stretto possono essere individuate anche i cosiddetti **"sistemi locali di industrializzazione leggera"** (secondo la definizione di F. Sforzi ), che rappresentano una quota molto elevata dell'occupazione manifatturiera e comprendono una superficie molto più vasta, in aree esterne ai grandi centri urbani, sia rurali che di montagna.

3

## **Il modello dei "distretti industriali"**

Sebbene non esista una definizione univoca di "distretto industriale" nei moltissimi studi sia empirici che teorici, italiani ed esteri, dedicati a questa forma moderna di organizzazione territoriale delle imprese, sembra esistere un consenso ampio sulle seguenti **caratteristiche di un "distretto industriale"** (Garofoli 1991, Brusco e Paba 1997):

- un'alta specializzazione in uno **specifico settore** o comparto produttivo manifatturiero,
- un'elevata popolazione di **piccole e medie imprese**,
- una scomposizione dei processi produttivi in **fasì differenti** caratterizzate da dimensioni ottimali ridotte,
- presenza di **economie esterne** rispetto alla impresa singola ma interne rispetto al territorio locale,
- sviluppo di contratti di sub-fornitura e di **comportamenti cooperativi** tra le imprese locali,
- elevata mobilità tra la situazione di lavoratore dipendente e di lavoratore indipendente ed elevati tassi di **nascita e mortalità delle imprese**,
- sviluppo di un **know-how produttivo e organizzativo** comune incorporato nelle competenze della forza lavoro locale.

4

## Le caratteristiche di un distretto secondo Becatini:

La definizione di distretto secondo Becatini presenta le seguenti caratteristiche fondamentali.

- L'unità di analisi deve cambiare: non può essere l'impresa piccola individuale, ma l'insieme dell'occupazione di un distretto, composto da molte piccole imprese. Esiste pertanto una **differenza sostanziale tra le piccole e medie imprese nei distretti e le piccole imprese al di fuori dei distretti**.
- "Il distretto è il risultato dell'incontro di certi **tratti socio-culturali di una comunità, di caratteristiche storico-naturalistiche di un'area geografica** e di caratteristiche tecniche del **processo produttivo** e il risultato di un processo di integrazione dinamica (un circolo virtuoso) fra la divisione del lavoro nel distretto e l'**allargamento del mercato** dei suoi prodotti".
- "Il distretto industriale marshalliano è costituito da una **popolazione di piccole e medie imprese indipendenti**, tendenzialmente coincidenti con le **singole unità produttive di fase**, appoggiatisi ad una **miriade di unità fornitrici di servizi** alla produzione e di **lavoratori a domicilio** e a tempo parziale, orientate attraverso il **mercato delle commesse** da un gruppo aperto di **imprenditori puri**"
- Il distretto è una popolazione di **imprese specializzate** e appartenenti ad **uno stesso settore industriale definito in un senso particolarmente ampio** (filiera o settore verticalmente integrato).
- Il distretto non è solo un **sistema produttivo**, ma anche una **comunità locale** e un **sistema dei valori** ("l'etica del lavoro").

La tecnologia e la specializzazione settoriale nei distretti presentano le seguenti caratteristiche fondamentali:

- i processi produttivi sono scomponibili in **fasi spazialmente e temporalmente separabili**;
- le **dimensioni tecniche ottime** sono basse;
- esistono diversi **distretti pluri-settoriali**;
- nel distretto si assiste allo sviluppo di **specifici intermediari commerciali specializzati**.

5

Il **rapporto dei distretti con i mercati esterni** è caratterizzato dai seguenti fattori:

- esiste una **domanda finale differenziata e variabile** nel tempo e nello spazio;
- lo sviluppo dei distretti è strettamente collegato con l'**espansione delle vendite a scala internazionale**;
- si assiste allo sviluppo di un'**immagine del distretto sul mercato finale**;
- sono forti i legami con i **mercati internazionali delle materie prime**;
- l'importanza del mercato è dimostrata dall'integrazione stretta tra la fase della **commercializzazione del prodotto finale e la attività di trasformazione industriale**;
- il distretto non è chiuso in sé stesso ma forte è l'**interscambio di individui tra il distretto e il mondo circostante** e la capacità di assimilazione.

La **divisione del lavoro o l'integrazione produttiva tra imprese** è caratterizzata dai rapporti di collaborazione.

- La collaborazione produttiva tra imprese non è il risultato di un mero processo di esternalizzazione di alcune fasi produttive e viene sottolineata la **distinzione tra il "fare" (make), il "far fare" (buy) e il "fare insieme"** (che è quindi diverso dal mero acquistare).
- Nel distretto esiste un **rapporto stretto tra concorrenza e cooperazione**.
- La lotta per la **sopravvivenza** è temperata dalla **solidarietà** nell'ambito della comunità locale
- Piuttosto che una logica commerciale e speculativa prevale una **relativa stabilità delle relazioni e dei prezzi** dei servizi e prodotti intermedi.

6

### **Il mercato del lavoro e le risorse umane** nei distretti presentano le seguenti caratteristiche.

- Nel distretto si crea una **“atmosfera industriale”** e si sviluppa la specializzazione delle **competenze tecniche** dei lavoratori.
- Nel distretto la figura chiave è quella dell’**“imprenditore puro”** (**impanatore pratese**), che organizza il lavoro di varie imprese con capacità diverse tra loro legate nel processo produttivo.
- E’ sviluppato il **lavoro a domicilio e part-time**, che integra il reddito familiare e rappresenta uno strumento per l’addestramento professionale dei giovani.
- Possono esistere **legami personali e relazioni di parentela** tra i titolari delle imprese, che operano nelle diverse fasi e sono diffusi comportamenti cooperativi.
- Lo sviluppo delle risorse umane è guidato da un **meccanismo di penalizzazioni e incentivi**, che spinge verso una convergenza tra il lavoro desiderato e quello per cui si è oggettivamente più adatti.
- Prevalga una logica di **solidarietà a scala locale** piuttosto che logica di **conflitto di classe**.
- Il distretto si caratterizza per la capacità di **attrazione dei lavoratori più qualificati** provenienti da altre aree.

7

### **Le caratteristiche di un distretto secondo Garofoli:**

- a) l’esistenza di una molteplicità di imprese piccole e medie e assenza di un’impresa dominante;
  - b) una rilevante quota del mercato nazionale rispettivo;
  - c) una consistente specializzazione produttiva a scala locale;
  - d) lo sviluppo di interdipendenze produttive di tipo intra ed inter-settoriale;
  - e) una spinta alla specializzazione produttiva crescente;
  - f) la diffusione di rapporti “faccia a faccia” tra produttori ed utilizzatori di prodotti intermedi e di servizi alle imprese;
  - g) la progressiva formazione di un sistema informativo a livello d’area;
  - h) l’esistenza di una diffusa professionalità dei lavoratori;
  - i) gli elevati tassi di turnover dei lavoratori e di tassi di ricambio delle imprese;
  - j) la flessibilità del mercato del lavoro e presenza di una diffusa “etica del lavoro”;
  - k) la presenza di un elevato consenso sociale e di forme di regolazione sociale.
- I punti a) d) g) i) rappresentano un contributo aggiuntivo rispetto alla definizione di **Becattini**.

Le tendenze in atto sembrano essere caratterizzate da:

- tendenza alla **crescente integrazione intersettoriale**;
- tendenza all’aumento della **capacità di controllo del mercato finale**;
- evoluzione della specializzazione settoriale dalla forma **“area di specializzazione produttiva”** a quella di **“sistema produttivo locale”** e infine a quella di **“area-sistema”**.

La crisi dei distretti industriali classici in altri paesi europei è in gran parte dovuta agli **errori della politica industriale nazionale** che ha privilegiato lo sviluppo della grande impresa

8

## Le analisi di Fabio Sforzi e dell'Istat

L'analisi viene compiuta sulla base del **censimento 1981** e porta ai seguenti risultati:

1. aree del mercato del lavoro locale : n. 955
2. aree di industrializzazione leggera : n. 161, 19,5% degli addetti dell'industria manifatturiera
3. i distretti industriali marshalliani : n. 61, 8,6% degli addetti dell'industria manifatturiera

In sintesi, l'**algoritmo per l'individuazione dei distretti** utilizzato nell'analisi Sforzi-Istat sui dati del censimento 1981 si basa sull'individuazione delle aree che rispettano le seguenti 4 condizioni:

- a) la quota degli addetti nell'industria manifatturiera maggiore della media nazionale
- b) la quota degli addetti dell'industria manifatturiera in imprese con meno di 250 addetti maggiore della media nazionale,
- c) una forte specializzazione settoriale,
- d) l'esistenza in almeno uno di questi settori di una quota degli addetti dell'industria manifatturiera in imprese con meno di 250 addetti superiore alla media nazionale dello stesso settore

La stessa analisi viene ripetuta a distanza di alcuni anni sulla base del **censimento 1991**.

L'analisi di Sforzi è poco coerente con le indicazioni del modello del distretto marshalliano di Becattini. Manca un'**analisi dei flussi** di prodotti intermedi o di lavoratori tra le imprese in modo da dimostrare la forte **integrazione interna del sistema produttivo locale**. Manca la considerazione del **ruolo delle istituzioni intermedie e del capitale sociale**, senza i quali il sistema produttivo locale non ha una propria **identità e coesione interna**.

9

Riccardo Cappellin, Corso di Economia Regionale, Università di Roma "Tor Vergata"

Fuente: L. Cammari e L. Federico Signorini, Nuovi strumenti per la classificazione dei sistemi locali, in Signorini, L.F. (a cura di), Lo sviluppo locale: un'indagine della Banca d'Italia sui distretti industriali, Roma, Meridiana Libri 2000

Secondo le definizioni che si trovano in letteratura, l'elemento costitutivo fondamentale del distretto industriale consiste nell'interazione localizzata fra una **comunità di persone** (dotata di una identità storicamente definita e di particolari valori, regole, istituzioni), e una **popolazione di (piccole) imprese manifatturiere**, specializzate in un certo settore e organizzate in modo da realizzare, secondo regole in parte idiosincratiche, uno schema di divisione del lavoro per fasi che si traduce in una maggiore efficienza e flessibilità del processo produttivo. La **metodologia Sforzi-Istat** per la definizione dei distretti industriali **tenta di approssimare questo intreccio di fattori socioeconomici** distillandone l'essenza per mezzo di un limitato gruppo di variabili censuarie.

La metodologia Sforzi-Istat per la definizione dei distretti industriali consta di due passaggi distinti. Nel primo passaggio, il territorio italiano viene diviso in un certo numero di **sistemi locali del lavoro (SLI)**, definiti sulla base dei movimenti pendolari giornalieri. Nel secondo passaggio, un sottoinsieme di SLI viene classificato come distretto industriale sulla base di un insieme di **caratteristiche della sua struttura economica**. Tutta la procedura è basata su dati dei censimenti della popolazione e dell'industria. Una prima versione fu sperimentata sui dati dei **censimenti del 1981**; la versione più recente, a cui si fa riferimento di regola nei saggi compresi in questa raccolta, è basata sui dati dei **censimenti del 1991**.

Un SLI, idealmente, è un'**area autocontenuta dal punto di vista dei tragitti giornalieri da casa al lavoro**. In pratica, l'algoritmo Sforzi/Istat individua i SLI prendendo come unità di base i confini amministrativi dei comuni, e aggregando i comuni in modo tale che una quota sufficientemente piccola dei residenti nei comuni appartenenti a un certo SLI si spostino quotidianamente per motivi di lavoro in comuni appartenenti a un altro SLI. L'algoritmo si basa sui dati riferiti agli spostamenti giornalieri rilevati con il **censimento della popolazione**.

Secondo le parole di Sforzi (1990), il SLL “identifica lo schema tempo-spazio della **vita quotidiana per la popolazione residente**, ove si innesta la gran parte delle relazioni sociali ed economiche”. Nella versione riferita al censimento del 1991, l'algoritmo Sforzi-Istat identifica 784 SLL. Nella versione precedente i SLL erano in numero maggiore (955); la **riduzione del numero di aree** (cioè l'incremento della loro dimensione media) riflette un **ampliamento del raggio degli spostamenti giornalieri** dovuto alla crescente mobilità della popolazione.

Il secondo passaggio si basa sull'idea che un distretto industriale marshalliano sia semplicemente un SLL che possiede determinate caratteristiche strutturali. Più specificamente, tra i 784 SLL del 1991 vengono classificati distretti industriali quei sistemi locali che soddisfano le seguenti condizioni:

1. la **quota degli addetti all'industria manifatturiera** sul totale degli occupati non agricoli deve essere maggiore di quella media nazionale;
2. la quota degli occupati nell'industria manifatturiera in **imprese con meno di 250 addetti** deve essere maggiore di quella media nazionale;
3. supponendo che in **una o più branche dell'industria manifatturiera** la quota degli occupati sul totale degli occupati manifatturieri sia **maggiore della media nazionale** (condizione sempre verificata al di fuori di casi limite), almeno in una di tali branche la quota di occupati in **imprese con meno di 250 addetti** deve essere maggiore di quella media nazionale.

Sulla base di questi criteri vengono individuati, con riferimento al 1991, **199 distretti industriali**, con un'occupazione manifatturiera complessiva pari al 42,5% del totale italiano.

11

Come si è detto, e come è inevitabile, la classificazione di Sforzi e Istat contiene **elementi di arbitrarietà** nella selezione degli indicatori e dei relativi valori soglia (Brunco-Paba, 1997). Per esempio, il limite dei 250 addetti - fondato su definizioni statistiche comunitarie - non ha una particolare giustificazione a priori; potrebbe anzi apparire troppo alto rispetto alla realtà dei sistemi produttivi locali italiani. Per fare un altro esempio, la **misura della specializzazione settoriale** dipende dallo schema di classificazione settoriale adottato: perciò, a seconda che si scelga di operare all'uno o all'altro livello di disaggregazione, la tassonomia dei sistemi locali risulterà in generale diversa. I criteri adottati implicano inoltre che un distretto industriale Sforzi-Istat possa avere **più di una specializzazione**, e che *la/de* specializzazioni individuate **possano non coincidere con il settore industriale** più importante del distretto in termini quantitativi.

Il problema dell'arbitrarietà della procedura di classificazione assume particolare rilievo perché la tassonomia Sforzi-Istat è rigorosamente dicotomica: **un'area, o è un distretto, o non lo è**. Queste considerazioni hanno indotto a ricercare **proposte alternative** non tanto in un ripensamento radicale dei criteri, quanto in una attenuazione del carattere dicotomico della classificazione, che vi introducesse qualche **elemento di gradualità e di multidimensionalità**.

Fine: citazione

12

## Le reti di imprese nei sistemi produttivi locali

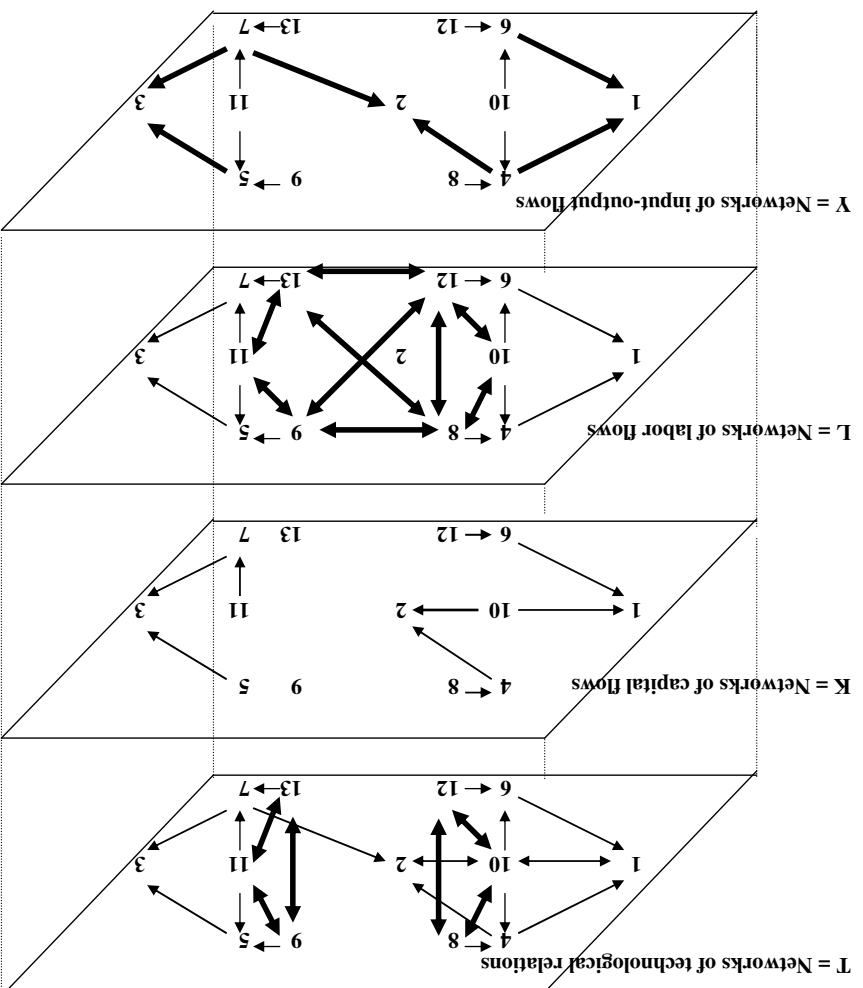
Il processo di interazione a rete (networking) a scala locale ha un carattere complesso e può essere descritto come l'interazione delle imprese e degli attori locali all'interno di diversi tipi di reti, ciascuna delle quali favorisce **diverse forme di integrazione**.

In sintesi, secondo l'approccio dei "network territoriali" un sistema produttivo locale competitivo deve essere caratterizzato dalle diverse forme di integrazione indicate nella figura 1 (Cappellin e Orsenigo 2000).

Tabella 1: Tipi diversi di network in un sistema produttivo locale

<i>Relazioni di integrazione tecnologica:</i> che caratterizzano lo sviluppo del know-how produttivo locale, la condivisione di saperi e valori, i processi di apprendimento sul lavoro, la formazione permanente dei lavoratori, la formazione professionale dei giovani, gli investimenti congiunti in R&S e l'apertura a collaborazioni tecnologiche con imprese esterne all'area considerata.
<i>Relazioni di integrazione sul mercato del lavoro:</i> che sono connesse con le relazioni di cooperazione tra lavoratori e imprese, la mobilità del lavoro tra le imprese dello stesso settore, ma anche con la capacità di attrazione di lavoratori qualificati esterni a scala interregionale e tra diversi settori.
<i>Relazioni di integrazione produttiva tra imprese:</i> che come le relazioni di subfornitura tra le imprese giocano un ruolo cruciale nel promuovere la diversificazione delle produzioni locali.

<i>Relazioni di integrazione tra servizi e industria:</i> che stimolano lo sviluppo di servizi di distribuzione commerciale, di trasporto e logistici moderni, come anche di servizi di assistenza alle imprese industriali nella certificazione della qualità del prodotto/servizio e nello sviluppo tecnologico.
<i>Relazioni di integrazione finanziaria tra le imprese:</i> che, come i rapporti banca-imprese, facilitano la successione imprenditoriale, la creazione di gruppi di imprese, i fenomeni di spin-off di nuove imprese, la capacità di attrarre investimenti esterni o di fare investimenti all'estero da parte delle imprese locali.
<i>Relazioni di integrazione territoriale a scala locale:</i> che richiedono un miglioramento della dotazione infrastrutturale ed uno sforzo volto a tutelare la qualità del territorio.
<i>Relazioni di integrazione socio-culturale:</i> che promuovono l'identità locale e il consenso di ampi settori della comunità locale su una strategia di sviluppo economico condivisa.
<i>Relazioni di integrazione istituzionale:</i> che sono connesse con lo sviluppo delle capacità amministrative locali e la capacità di queste ultime di interagire con le istituzioni regionali e nazionali nella realizzazione di progetti strategici di sviluppo.
<i>Relazioni di integrazione territoriale a scala interregionale e internazionale:</i> che spingono ad una maggiore apertura a scala interregionale, allo sviluppo di una politica estera locale o del marketing territoriale e sono fondamentali nel promuovere la capacità di attrarre investimenti esterni e l'internazionalizzazione delle imprese locali.



**Fig. 3: The connectivity between the flows of production factors, technology and productions**

Riccardo Cappellin, Corso di Economia Regionale, Università di Roma "Tor Vergata"

Cappellin, R. (2003b), *Networks and Technological Change in Regional Clusters* in Bröcker, J., Dolse, D. and Soltwedel, R. (eds.), *Innovation Clusters and Interregional Competition*, Springer Verlag, Heidelberg (ISBN 3-540-00999-X): 52-78.

In fact, a local production system represents a local pool of specialized labor. The movement of labor between the firms allows an efficient transfer of knowledge and technology between firms, facilitates learning, innovation and faster development of new products and processes. Labor market flows enable the firms to cumulatively build on a shared set of technological experiences and tacit knowledge. Firms compete for specialized labor and individuals benefit through having the ability to move easily between firms. Thus in a cluster workers have at their disposal a wider range of jobs capable of enabling them to achieve their job ambitions.

These flows in the labor market may be indicated with the network of figure 2 or with the matrix (L) of table 2. An operational representation of these flows is that of table 3, which represents the labor market flows in the wider context of the demographic flows in the area considered. In fact, the table indicates the population in the initial year ( $X_{89}$ ) and the population in the final year ( $X_{98}$ ).

From this table it is possible to compute how many workers, which are employed in the final year in a given firm (which may have already existed in the initial year or may be a new firm), were employed in the initial year in the same firm or in another firm or were unemployed or have migrated from a different area. Furthermore, the table allows to compute the workers, which have moved from a profession to another profession (for example from a self-employment status to an employees status and viceversa), either in the same firm or while moving from a firm to another firm.

This table allows to measure the change of employment between two years as the summation of the employment in the new born firms ( $X_{97}$ ), minus the employment in the firms, which have closed ( $X_{79}$ ), plus the net change of the employment in those firms, which have persisted in the period considered ( $X_{95} - X_{59} + X_{96} - X_{69}$ ), according to the following identity:

$$X_{95} + X_{96} + X_{97} = (X_{59} + X_{69} + X_{79}) - (X_{97}) + (X_{95} + X_{96} - X_{69}) + (X_{96} - X_{69})$$





## L'approccio dei network territoriali

Il modello dei "network territoriali", rappresenta un'evoluzione del modello "endogeno", nell'accezione tipica delle teorie dello sviluppo regionale, e corrisponde alla vasta diffusione avvenuta negli anni '90 del concetto di **rete in diverse discipline**, quali l'economia industriale e l'economia aziendale, ma anche l'analisi geografica, urbana e territoriale, la sociologia, le teorie della innovazione e dei processi di apprendimento, le teorie della pianificazione e della "governance", del decentramento amministrativo e del federalismo.

L'esperienza degli ultimi decenni nella Unione Europea dimostra che lo sviluppo di un sistema produttivo regionale dipende in modo cruciale non solo dalle risorse e dalle capacità "endogene", ma anche dall'**apertura verso l'economia internazionale** e dall'intensità dell'integrazione con altri sistemi produttivi regionali in termini di flussi di esportazioni, investimenti produttivi, investimenti finanziari o acquisizioni di imprese, trasferimenti di capacità organizzative, trasferimenti di know-how tecnologico e flussi turistici.

Pertanto, l'evidenza empirica contraddice un paradigma tradizionale, secondo il quale una maggiore integrazione economica delle regioni arretrate con quelle più sviluppate determinerebbe meccanismi di crescita cumulativa delle disparità interregionali. Al contrario, i cambiamenti avvenuti nelle tecnologie e nella forma delle relazioni tra le imprese sembrano dimostrare che **la maggiore integrazione a scala europea è stato un fattore che ha promosso uno sviluppo più rapido delle regioni arretrate**. Infatti, l'isolamento di una singola regione rispetto alle aree contigue impedisce di raggiungere quella massa critica che permette di essere visibili nel contesto di una competizione crescente a scala globale e che richiede che ciascuna area sviluppi strategie di cooperazione almeno con le regioni più vicine.

Il modello dei network territoriali si basa su **concetti chiave quali quelli di apertura, connettività, sinergia, cooperazione e integrazione**.

1

Secondo il modello dei "network territoriali" i **tradizionali "distretti industriali" non sono un'eccezione rispetto al modello prevalente di funzionamento della industria moderna a scala globale**: interessante ma limitata ad aree specifiche con particolari caratteristiche sociali e culturali. Essi devono essere invece interpretati come **un caso particolare del nuovo paradigma di organizzazione industriale** (Cappellin 1998), che si basa sullo sviluppo di relazioni a rete nell'ambito di gruppi o cluster di imprese e sul radicamento territoriale ("embeddedness"), come è tipico anche di moltissime grandi imprese. Pertanto, i fattori e i processi di integrazione a scala locale evidenziati da una vasta letteratura internazionale sui sistemi produttivi locali **hanno una rilevanza di tipo generale** e sono importanti per spiegare i **numerosi cluster settoriali o locali esistenti nelle economie industriali più sviluppate**.

2

## **L'evoluzione dei distretti industriali nelle regioni più sviluppate**

L'evoluzione recente dei sistemi produttivi locali più sviluppati mostra **la transizione dal modello del "distretto industriale" a quello della rete o del "network territoriale"**. Mentre il modello dei distretti industriali si caratterizza per l'essere fondato sui concetti di **specializzazione settoriale** e di **concentrazione geografica**, il modello dei network territoriali si caratterizza per l'essere fondato sul **concetto di "integrazione" di tipo sia settoriale che geografico**.

Un sistema produttivo locale moderno non si caratterizza tanto per la **concentrazione territoriale** di molte imprese **specializzate nello stesso settore**, quanto per la **specializzazione diversa** e la **complementarietà** delle diverse imprese anche con **imprese esterne**.

**Aumentano i settori di specializzazione** dei singoli sistemi produttivi locali e quindi aumenta la loro diversificazione settoriale. Il **"distretto industriale"** monosettoriale tradizionale si è trasformato in un **"sistema produttivo locale" integrato a scala intersettoriale** (Cappellin, 1998).

I sistemi produttivi territoriali in molti paesi sono evoluti dallo stadio nel quale essi erano semplici **concentrazioni di imprese simili**, che lavoravano nello stesso settore produttivo ma tra loro concorrenti, allo stadio di **reti di imprese specializzate e complementari**.

La creazione di **forme di integrazione verticale**, come le filiere, permette al sistema produttivo locale di alimentare l'evoluzione continua del know-how produttivo, dal cui controllo dipende la possibilità di mantenere un vantaggio competitivo sostenuto nel tempo, come anche di assicurarsi un accesso sempre più immediato al mercato finale, che determina il valore aggiunto totale del ciclo produttivo complessivo.

3

Nei sistemi produttivi locali di PMI delle regioni con maggiori tradizioni industriali (Lombardia, Emilia Romagna, Veneto) **emergono meccanismi che sono diversi da quelli tipici dei "distretti industriali" tradizionali**.

Il modello tradizionale dei "distretti industriali" sembra di fatto corrispondere all'esperienza dello sviluppo dei sistemi produttivi locali nelle regioni di maggiore industrializzazione durante gli **anni '60**, ma si rivela del tutto inadeguato a interpretare **la struttura industriale attuale** di queste regioni.

Infatti, da un lato sono chiaramente individuabili anche in queste regioni diversi "sistemi produttivi" a scala locale o provinciale, caratterizzati da strutture e specializzazioni produttive sostanzialmente differenti tra loro e fortemente radicati nel loro rispettivo territorio. Dall'altro, i **sistemi produttivi territoriali moderni differiscono dal modello tradizionale del "distretto industriale"**, basato su un modello di sviluppo "endogeno" e fortemente specializzato in un settore specifico, almeno per **le seguenti caratteristiche**(Cappellin 1998):

- a) un **elevata e crescente apertura internazionale** non solo in termini di esportazioni, ma anche di investimenti, sia dall'estero che anche sempre più verso l'estero, e di accordi di cooperazione commerciale, produttiva e tecnologica a scala internazionale,
- b) un **elevata e crescente diversificazione** delle produzioni locali,
- c) un **allargamento del know-how produttivo locale** e un'elevata diversità e complementarietà delle tecnologie adottate nelle singole imprese dei sistemi produttivi locali considerati.

Si sviluppano le relazioni a scala regionale e interregionale con la creazione di "network territoriali" o di **"reti di sistemi produttivi locali"** a **scala regionale o anche interregionale**. Queste caratteristiche sono il risultato di un **processo graduale di evoluzione** dei sistemi produttivi locali dal modello dei "distretti industriali" a quello dei **"network territoriali"**.

**Tre dimensioni del modello dei network territoriali**

4

Il modello dei network territoriali consente di stabilire un legame diretto tra **tre diverse dimensioni dello sviluppo locale**, quali (Cappellin 1998, 1999, 2000):

- 1) la **dimensione industriale/economica** delle relazioni economiche tra le imprese e gli attori locali,
- 2) la **dimensione fisica** della organizzazione del territorio e
- 3) la **dimensione istituzionale** delle relazioni tra i diversi livelli di governo locale e nazionale.

## La dimensione industriale

- **Immanzitutto**, in una prospettiva industriale, il modello dei network territoriali implica innanzitutto una **maggiore formalizzazione delle relazioni tra le imprese**, un tempo basate prevalentemente sulla fiducia e la conoscenza personale nei distretti industriali. Da esso deriva l'uso di accordi più vincolanti tra le imprese locali, come è tipico dei processi "just in time" e della "qualità totale".

- **In secondo luogo**, un network territoriale si caratterizza, rispetto al distretto industriale tradizionale, per una **maggiore diversificazione settoriale** dell'economia locale e una relazione stretta di integrazione tra settori diversi.

Infatti, un sistema di produzione locale moderno è caratterizzato dalla **specializzazione** e dalla **complementarietà** delle imprese e porta a **forme di quasi-integrazione verticale** come le filiere, che permettono al sistema produttivo locale sia di combinare il know-how in continua evoluzione specifico delle singole fasi produttive che di assicurare un accesso sempre più diretto con il mercato finale ove si determina il valore aggiunto creato.

5

Riccardo Cappellin, Corso di Economia Regionale, Università di Roma "Tor Vergata"

- **In terzo luogo**, il modello delle reti territoriali permette un'**estensione del quadro geografico**, nel quale le imprese sviluppano le relazioni di sub-fornitura e di altro tipo, a scala interregionale e internazionale, rispetto al mero ambito locale tipico nel modello dei distretti industriali. Infatti, le forme delle relazioni tra le imprese ed in particolare i **rapporti di sub-fornitura e di integrazione finanziaria evolvono continuamente e si estendono a scala geografica sempre più ampia**. Un'organizzazione a rete a scala interregionale permette un **accesso più facile alle informazioni sui diversi mercati di sbocco** e sull'evoluzione dei bisogni dei consumatori in regioni e paesi distanti.

La caratteristica del **radicamento territoriale** ("embeddedness") non appare in contraddizione con un'apertura esterna crescente a scala sia interregionale che internazionale. E' invece necessaria **una relazione stretta tra capacità "endogene" e apertura esterna**. In particolare, il concetto di "network territoriale" si caratterizza rispetto a quello tradizionale di "distretto industriale" o di "cluster" produttivo per il passaggio da un approccio di **relativa chiusura localistica** ("selective closure") **basata sulla omogeneità territoriale** ad un approccio basato sul **concetto di integrazione territoriale, che prevede reti fortemente radicate** ("embedded") **nel territorio** e a geometria variabile tra i diversi attori locali e tra questi e le regioni e i paesi esterni (Cappellin 1997, 1999, 2000).

- **In quarto luogo**, l'apertura interregionale e il processo di networking a scala locale consentono di promuovere **uno sviluppo e un cambiamento continuo delle conoscenze e competenze** nei singoli sistemi produttivi locali, tramite la sinergia tra le risorse tecnologiche specializzate interne alle imprese locali e quelle esterne in altre regioni e paesi. Questo consente di arricchire e sviluppare il know-how produttivo locale, mantenendo il controllo sulla tecnologia che assicura un vantaggio competitivo stabile nel tempo.

6

## La dimensione geografica

**Con riferimento alla dimensione fisica**, il modello dei network territoriali, ha il vantaggio di sottolineare la stretta relazione tra l'organizzazione delle relazioni economiche tra le imprese e l'**organizzazione del territorio regionale**, che è caratterizzata da un **reticolo fitto di insediamenti industriali** o **"sistemi produttivi locali"**, di **centri urbani di medie e piccole dimensioni** e da complesse relazioni di questi ultimi con le **grandi aree metropolitane** (Cappellin 1988, 1997b e 2000). In particolare, lo sviluppo dei sistemi produttivi di piccola e media impresa è sempre più strettamente legato alla valorizzazione del ruolo dei centri urbani, che forniscono moderni servizi alle imprese, e allo sviluppo delle **reti di trasporto e dei servizi logistici**.

## La dimensione istituzionale

Infine, un'ulteriore caratteristica del modello dei network territoriali è il fatto che esso evidenzia **la dimensione istituzionale** del processo di sviluppo locale (Cappellin 1997a 1997d). Infatti, in una società della conoscenza o in una "learning economy" **l'intervento degli enti pubblici appare necessario ove esistono asimmetrie informative**. Il crescente decentramento della economia e la complessità crescente di una moderna economia industriale creano **l'esigenza di una funzione di integrazione**, che deve essere svolta dalle istituzioni pubbliche e da nuove organizzazioni collettive.

Pertanto, **il ruolo del governo locale e regionale diventa quello di catalizzare nuove soluzioni, come un "integratore di sistema"**, promuovendo l'integrazione di risorse complementari dei diversi attori, stimolando la capacità progettuale degli attori locali tramite la **proposta di programmi strategici ("action plans")** e eventualmente tramite l'offerta di assistenza tecnica nella realizzazione di progetti specifici. Lo sviluppo di **reti tra gli attori locali ("policy network")** indica l'importanza di **ruoli nuovi come quello del negoziatore, del leader**, del facilitatore, del catalizzatore, del broker, del gestore della rete e del promotore di forme nuove sistemiche di organizzazione tra imprese, organizzazioni e istituzioni.

In un nuovo approccio alla politica locale e regionale un ruolo cruciale viene assegnato non ai **"governi"** nazionali e neanche a quelli regionali e locali, ma agli **"attori" e alle "reti" o ai "network"** che organizzano le interazioni tra tali attori.

Il concetto di **interdipendenza ed integrazione** tra le diverse attività produttive non è sufficiente e i sistemi produttivi locali devono essere in grado di promuovere la creazione di **forme esplicite di cooperazione ("partnership") tra i diversi attori locali**, che devono essere unite da una strategia comune e mirare esplicitamente a realizzare programmi d'azione ("action programmes") comuni.

# International Knowledge and Innovation Networks

Knowledge Creation and Innovation in  
Medium-technology Clusters

---

Riccardo Cappellin

*University of Rome Tor Vergata, Italy*

Rüdiger Wink

*Leipzig University of Applied Sciences, Germany*

NEW HORIZONS IN REGIONAL SCIENCE

**Edward Elgar**

Cheltenham, UK • Northampton, MA, USA

9

Riccardo Cappellin, Corso di Economia Regionale, Università di Roma "Tor Vergata"

PAGINE: 83-87; 106-111; 111-115; 116-122, 123-127; 179-185

### 3. The process of innovation in SMEs and medium technology sectors

While most of the literature and policy debate on innovation focuses on high-tech sectors, the innovation process in medium-tech sectors has rather different characteristics and it is explained by different factors than in high-tech sectors.

Machinery and transport equipment productions represent typical examples of medium technology sectors. Differently from high tech sectors, such as the biochemical, pharmaceutical or information technology sectors, the production process in mechanical industry may be distinguished in many different phases and also the final product is the result of the assembly of a very high number of intermediate components.

Medium-technology sectors are based on technological paradigms, which started centuries ago, but have been improved by engineering expertise and by integrating experiences from other technological disciplines, like material sciences or nature sciences.

Technology in medium technology sectors is characterized by a high complexity, as products are made by a high number of heterogeneous physical components, which require a variety of agents, competencies and pieces of knowledge for their production.

Thus, medium-technology sectors are highly dispersed, fragmented and characterized by a high modularity, specialization of the firms, forms of vertical quasi-integration between the firms which are organized in complex and continuously changing supply chains. Firms in medium-technology sectors mainly produce intermediate products for other firms rather than final products for the consumer market.

The fragmentation of the production process and the high specialization of the firms explain why economies of scale are less important and firms have a small size and why the firms develop a very strong interaction with their external local environment, characterised by a high diversity of private and public, local and non local actors.

These circumstances cause a high competition between the SMEs and also to the need to promote cooperation between the various producers. In fact, the high number of SMEs existing in medium tech sectors calls for a different approach in innovation policy, which should aim to exploit the potential of complementarity between widely dispersed components and actors.

SMEs in the medium and low technology sectors do not invest in routine R&D activities, as they cannot recuperate the high cost of these investments and they also often lack the necessary human capital resources to get into continuous interaction with basic research institutes and researchers from disciplines different from that of the own field of specialization.

Thus, differently from large firms and high tech sectors, innovation processes in the SMEs working in medium and low technology sectors do not depend on formal R&D, but on tacit knowledge or on combinatorial capabilities and interactive learning processes within networks of firms. Innovation has a gradual character and consists mainly in improvement of existing products, services and processes.

In particular, the process of innovation in medium technology sectors is driven by an intensive interaction between the suppliers and the customers, due to the high specificity of the needs of the customers, which require solutions made by different complex combinations of many specific components.

The different characteristics of the innovation process in SMEs with respect to those in large firms, in service activities and in research institutions (Table 4) can be clarified by comparing the characteristics of the inputs, the processes and the outputs in the innovation process within these four types of activities. In particular, inputs may be distinguished between codified and tacit knowledge. The processes may be distinguished between formal research activities and informal search activities. The output may be distinguished between innovation/inventions and internal competencies:

- a) innovation processes in SMEs, working in medium technology sectors, are characterized by tacit knowledge, informal research processes and development of competencies, which represent the competitive assets of SMEs,
- b) innovation processes in large firms are characterized by tacit knowledge, formal research activities and development of inventions/innovations,
- c) innovation processes in the modern knowledge intensive services are characterized by codified knowledge, informal research activities and development of inventions/innovations with the users of these services,
- d) innovation processes in the academic institutions are characterized by codified knowledge, formal research activities and development of competencies students and researchers.

Table 4: Input, processes and output of knowledge creation in different organizations

University institutions	Large firms	Formal research	PROCESS	University institutions	Large firms
Knowledge intensive services	SMEs in non high-tech sectors	Informal search		SMEs in non high-tech sectors	Knowledge intensive services
Codified knowledge	Tacit knowledge	KNOWLEDGE CREATION AND INNOVATION		Competencies	Invention or innovation
INPUT				OUTPUT	
University institutions	SMEs in non high-tech sectors	Competencies	OUTPUT		
Knowledge intensive services	Large firms	Invention or innovation			

Moreover, innovation processes within SMEs should be analyzed not within the individual firm, but within the system or network to which the SMEs belong. In fact, within the individual firms, problem solving may arise by decomposing a problem into sub-problems through the "ex ante" coordination by a superior authority. On the contrary, a decentralized economy is typically characterized by incomplete and scattered information or by bounded rationality. No single individual can solve all problems. Thus, in a decentralized economy, problem solving is the result of marginal improvements, made by various individual actors through an "in itinere" coordination or according heuristic and recursive processes and mutual interactive learning. These characteristics of the process of knowledge creation and of innovation are particularly evident in the case of the local production systems of SMEs.

The individual parts of the networks of SMEs seem to change in an almost coordinated manner. Technological progress is implicit or of a non-volunteer type, differently from the R&D projects guided by a unique decision making body as in the large firms model. It follows technological trajectories and evolutionary processes, which are not optimizing but have an interactive character and are based on recursive adjustment processes of the various actors involved.

SMEs systems are characterized by multiple incremental product and process innovation. It is often difficult to distinguish the management of the process of daily production, aimed to respond to the needs that result from the orders of the customers, and the process of product development and innovation. In particular, local production systems of SMEs are characterized by a systemic process, within which different phases may be distinguished (Cappellin and Orsenigo 2000):

- the phase of knowledge creation, characterized by learning processes based on emulation and the close interaction of actors with different competencies,
- the innovation phase, characterized by a "problem solving" approach that makes expert use of a combination of different and complementary knowledge,
- the production phase, characterized by the joint work of various specialized suppliers.

SMEs develop vertical flows of tacit knowledge within their respective "filieres" or value chain. Moreover, they are increasingly developing also horizontal linkages with different technologies and sectors, which are crucial in order to promote structural changes and a productive diversification of the cluster, through the creation of new fields of production (Cappellin 1998).

A close complementarity emerges between the "soft" cognitive networks, which organize the learning and innovation processes, and the "hard" networks that are based on real and monetary flows of goods/services or of financial funds. In fact, the development of innovation and competence within SMEs is related to the subcontracting relations, which promote tight "client-supplier" relationships of technological collaboration. Moreover, the relations of financial control among SMEs, within groups made by several firms and often controlled by an intermediate leader firm, are often the results of spin-offs in innovative sectors from the mother firm or of the acquisitions of other firms, that allow to diversify the traditional productions of the controlling firms.

13

This process explains the evolution of knowledge in the small and medium size firms, as the result of the combination of complementary capacities in the framework of widespread interactive learning processes. In fact, the development of new productions requires the innovative combination of the different types of technologies characterising different sectors. Technology spreads across industries and the new knowledge indicates a higher level of flexibility.

In conclusion, the case of the local production systems of SMEs indicates the following new dimensions of the process of innovation (Cappellin and Orsenigo 2000):

- a) the integration of different and numerous technological and organizational knowledge inputs, derived from other sectors and regions, which allow to renew the know-how and to solve new problems. External knowledge should be combined with the knowledge and technologies internally available, since the frontier of technology increasingly is at the crossroad of two or more disciplines or traditional cultures,
- b) the interactive character of the learning process, which involves groups of individuals, both within the individual firms and outside ("social networks") and which requires the development of linkages, networks and co-operations between the most different actors, also outside the channels of the existent institutional structures,
- c) the gradual and cumulative character of the innovation process, which develops in a gradual way and proceeds along trajectories or development paths, which are based on the continuous learning process by the entrepreneurs, the technicians and the workers engaged in the productions,

Thus, the innovation process in medium technology sectors can be interpreted according to a "systemic approach". This approach is different from the "linear approach", which is based on R&D investment and just promotes the transfers of information and of modern technology or provides customized expertise to individual firms.

This new and alternative concept of innovation as interactive learning process allows a broadening of the regions and sectors and firms which may be considered as innovative, as they are not only represented by those organizations where massive investment in R&D are done.

In a policy perspective, the traditional linear model of innovation is based on a rational process of optimization by the individual firms and it has a technocratic character by distinguishing the decision making phase and the execution phase within the production processes. On the contrary, medium technology sectors seem to require a systemic approach based on promoting knowledge networks and cooperation between the various local and external actors and on the development of the internal capabilities of these actors.

14



## 7. The economic characteristics of local production systems

At the present time the organization of production is experiencing a profound transformation process in which the hierarchic models give way to more flexible and decentralized forms of organization. This has produced multiple interpretations such as the industrial districts (Becattini, 1990) flexible specialization (Piore and Sabel, 1984), industrial clusters (Porter, 1990, 2000), the knowledge economy (Lundvall 1992; Florida 1995), the new economic geography (Krugman, 1991; Fujita and Tyse, 2002), the theory of the innovative milieu (Maillat 1995, Maillat and Kébir, 1999; Crevoisier and Camagni, 2000), regional innovation systems (Cooke, 1998). Thus, a single unique interpretation as to how production is organized within the territory does not exist.

### a) The "industrial district"

According to Becattini (1990), an "industrial district" is the result of the combination of the specific socio-cultural characters of a community, of the historical-naturalistic characteristics of a geographical area and of the technical characteristics of the production process and it is the result of a process of dynamic integration (a virtuous circle) between the division of labor in the district and the widening of the market of its products.

In particular, the Marshallian industrial district would be made by a population of independent small and middle firms, mostly coincident with individual production phases, supported by a myriad of units supplying production services and of cottage and part-time workers, which are oriented by an open group of pure entrepreneurs through the market of the production orders.

Although there is not a single definition of industrial district in the very large number of empirical and theoretical, Italian and foreign, studies devoted to the analysis of this modern form of territorial organization of the firms, a wide consensus seems to exist on the following characteristics of an industrial district (Steiner 1998):

- an high specialization in a specific product,
- a population of small and medium size firms,
- production processes decomposed in different phases with low optimal technical sizes,
- a presence of external economies for the individual firms, but internal in the local territory,
- the development of subcontracting agreements and of cooperative behaviors between the firms,
- an high mobility from employee to self-employment status and high birth and death rates of the firms,
- the development of a common production and organizational know-how embodied in the skills of the local labor force.

15

### b) The "milieu innovateurs"

With respect to the concept of "industrial district", the concept of the "milieu innovateur" is not focused only on the efficient and decentralized organization of the local productions, but it is focused on the role of the innovation processes, that could take different forms, like the processes of imitation and of development of specific technology or the ability of reallocation of the local resources from the sectors in decline to new emergent sectors, when the local production system is stricken by a crisis and by external shocks.

Two typical elements of a "milieu" are a "logic of interaction," that it is revealed by the creation of "innovation networks" and by an explicit cooperation between the different local, private, public and collective actors (Maillat 1995), and a "dynamic of collective learning", that implies the ability by the local actors of gradually modifying their behavior according to the change in the external environment and of activating the internal resources of the "milieu", in order to create solutions that are appropriate to a new situation.

### c) The "regional innovation systems" (RIS)

The approach of regional innovation systems (RIS) emphasizes the systemic dimension of the innovation process, which derives from the fact that a regional system of innovation is made by a plurality of actors, like large and small firms working in a production sector, where network relationships exist or could be economically foreseen, institutes of research and of superior training, private laboratories of R&D, agencies of technological transfer, chambers of commerce, associations of enterprises, organizations of professional training, specific governmental agencies and appropriate offices of the public administrations. This sense of belonging represents the base of an "associative approach" or of an "associative governance", that leads to the creation of club, forum, consortia and different institutional schemes of partnership (Cooke 1998, Cooke and Morgan 1998).

A regional system of innovation could be defined like a system in which the firms and the other organizations are systematically engaged in an interactive learning through an institutional environment characterized by local embeddedness.

The concept of "regional system of innovation" (RIS) appears to be certainly broader than the traditional concept of "industrial district" and able, like also the concept of "milieu innovateur", to analyze different types of local production system.

In this perspective a typology of RIS could be built (Cooke 1998). For instance a "localist RIS", like Tuscany, is characterized by few large firms both of local and of external origin, by a spectrum of activity of research or by a "research reach", which is not very broad. On the contrary, an "interactive RIS", like Catalonia and Baden Wuerttemberg, is characterized by a relative balance of large and small firms, both indigenous and external, while the spectrum of research activity includes diversified structures of regional research and the reliance on external innovations. Finally, a "globalized RIS", like California or North Rhein Westfalia or Midi Pyrénées, is characterized by the domination of global firms, often supported by a localized supply chain made by SMEs, which are rather dependent on the large companies.

#### *d) The approach of the "proximity dynamics"*

The approach of "proximity dynamics" introduces the notion of territorial proximity, given by the intersection/overlap of three different dimensions of proximity, which may be classified respectively under the names of "geographical proximity", of "organizational proximity" and of "institutional proximity" (Rallet and Torre 1998; Bellet et al. 1993).

While organizational proximity deals with the links in terms of production organization, the geographical proximity deals with the links in terms of distance. The organizational proximity is based upon on the logic of organizational membership and intrinsic similarity of the actors. Instead, the geographical proximity refers to the natural and physical limits and it includes the effect of the transport infrastructures.

An industrial district combines in its definition these two components, since the firms that constitute an industrial district are tied up among themselves at the same time in terms of relationships of similarity or of membership and they are also located at a short functional distance.

Finally, the institutional proximity means the belief into representations, models and rules of thought and of action by the agents belonging to a common territory. It consists of the development of relationships of intentional nature, like the relationships of cooperation, trust, exchange of technological information and partnership, that determines the strategy of the actors. It implies forms of collective action and the creation of institutions both formal and informal that perform an often fundamental role in the mechanisms of operation by the economic agents.

The interaction through the price mechanism is not the only one and it could be accompanied by a series of non-market interactions or by forms of reciprocal coordination, like the relationships of cooperation or the relationships of trust or technological interaction.

The geographical proximity allows the development of knowledge interactions, if this is accompanied by an appropriate organizational and institutional context. However, the experience accumulated in the international transfers of technology has demonstrated that the geographical distance is less important as an obstacle to the international cooperation than the organizational and technological distance. In fact, the cooperation is greater between firms with similar technology, even when they are localized in different regions, than between organizations of the same region, which do not share the same problems and objectives.

#### *e) The "learning regions"*

According to the approach of "learning regions", "knowledge represents the fundamental resource in the contemporary economy and the process of learning represents the most important process" (Lundvall 1992, Lundvall and Johnson 1994).

This strategy is based on the belief that the opportunities of development and the exogenous risk factors, which have an objective character, do not determine automatic results but that, in order to be valorized or opposed, they require the development of the local technical, organizational and entrepreneurial abilities, which must be built through a process of learning and have a subjective character.

17

The objective of a "learning region" refers to the integration of tacit or implicit traditional knowledge, which is bound to the local context, with codified knowledge available at the world level, in order to stimulate the regional endogenous potential.

The creation of new knowledge implies an intense process of interaction (Nonaka and Konno 1998), which is characterized by transfers both of tacit and explicit knowledge and requires face to face contacts and a physical proximity, like also contacts through the ICT on long distance.

The concept of learning region (Florida 1995; Ashheim 1996; Morgan 1997) is very similar to that of the regional innovation system and it indicates that the presence of a plurality of actors within the same local production system favors the diffusion and the accumulation of knowledge.

The knowledge networks are based on vertical customer-supplier relationships, which are a crucial tool for the development of incremental product innovations, and also on horizontal relationships, that could promote the development of the innovation process through the offer of information on technological opportunity and the process of imitation and adaptation of success innovations adopted by other firms and organizations (Maillet and Kebir 1999).

The concept of regional system of innovation and learning regions appears to be more general than that of "industrial district" and it is suitable both for the less developed regions and to more developed regions, which seem to have by now overcome the phase of a tight specialization. It is based on the concept of evolutionary learning, which makes it suitable to interpret the continuous changes in the internal structure, in the geographical dimension and in the relationships with the exterior of a local production system.

#### *f) The "institutional thickness"*

The approach of "institutional thickness" is based on the idea that the economic development process is not the result of a completely endogenous dynamics of the economy, but that it rises from the interaction between the economic and the social system to be considered in their different and also institutional aspects (Rullani 1998).

The "institutions", understood according to the approach of the "neo-institutional contractualism", represent the framework that the social and political action creates for ordering the individual behavior of the economic operators in more or less organized and coherent forms. Therefore, the institutions are not confined in the public sphere, but they emerge in the complex interaction between the individual subjects.

Therefore, the "institutional thickness" has a definite evolutionary character, since the institutional fabric is the result of a long and gradual process of learning or of "institutional learning". Moreover, this constant evolution and creation of the different organizations and institutions, that integrate and guide a local production system, correspond to the dynamism of the organizational forms in the system of the private firms.

18

Typical examples of "institutions", that offer a new decisional infrastructure to the post-fordist economy, are the "collective actors" performing a fundamental role in the implementation of the principle of self-organization. In fact, in the post-fordist stage, public regulation must be, at least partly, transformed in self-government of the (individual and collective) actors, by adopting on a wide scale what, in the institutionalist debate, is called the principle of subsidiarity (Rullani 1998, Cappellin 1997a).

These recent theoretical approaches in the analysis of the regional economic development define some important characteristics of a modern regional industrial and innovation policy. The theories of industrial districts and territorial networks underline the development of the territorial "embeddedness" of production activities. The theories of the "milieux innovateurs", regional innovation systems and "learning regions" underline the importance to promote the development of interactive learning at the regional level. All these theories underline the importance of the "institutional thickness", the development of intermediate institutions and various forms of informal and formal association between the firms and between these latter and the regional institutions.

## 8. The role of proximity and the changing nature of local production systems

Given geographical agglomerations allow different types of networks and different patterns of behaviour and also different forms of learning, knowledge sharing and knowledge creation. Geographical proximity per se is not sufficient to generate knowledge between firms. The forms of organized learning differ remarkably between clusters, as the diffusion of knowledge within clusters is highly selective and strongly depend on the position of firms within networks and their absorptive capacity.

Geographical proximity alone is only a facilitating factor, and it is neither a sufficient nor a necessary condition for promoting cooperative relationships in innovation. Thus, regional policymakers need to orient the policies aiming at the promotion of learning and innovation in a specific cluster or territorial network, in order to enhance the factors associated with various types of proximity, which are different from traditional geographical proximity.

A related concept is that of temporary geographical proximity, which is determined by the movements and meetings of the actors for participating to working groups, scientific conferences, industrial fairs etc., as these movements may be a substitute to the permanent concentration of the actors into the same geographical area (Torre, 2008).

Geographical distance between two individuals may represent an obstacle to their interaction. However, it may be compensated by "organizational proximity" (Dupuy and Torre, 2006; Torre and Rallet, 2005; Gherardi, 2006), when these individuals are linked by belonging to the same organization, such as the same firm, characterized by internal routines and procedures, which may facilitate their relationship.

19

Geographical distance may also represent an obstacle to the interaction between two firms or other economic and social collective actors. However, it may be compensated by "institutional proximity", when these firms are linked by the existence of a common institutional framework, made by procedures, contracts, norms, intermediate institutions, which perform the role of "soft infrastructures" facilitating their relationship.

While these three concepts of distance or proximity refer to external obstacles hindering the relationship between individuals, firms or actors, the internal characteristics of these individuals, firms or actors determine the concept of receptivity. In fact, the existence of objective framework conditions facilitating or hindering the interaction, as indicated by the concepts of geographical, organizational and institutional proximity, should be complemented or compensated by the existence of subjective capabilities leading to exploit these opportunities.

Receptivity may also be defined as "cognitive proximity", since it refers to the similarity of the subjective mental frame of the individual actors considered and of the tacit and codified knowledge owned by these actors, as these characteristics may facilitate the process of interactive learning between them. In particular, cognitive proximity represents a key factor for the extension at the international level of the cooperative relations in the process of interactive learning between the various firms. Thus, while the concept of accessibility refer to that of distance (i.e. geographical, organizational and institutional proximity), the concept of receptivity refers to that of similarity (i.e. cognitive proximity). The first refers to external obstacles. The second refers instead to internal characteristics.

Accessibility and receptivity represent two complementary conditions, which allow the interaction. As indicated by table 3 in section 2 above, a low accessibility may at least partially be compensated by a high receptivity. On the other hand, a high accessibility or proximity may lead to positive interaction and interactive learning, when the receptivity is also adequate, but to a situation of blockade or lock-in and even to a conflict, when the receptivity of the two individuals, firms or actors is very low, due to their very different characteristics or due to the high "cognitive distance" between them.

In particular, organizational factors play a different role in the concept of accessibility and in the concept of receptivity, as the analysis shifts from the level of individuals to a higher level of aggregation. In fact, when the analysis focuses on the relationships between individuals, organizational factors are an external condition to these latter and they may determine their "organizational proximity", facilitating the relationships between two individuals within a specific organization. On the other side, when the analysis focuses on the relationships between two organizations, such as two firms, organizational factors explain the internal characteristics of these firms and they may be a factor of similarity, which may facilitate their reciprocal relationships or their reciprocal receptivity and cognitive proximity.

Regional innovation systems and territorial networks insure the advantages of higher geographical, organizational and institutional proximity between the firms belonging to the same regional innovation system. On the other hand, regional innovation systems and territorial networks also insure the advantage of a higher receptivity or closer cognitive proximity, as the actors may become more similar due to the long-term effect of more frequent interactions. Both, the accessibility and receptivity, evolve in time and are the result of previous actions. The continuous investment in soft and hard infrastructures is increasing the accessibility between two actors, while their reciprocal receptivity is affected by the gradual development of competencies, which are a result of the processes of interactive learning between these actors.

20

Regional production systems should be analysed in a historical background and are the result of an evolutionary development. Regional production systems in many countries have evolved from the stage of pure geographical agglomeration of similar firms, working in the same industrial sector and competing each other, as indicated by the cluster concept. They often also do not correspond to the traditional industrial districts, characterized by tight production and social linkages between the various firms. Thus, regional production systems have transformed themselves into territorial networks made by specialized and complementary firms and are characterized by a greater sectoral diversification, a greater integration of the various sectors of the local economy and also by an increasing internationalisation. In fact, a modern regional production system is not characterized by the geographical concentration of many firms specialized in the same sector, but rather by an increasing diversity and complementarity of the various firms and by the development of external relationships with other regions and countries.

While the models of clusters and industrial districts were characterized by the concepts of sectoral specialization and geographical concentration, the model of territorial networks is characterized by the concept of integration, both between various sectors and between various regions. Key concepts in the model of territorial networks are those of openness, connectivity, integration, synergy and cooperation.

Second, the model of territorial networks implies a greater formalization of the relationships between the firms, which were based on trust and personal links in the traditional geographical clusters and industrial districts.

Third, the cluster concept has evolved from a predominantly material linkage and agglomeration based concept to the concept of the innovation network, where the key process is the creation of tacit or codified knowledge in traditional sectors and its diffusion into new fields of production.

Fourth, according to evolutionary and institutional economics, innovation networks also represent an institution that supports knowledge generation and the sharing of knowledge or a form of governance enabling the generation and diffusion of knowledge between various local and external actors.

An innovation network is a set of many actors linked by stable, frequent, intense, direct and indirect relationships, which allow flows of intermediate products, human and financial resources, information and knowledge and are facilitated by different forms of proximity and by different form of soft infrastructures or bridging institutions.

In particular, an innovation network is the result of a processes of collective learning and of flexible forms of cooperation between many different private and public, regional and international actors, such as large firms, SMEs suppliers, knowledge intensive services, higher education and research institutions, financial intermediaries, public administration and many other partners such as professional association and media. Moreover, the actors of an innovation network may belong to the same or different regions and to the same or various sectors and they may develop a sense of common identity and a common development strategy.

The structure of an innovation network is highly flexible and continuously evolving, on the base of a principle of negotiation between the various actors participating to the network, rather than on a principle of hierarchy or a principle of competition.

21

Regional production systems in medium technology sectors are not made only by SMEs, as they are characterized by tight relations between large firms and SMEs. Moreover, firms often are different from the traditional SMEs, which only adopt innovation by imitation and adapt to technology transfers from larger firms. On the contrary, an increasing share of SMEs consists of innovative and highly specialized SMEs, which closely cooperate with large firms in the framework of highly integrated supply chains and are introducing innovation to be adopted by the large firms.

Regional production systems are characterized by high mobility and also by high stability. The first is demonstrated by the high turnover within the firm demography, related to the births and the closures of firms, while the second is indicated by the fact that subcontracting arrangements between the various firms require a high interaction and are rather stable, when compared to normal commercial relationships.

Innovation is not adopted by SMEs in isolation. Innovation is not the result of the individual inventor or entrepreneur. Innovation requires the combination of different competencies within processes of collective learning. Thus, firms are forced to cooperate in order to increase and diversify their knowledge base.

The focus on regional innovation networks, rather than on the individual firm, in the analysis of innovation processes highlights new factors, which relate to the links between the various firms in a local economy and are crucial in a long-term perspective. In particular, the development of know-how, the transformation of tacit knowledge into codified knowledge, the collective learning processes, the development of new competencies or skills of the people, the level of switching and adjustment costs in the process of change are all factors, which have to be interpreted not only within an individual firm but also in a territorial perspective within a specific network of various firms.

**Table 6: The characteristics of the innovation networks**

Key elements and focus	Innovation networks	Clusters	Industrial districts	RIS
Firms	+	+	+	+
Geographical proximity	+	+	+	+
Material relationships	+	+	+	+
R&D and technology transfers	+	-	-	+
Knowledge creation processes	+	-	-	-
Intermediate institutions	+	-	+	+
Strategy	+	-	-	+
Intersectoral character	+	-	-	+
Interregional character	+	-	-	-
Evolution paths	+	-	-	+

The similarities and differences of the concept of the innovation network with respect to other related concepts in the literature of regional economics are described in table 6. Thus, all these concepts are based on the existence of various firms, of geographical proximity and of material linkages. However, differently from all other related concepts, clusters focus on material relationships and do not explicitly consider the role of intermediate or bridging institutions, as for example also the concept of industrial districts. Moreover, differently from clusters and industrial districts, networks and regional innovation systems consider the existence of R&D investments and technology transfers between the firms. They may have an inter-sectoral character. They may be capable to develop a common strategy and have an explicit dynamic nature, allowing evolution along specific paths. Finally, the concept of innovation networks differs from all other concepts for the fact that it explicitly considers the cognitive processes of knowledge creation and may have an interregional character. Thus, it perfectly fits into the context of medium-technology industries, as the intersectoral and interregional linkages of knowledge play a major role for the evolution of these industries. The empirical parts in chapter 3 illustrated that successful medium-tech SMEs typically make use of systemic linkages to other firms or intermediate institutions.

23

## 9. The model of knowledge and innovation networks

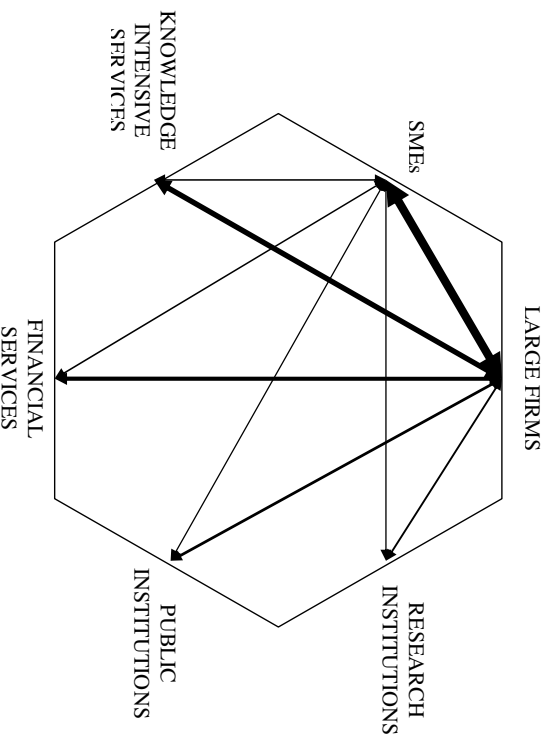
The relationships between the firms become more complex, risky and require to be redesigned in a long-term perspective. This has compelled firms to devise new organizational forms and contractual arrangements, which may be capable to manage these new and more complex relationships.

The role of interactive learning process for knowledge creation and the access to tacit knowledge underline the concept of knowledge and innovation networks (Cammner and Graf, 2006; Cappellin, 2002, 2003a; Gay and Dousset, 2005; Geenhuizen, 2007; Grabher, and Ibert, 2006; Karlsson, 1997; Holland, 2002; Karlsson and Ejermo, 2006; Kräike, 2002; Powell, 1990; Scott, 2000; Steiner and Piolder, 2008; Wink, 2006, 2008). In fact, networks are an appropriate form of organization facilitating the interaction and the flows of information and knowledge.

Knowledge circulates within networks through formal and informal institutions. Explicit or codified knowledge may be exchanged on technology markets. Instead, tacit knowledge requires allocation mechanisms, which are different from the markets, since it has an asymmetric character, implies high risks and requires reciprocal trust, identity and shared values leading to collaborations. Only specific organizations and institutions and not traditional markets are capable to insure those connections, which allow the exchange and the tight interaction of tacit knowledge and competences.

The structure of a network can be illustrated by the relationships between various actors, which can be classified in six groups: large industrial firms, industrial SMEs, business services, financial services, research institutions and public institutions, as indicated in figure 4. These actors correspond to those considered in the empirical analysis of the IKINET project (Cappellin 2004a), which has analysed six specific clusters in different European regions. The network relationships between these groups of actors have different intensity and they are mostly hierarchically organized around the large industrial firms. Each group of actors is characterized by very tight internal relations and it may represent a sub-network within the overall network. The theoretical model illustrated within this section aims to explain the general characteristics of those networks observed in the empirical analysis and described in section 3.

24



**Figure 4: Information and knowledge links in a regional innovation system**

In particular, the structure of a network is characterized by:

- nodes, which may be firms and other private and public actors,
- links, which connect directly or indirectly the various nodes,
- flows, which may be material or immaterial, such as product, services, financial, labour, power, information and knowledge flows,
- distances, which may be geographical but also technological, organizational, cultural, institutional and determines obstacles or transaction costs in the circulation of the flows,
- infrastructures, which may be material or immaterial, such as norms, institutions and social capital, and reduce the transaction costs, thus facilitating the circulation of the flows between the nodes.

25

Network relations present five characteristics. First of all, the relationship between two nodes is characterized by a precise direction, which identifies a relationship of control or of dependence of a node with respect to another node. That implies that the relationships within a network usually have a hierarchical character:

Secondly, each node has a specific function, which depends not only on the relationship with another individual node, but also on its position in the overall network.

Thirdly, the various networks are interconnected between themselves, and the relations existing between two nodes in a specific network are normally linked to relations between the same nodes in other networks.

In fact, different dimensions of the process of local interaction and of geographical agglomeration can be observed. Regional production systems are a complex web of different but also interlocking networks, such as the economic networks of flows of intermediate products, networks of labour and capital flows, but also social or friendships networks, institutional or power networks and spatial or physical networks.

The networks where tacit and codified knowledge and information circulate are tightly related to the networks of material flows ("value chain"), labour flows (professional mobility) and financial flows (credit and equity), as also to the network of power or institutional relationships (multilevel governance). These networks are different in respect of the involved actors, in the spatial extension and therefore also have a different significance in explaining the factors of geographic agglomeration. Some of these networks may be more efficient in some regions than in others. In fact, the failure of many artificial clusters, seems to be related to the fact that policy initiatives have concentrated on some of these networks, while being un-capable to activate the other types of networks.

Fourth, networks have a different geographical reach. Knowledge flows are more important at the regional level, while the supply chains of material flows are becoming international. The network relations observed in the empirical section reveal that the immaterial dimension increasingly is dominating the material one within local clusters. While the firms have extensive international supplier relations, these latter are becoming relatively weak within the individual region. However, the knowledge-oriented relations of firms are to a large degree regionally concentrated. Thus, supplier relations are more or less separated from knowledge intensive ones. There is no automatic parallelism of different types of interactions.

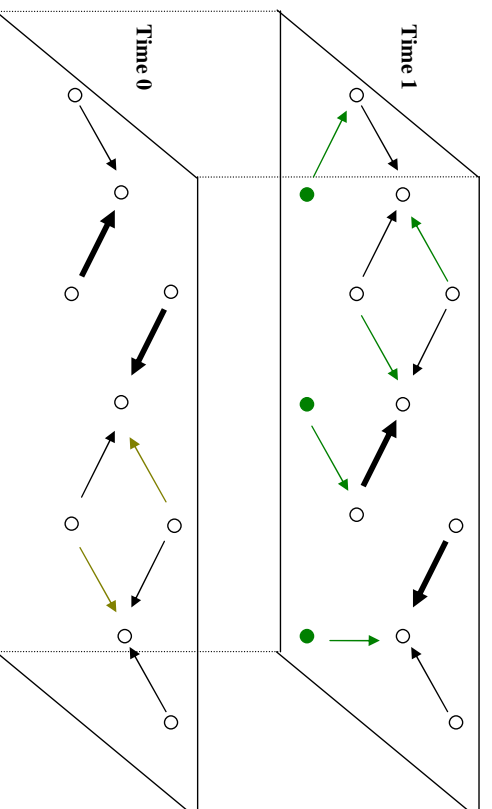
Fifth, the relations existing within a specific network in a particular time are normally related to the relations existing in the previous periods within the same network, due to the existence of cumulative processes of learning and of path dependence.

In fact, networks can be analysed in a dynamic perspective and are characterized by their flexibility. Their evolution (figure 5) is related to:

- the change in the capabilities of the various nodes,
- the change in the intensity of the various flows,
- the creation and disappearance of some links,

26

- the change in the alternative paths linking directly or indirectly the same nodes,
- the creation of hard or soft infrastructures between particular nodes,
- the path of evolution of the overall structure of the network.



**Figure 5: The evolution of the network form**

The network approach is very different from the neoclassical approach, which represents the traditional base of economic analysis. Within the neoclassical model of perfect competition the firms are all equal and connected through the anonymous mechanism of the market, while in the model of the networks the firms are all different and integrated between them through different types of relations, which have an intentional character.

While the traditional neoclassical paradigm underlines the horizontal dimension of the competition between the firms on the market and the process of determination of an equilibrium price, the network paradigm underlines the relations of production integration between the firms, which participate to different phases of the value chain.

27

The crucial characteristic of a network of firms is not the concept of equilibrium and disequilibrium, as in the neoclassical model of the market, but rather the concepts of integration, sequential interaction, circulation, diffusion, feedback, recursive processes, symbiosis and co-evolution.

## 10. The dynamic process of interactive learning within networks

The adoption of a network perspective allows highlighting some new aspects of the process of technological change. In fact, in a network perspective, technological change may be interpreted as the result of the continuous or gradual search by each node, of the most appropriate level and form of integration or co-operation with the other nodes or actors within the network. Technological change is similar to a process of iterative adaptation of the direct and indirect links between any couple of nodes in order to maximize their respective interaction and integration.

As in the model of neural networks, an innovation is the result of an adaptive learning or searching process, which leads to new synaptic connections of various nodes. A scientific breakthrough and an innovation occur, when the joint impulses or signals coming from other nodes not only are compatible with the node considered, but also overcome a certain threshold of intensity. That allows the considered node to perceive this stimulus. The node may then decide whether to conflict with it or rather to adapt to it. If the stimulus is compatible with the existing cognitive system, an interactive processing may lead to identify an incremental solution to an existing problem and that stimulates the act of innovation. Clearly also time is a crucial factor as it facilitates perceiving a continuous stimulus or absorbing and adapting gradually to it.

Networks promote interactive learning and evolution Networks are a form of learning organization, which insure a greater overall dynamic efficiency. While competition and monopoly are static models, networks promote dynamic processes of adaptation, specialization and selection both within individual firms and at the aggregate level between firms.

The process of adaptation of the innovative firms to the external stimulus occurs in a gradual form first when the individual firm abandons traditional solutions, which are not adequate any more ("creative destruction"). Then, the process of adaptation occurs at the aggregate level through the process of diffusion of the most innovative solutions, which have been experimented with success by some innovative firms and are later adopted by the firms lagging behind, leading to completely abandon the most traditional productions.

In particular, the processes of innovation diffusion and adaptation are tightly linked to a process of increasing specialization rather than to increasing homogeneity between the actors belonging to an innovation network. In fact, the individual firms have access to external knowledge and transfer their knowledge to other firms. Each firm is led to re-elaborate the new knowledge obtained through the interaction in a way different from the other actors and can focus on a different selected field and generate an innovation. Firms gradually differentiate the products, the areas of overlap between firms decrease and each firm becomes more effective and innovative.

The process of selection occurs first ex ante within the individual firms as the result of the explicit technological and organizational choices of the individual firms, which choose temporary solutions to the individual problems through the iterative processes of research and experimentation based on successes and failures. Then, ex post, the success or failure in the market selects the most innovative individual firms. Finally, the process of diffusion of innovation through imitation by the more traditional firms selects the most efficient productions of the considered regional economy, until the less efficient productions have disappeared.

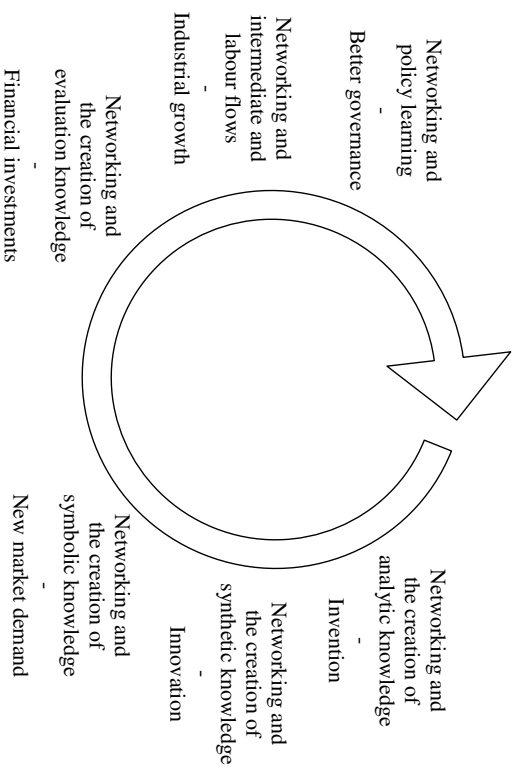
In a dynamic environment the creation of value and of new knowledge depends on the integration of the knowledge acquired from many other firms and the speed of innovation depends on the interaction between a plurality of actors. Due to their flexibility, networks represent the most effective form of organization to promote a fast speed of innovation. In fact, the major advantage of the network model of organization is to insure to the firms a faster access to a wide scope of complementary competencies existing in other firms and to remove the barriers, which are hindering to operate into new products, processes and markets and could lead to a lock-in situation. Through network integration, firms are capable to decrease the resources and time for adopting an innovation, with respect to the situation where they would be required to develop internal capabilities. This high flexibility is a key competitive factor in a dynamic market, where innovation has to be adopted faster than competitors.

Thus, networks are characterized by lower "adjustment or switching costs" (Cappellin 1983) in the choice of new possible partners. Weak ties or indirect links can easily be transformed into strong ties or direct links, when the need to respond to external opportunities and threats make that necessary. For example, networks allow even to SMEs having access to the global markets, as through indirect links or the cooperation with large local or foreign firms it is possible to export and also to produce in remote areas without a direct investment of the firm considered.

Networks imply less "transaction costs" (Williamson, 1981, Cappellin 1988) in inter-firm relationships than a competitive market made by isolated producers and users. Within networks firms can easily change the level of cooperation with previous partners, as implicit contracts can more easily be adapted than formal contracts. Moreover, networks lead the various actors to invest in the creation or strengthening of soft and hard infrastructures and routines linking them. That makes the relationships between firms more intense or increases the speed of the flows between the firms.

In a governance perspective, networks allow that "ex-ante coordination", which is needed for long-term investments and major innovation. Networks facilitate the solution of conflicts between the various firms, which are inevitable in purely competitive market, thus reducing the costs and risks and the waste of time related to these conflicts and lacks of coordination.

The network model limits the autonomy in decision making of the individual firm, compared to a competitive market made by isolated firms, or the case of a hierarchical organization, such as a single large integrated company or an autonomous state. Clearly, within networks decisions depend on an interactive process of negotiation between the various firms and other actors and often develop in time in an iterative way.



**Figure 6: The different complementary networks in the innovation process**

The process of innovation may be interpreted as the result of the sequence of various forms of networking, as indicated in figure 6. In particular, the discovery of inventions requires immaterial flows of codified or "analytical" knowledge. Then, the exchanges of engineering based or "synthetic knowledge" facilitate a timely adoption of a technological innovation. Then, the exchange of "symbolic" knowledge, such in the creation of new brands, allows a tighter integration with the culture and needs of the users and the growth into new markets and the exploitation of the latent demand in new market niches.

Moreover, any innovation requires a greater investment and the access by the firms to financial networks, where more evaluation knowledge is needed in order to overcome the asymmetries of information between the firms and the financial institutions. Production innovation requires a restructuring of the traditional flows of intermediate products and services between the firms and implies the access to new qualified human resources and a higher



labour mobility. Finally, innovation requires the creation of policy networks between the various local actors and flexible institutions and procedures to manage decision-making process characterized by many interdependent stakeholders.

### 11. The role of networking and knowledge creation in regional development

According to the model of the territorial networks, a local production system of firms is similar to a "complex adaptive system" made by a large number of actors, firms and institutions, which interact in non-linear ways and adapt or learn (Holland 2002). In particular, as indicated in figure 7, the process of economic development is the result of the tight interaction between the following eight blocks of variables (Cappellin, 2003):

- growth of regional product and employment,
- interregional and international networking and competitiveness,
- local networking between the various sectors and firms,
- birth, growth and closure of local firms,
- investments, product and process innovation, productivity increase,
- knowledge creation, learning processes, competencies and human capital,
- quality of the physical environmental,
- policy framework and multi-level governance.

Increased networking between local firms and sectors promotes interactive learning, knowledge creation and the growth of human capital. These latter processes promote investments, innovation and then the productivity increase within firms. That promotes international competitiveness and exports, which determine output and employment growth. This latter promote the creation of new firms, which further increase the local networks and the process of interactive learning and the growth of local know how. These latter processes are also stimulated by the international openness and the contacts with actors external to the region. Environmental quality is affected by the growth of the regional economy and it facilitates the networking between local firms through the provision of infrastructures and it facilitates the growth of knowledge creation by attracting qualified workers in the region. Finally, policies adopted in a multilevel governance framework through the negotiations between the various local actors may affect directly and indirectly all the above indicated variables and processes.

This model may also be used to explain why the openness to the international economy may determine the crisis of a local economy and a spiral of cumulative decline, as often indicated by the critics of the globalization process and stated for the old industrialized regions (figure 7.2), facing a problem of sectorial reconversion. In fact, the withering of the local know-how, due for example to the lack of a strong effort in research and professional education may decrease the innovation, the growth of productivity, the competitiveness of regional exports and the production capacities of local industry. It also decreases the birth rate of new firms and increases the death rates of firms, which determine an increase of the financial concentration of the local firms and the weakening of the process of local networking. The process of globalization and increased international competition may also determine the crisis of some local firms and constrain the surviving firms to deep restructuring processes, with negative effects

31

on local employment. This initial effect may determine a cumulative decline of the local subcontracting networks and of service and industrial firms, which are oriented towards the local demand. That decreases the diversification of the local production system and limits the development of the local know-how as well as increases the technological dependence on outside knowledge. Moreover, the crisis of large exporting firms determines a rupture of the links with the international economy, which will make it more difficult to develop forms of international technological co-operation between the firms. This may have a negative impact on the development of the local know-how and innovation capabilities. The closure of firms determines the creation of huge industrial derelict sites and that decreases the capability to attract external investments.

In the case of many economic lagging regions (figure 7.3), the external financial flows sustain the revenue level and the local demand. That determines the development of local production systems made by service and industrial firms mainly oriented to the local demand rather than to the national or international market. However, the dependence from the public resources determines a distortion in the sound financial evaluation of the investment projects and negative effects on the labor ethic and on the saving capabilities and spreads at the local level an assistance mentality and patronage practices. That hinders the development of local networking between local firms and institutions and determines a lower cohesion in the local community. In particular, the abundant flows of financial resources transferred to the firms discourage the stimulus to increase the productivity and to introduce innovation, determine an increase of the employment in the public sector, negative effects on the labor ethic, a decrease of the labor mobility and flexibility and of the saving capabilities and hinder the sense of responsibility of the local institutions and the development of their internal capabilities. These effects also determine a low sensibility to the problem of the quality of the urban and natural environment and negative impact both on the capability to cooperate between local actors and on the attractiveness of external private investments. External public funds strengthen hierarchical relations with central authorities, hinder the development of horizontal relations with foreign regions and determine an attitude of closure and an international isolation. The prevailing of a bureaucratic and conservative culture hinders the development of innovation and entrepreneurial capabilities and the creation of new firms. The lack of production diversification of the local economy and the difficulties in cooperation between the local firms hinder the development of interactive learning processes, the development of the local know-how, competencies and technological and organizational capabilities within the firms. The low development of local networks, the limited forms of cooperation with other local firms or organizations and the frequent internal local conflicts and political instability lead to a lengthening of decision-making processes and decrease the pace of innovation adoption and the increase of productivity and competitiveness.

In the perspective of the knowledge economy, it is important to facilitate the reciprocal interactions between the process of learning and knowledge creation and all the other variables, indicated in the figure 7. Increased knowledge promotes greater international openness, through the participation to international innovation programs and international technology transfers. Increased knowledge promotes regional networking through the diffusion of technology spill-over, and it is promoted by it through the creation of local innovation networks. Increased knowledge promotes the turnover of firms, as it stimulates the creation of science start-ups, while these latter increase the diversity of the industrial environment and stimulate the creation of new knowledge. Finally, increased knowledge promotes investments in structures and the adoption of innovation, as it provides the capabilities to design new projects and it is promoted by the investments in R&D and the demand of new competencies.

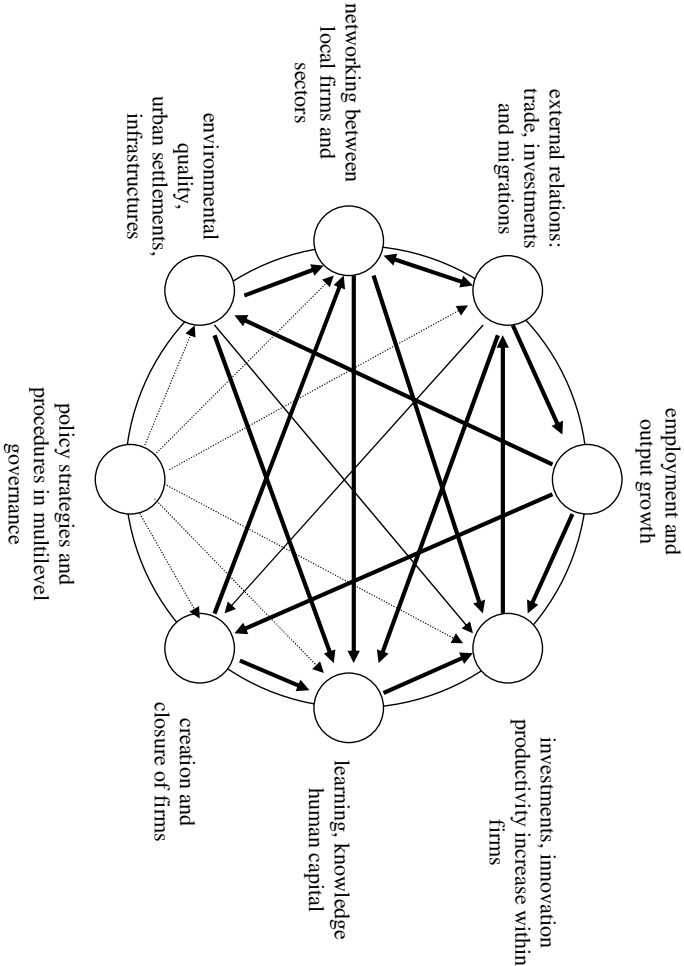


Figure 7.1: Factors and key links in the process of socio-economic development

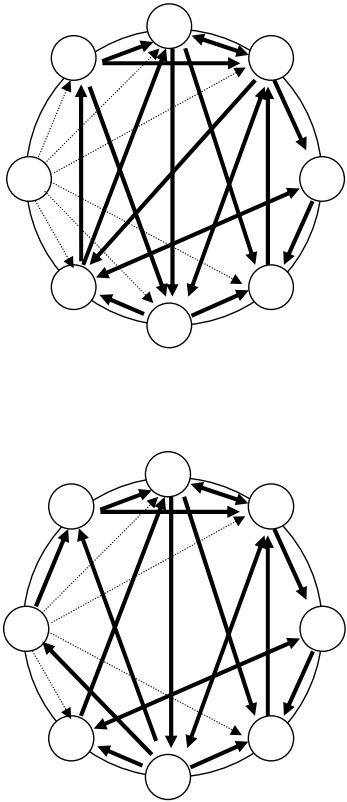


Figure 7.2:  
Factors and key links in the process of  
socio-economic decline

Figure 7.3:  
Factors and key links in the stagnation of  
economic lagging regions

## 12. Three types and phases of a regional innovation network

Regional production systems are evolving from the model of industrial clusters and industrial districts based on many rather homogeneous firms linked by flows of knowledge spill-over to the model of territorial innovation networks made by complementary specialized firms, linked by formal forms of cooperation in production, commercial and technological field, not only locally but increasingly also at the interregional and international level.

Territorial networks may be classified into three types of networks: "ecological networks", "identity networks" and "strategic networks", which have different characteristics, as indicated in table 7.

In particular, 'ecology networks' are characterised by strong unintended interactions between various actors and facilitate various forms of traded and un-traded technological interdependencies or technology spill-over, as it occurs in geographical agglomerations.

'Ecology networks' may be assimilated to 'agglomeration economies'. They are made by relationships of objectively observable stable interdependence. They are also based on behavioural adaptation, strong specialisation, complementarity and idiosyncratic relationships. Basically ecology networks are the result of geographical agglomeration and they characterize the areas of concentration of the firms belonging to the same sector, such as an industrial cluster, or widely diversified areas, such as urban areas (Cappellin, 1988, 2007; Acs, 2002). Information and communication technologies may also favour the creation of these types of networks. Ecology networks are the result of external economies, which are also defined as "localization economies" or "urbanization economies" and which spread in a rather automatic and casual way between the various firms and actors living in a specific local environment.

'Identity networks' are based on the sense of identity and common belonging, on the existence of trust relationships and specialised intermediate institutions ("social capital"). They may be defined as places of collective learning, whereas in "industrial districts" the development of common production know-how occurs. Typical cases of community networks are the industrial districts or the regional innovation systems. This subjective element distinguishes them from ecology networks. Thus, community networks require the sharing of a homogeneous culture, common values and the development of common production know-how. However, they lack the capability of central coordination and strategy making.

'Strategy networks' are based on intended relationships and cooperative agreements between firms and other organisations. They are the result of negotiations, agreements on specific strategies and the creation of formal and explicit 'joint ventures' by the participating actors. Strategy networks also imply the reciprocal commitment of specific resources, which are invested in order to achieve common goals and future but uncertain benefits. They imply forms of central coordination, the creation of procedures for the exchange of information, the codification of individual implicit knowledge and the joint investment in the creation of collective codified knowledge. Strategy networks may be represented both by widely geographically dispersed strategic alliances made by pool of large and small firms in different regions or by local clusters and regional innovation systems, which explicitly want to become a "learning region".

35

**Table 7: Types and phases of a regional innovation network**

	<b>Ecological networks</b>	<b>Identity networks</b>	<b>Strategy networks</b>
<b>Type of relationship</b>	External economies	Exchange	Joint investment
<b>Form of interaction</b>	Interdependence	Cooperation	Strategic coordination
<b>Self-consciousness</b>	Objective homogeneity	Subjective factors, intended relationships, sense of identity	Subjective factors, intended relationships, joint aims
<b>Formalism</b>	Informal relationships: imitation	Informal relationships: trust relationships	Formal relationships: contracts
<b>External support</b>	Geographical proximity	Common infrastructures, intermediate institutions and social capital	Joint decision making and policy making
<b>Key knowledge base</b>	Symbolic/synthetic knowledge	Synthetic/symbolic knowledge	Analytical/ synthetic knowledge
<b>Key knowledge phase</b>	Exploitation	Examination/ Exploitation	Exploration/ Examination
<b>Knowledge interaction</b>	Knowledge spill-over	Interactive learning	TKM and R&D
<b>Differentiation process</b>	Homogeneity	Autonomous specialization	Division of tasks
<b>Innovation</b>	Process	Organizational	Product
<b>New firms</b>	Imitative	More specialized	Innovative
<b>Sectors</b>	Low tech	Medium tech	High tech

Regional production systems most often have evolved from the form of a simple agglomeration of similar SMEs, such as in so called "ecological networks", to the form of a community characterized by intense processes of interactive learning, such as in so called "identity networks", and they may finally evolve to the form of "strategy networks", characterized by an explicit governance of knowledge interactions between the various firms.

36

**Table 8: The knowledge flows in different types of networks**

Forms of governance ----- Types of knowledge	Ecological networks	Identity networks	Strategic networks
<b>Symbolic knowledge</b>	Localized knowledge spillover, labor mobility, competitors imitations	Interactive learning within professional communities	Interdisciplinary integration and collaboration
<b>Synthetic knowledge</b>	Localized knowledge spillover, labor mobility, competitors imitations	Interactive learning between SMEs and with clients	Technological collaborations within the supply chain
<b>Analytic knowledge</b>	Localized knowledge spillover, university education	Technology transfers from universities and service centers to SMEs	Joint R&D projects and networks of centers of excellence

Therefore, these three types of networks are characterized by different forms of knowledge interactions. In fact, knowledge spill-overs characterize the ecological networks, interactive learning processes are characterizing the identity networks and explicit governance of knowledge relations between the various local and non local actors is a characteristic of strategy networks.

In particular, it is useful to distinguish three types knowledge (Asheim and Coenen, 2005; Asheim, Boschma and Cooke, 2007), such as: 1) the science based or "analytical" knowledge, which is important in high tech sectors, 2) the engineering based or "synthetic" knowledge, which is most important in medium technology sectors, and 3) the creativity based or "symbolic" knowledge, which is most important in low technology sectors. In fact, each of these three types of knowledge is important in each of the three types of territorial innovation networks indicated above, as indicated in table 8. However, the governance of knowledge interactions within the various types of networks implies an appropriate balance of the different types of knowledge.

In "ecological" networks, such as the traditional clusters in their initial phase of the life cycle, both the synthetic and the analytic knowledge circulate in a rather automatic way or without any explicit design. That may be facilitated by the existence of general infrastructures and services, such as the proximity to universities, and by the imitation of the best practices in contiguous firms.

In the case of "identity" networks, such as the most developed industrial clusters, the firms are intentionally participating to interactive learning processes, aiming at the creation of synthetic knowledge, such as in the framework of traditional subcontracting relationships of a supply chain. In this case, specific types of analytic knowledge may diffuse from some technological and scientific infrastructures, such as technology transfer centres for the industrial SMEs. "Identity" networks can improve the innovative capabilities and international competitiveness of European medium-tech SMEs, as they can promote informal forms of cooperation with universities, in order to combine the characteristic strong base of synthetic knowledge with elements of analytical knowledge.

Finally, the shift to the model of "strategy" networks implies the design and creation of specific infrastructures, institutions and procedures, which may facilitate the knowledge flows. These policy measures may be represented by the "territorial knowledge management" and the "competence centres", in the case of synthetic or engineering based knowledge, and by international integrated projects and networks of excellence, in the case of analytic or science based knowledge. Specific joint projects can facilitate the medium-technology firms in organizing the partnership and knowledge flows with institutions and organizations having strong competence in symbolic and analytical knowledge.

Politics and public institutions have a crucial role in enhancing the exchange of knowledge between different industries, the universities and other R&D organization and in promoting the evolution of a cluster from the form of an ecological network to that of an identity network or a strategic network, which is in fact characterized by the identification of common aims and culture.

## 22. The development of international knowledge and innovation networks

Firms in medium tech sectors have organized complex production systems characterized by an increasing content of know-how and made by many different complementary partners. That has led to the internationalization of markets and industrial value chains. In fact, clusters specialized in medium tech sectors have often been characterized by an intense network of international export flows for a long time. More recently, the internationalization of production capacities through investment in foreign countries and through international subcontracting has become widely diffused.

However, many small firms have only few international contacts and experiences in international cooperation. While the internationalization of product markets and the industrial supply chain are well-developed, the internationalization of knowledge links is still lacking behind.

The geographical span of the various forms of technological cooperation by SMEs is mainly regional and the lack of trust and reciprocal knowledge as well as the high cognitive distance are hindering significant developments of international cooperation in innovation based on interactive learning with foreign or distant firms.

The international extension of knowledge networks of SMEs calls for the identification of common objectives and collaboration in projects that go beyond their own territory, while maintaining a strong local identity. In fact, innovation and new knowledge are key factors of the international competitiveness of European firms and regions. In particular, the international competitiveness of developed European regions in medium technology sectors compared to less developed emerging countries is explained and may be further strengthened by their capability:

- to respond to the new emerging needs in more sophisticated markets,
- to introduce new products characterized by high complexity and quality,
- to organize complex production systems with a higher content of know-how and made by different complementary partners.

Some traditional intermediaries in international knowledge networks are:

- MNE - multinational enterprises,
- investment banks and private equity funds,
- knowledge intensive business services.

However, new intermediaries are emerging in international knowledge networks, such as:

- medium size ("leader") firms,
- universities and research centres
- regional administrations and interregional cooperation programs,
- European Union programs.

39

SMEs are efficient in a production perspective, as they can focus on a precise product specialization and exploit the advantages of subcontracting relationships. However, SMEs may prove ineffective when the most important competitive factors become innovation and internationalization of the firms. On the contrary, medium size firms (100-500 employees) have been capable to combine an explicit effort in R&D with the process of internationalization of product markets and the supply chain. Moreover, medium size firms are strongly embedded in their regional territory, have an easy access to tacit knowledge existing within other local actors and are capable to combine this regional knowledge with external knowledge available in other regions. Therefore, intermediate firms in medium-tech sectors may become the nodes of international knowledge networks.

An international perspective indicates a series of challenges for medium size firms. A mental change is needed, as even some medium size firms are reluctant to internationalize in a knowledge perspective or to promote new forms of international interactive learning with foreign partners due to the fear to loose their proprietary know-how, which they believe to represent their most important tacit competitive asset.

Moreover, medium size firms often rely only on forms of economic or commercial internationalization, which prove to be risky and short-sighted, if they are not accompanied by the development of international linkages in the cultural and social field based on cooperation with other local partners, research centres and regional institutions. In fact, the internationalization process of individual firms is easier, when it is supported of the respective economic, social and institutional system.

In a methodological perspective, the creation of international cooperation between SMEs implies firstly the decision, on which field and with which partners it should be realised and then the choice on its specific form. Thus, international cooperation between SMEs depend on the aims of the firms, the fields to be considered and the characteristics of the partners. These factors affect the benefits, which may accrue to the considered firms in a long-term perspective, as cooperation may be instrumental in order to get an easier or faster access to key specific technologies, to expand into new markets, to diversify the scope of products and to improve the image or the relational advantages with respect to specific clients or suppliers. SMEs often prefer alliances focused on commercial aims rather than on technological cooperation and prefer national or regional partners to foreign partners.

The advantages of an alliance with partners having complementary knowledge may be positively related to the specific characteristics of technology and it increases with increasing complexity, tacit nature, speed of change, specificity and strategic relevance. In particular, transaction costs are affected by the characteristics of technology and are higher if the technology is characterized by high complexity, tacit components, speed of change, specificity and strategic relevance.

On the other hand, international cooperation in technology between SMEs may be unfeasible, in the short term, if the transaction costs are too high, as in the case of too high geographical distance, lack of trust or high social disparities and too distant technological level or cognitive distance.

Similarly, distance affects the forms of cooperation, as a lower distance may induce forms of tighter integration between the firms, not only in a commercial or productive perspective but also in a financial or in technological perspective. Moreover, a too high distance may lead to no relations

40

and to autarchy, which hinders the development of interactive learning and knowledge creation. On the other hand, a too high proximity may not lead to cooperation, but rather to negative effects, such as a lock-in effect or local conflicts. Thus, an intermediate level of proximity seems more adequate.

The role of distance underlines the role of institutions. In fact, SMEs often are myopic and overestimate short-term costs of an international cooperation and underestimate the long-term opportunities. Thus, bridging institutions and international coordination of national innovation policies can promote a stronger awareness by the SMEs of the strategic benefits of cooperation, by helping them to identify realistic aims, key fields and complementary partners. In particular, bridging institutions may stimulate the firms to change their corporate strategy to a forward looking and leadership model, which is more externally focused or more open to external knowledge and may promote strategic convergence between the various possible partners.

Moreover, specific bridging institutions may be required to decrease the transaction costs of the international cooperation and to choose its most appropriate form. In order to promote a shorter cognitive distance, policies should be capable to improve the reciprocal trust, the sharing of common values, culture and institutions, sense of belonging, reciprocal knowledge and reputation.

Finally, policies may address also those organizational factors, which may lead to the failure of alliances, such as asymmetric incentives, lack of commitment, communication, project planning and flexibility.

The process of internationalization of firms in a technology perspective should be interpreted as a learning process, where the single phases and forms of international alliances may lead to new and more complex phases and forms according to specific paths of evolution. Alliances with some firms may be terminated to develop alliances with other partners in the same or in different fields. The factors leading to the failure of alliances are similar to those determining its creation. Strategic divergence is the most important factor, accompanied by the failure in arranging the appropriate form of the alliance and to solve organizational differences.

We may conclude that the factors leading to an international alliance between SMEs are similar to those considered in the TKM approach in promoting processes of interactive learning within knowledge and innovation networks. Factors, such as: external stimulus, accessibility, receptivity, common identity, creativity and governance, stimulate the creation and facilitate the success of an international alliance.

In particular, policies may promote a greater accessibility by reducing cultural and language barriers, promoting greater openness, making compatible different technologies and reducing their complexity, favouring frequent communication and transparency and the interaction within specific interregional working groups.

Policies may also promote a greater receptivity, by building internal competencies, transferring skills and capabilities by exposure of workers to the culture of partnering organizations, changing corporate culture and promoting a learning culture.

Policies may promote a greater common identity or sense of belonging, reciprocal trust, a cooperative rather than competitive posture, the identification of common strategic aims rather than short-term individual objectives and the design of common institutions with a relative power balance.

Finally, the governance of international co-operations between SMEs requires regional, national and European institutions. In fact, the development of international relations requires a more stable framework compared to what the market mechanisms, multinational companies or private forms of bottom-up international cooperation may be capable to provide.

The process of internationalization has a selective character and a key role is played by "gateways" or "bridging" institutions. The economic strengths of medium size firms should be combined with the greater experience in international relations of other local actors, which may be much weaker in terms of economic strength than the industrial firms, as in the case of universities, research centres and the regional governments, but can perform a key role as intermediate nodes in international networks.

Table 13: The process of international integration and the knowledge economy			
	<b>Knowledge economy: Innovation competition</b>		
<b>International market integration</b>	National innovation systems, national champions, national innovation policies	International strategic alliances and joint ventures, European innovation networks, European innovation policy	<b>International institutional integration</b>
	Export orientation, production decentralization, European competition policy, protectionism	International subcontracting networks, financial mergers & acquisitions, European regional policies	
<b>Industrial economy: Cost competition</b>			

In fact, institutions play a key role in promoting international economic integration. Thus, in a market perspective, European integration allows the free flows of products and services and it is determined by the abolishment of custom tariffs, adoption of a common currency, improvement in transport and ICT infrastructure and decrease of other barriers, which imply monetary costs to the firms. However, European integration has also an institutional and organizational dimension, as the harmonization of the institutional and organizational framework is required to promote the flows of investments, labour and technological knowledge and social, cultural and institutional links.

Both in a traditional industrial economy, where competition is determined by production costs, and in a modern knowledge economy, where competition is determined by the speed of innovation, institutions play an important role in promoting the international integration of the economies, as indicated in table 13. The governance of international relations may be insured by individual private firms or by public institutions. In an industrial economy, firms have to create complex organizations to manage international subcontracting networks, mergers and acquisitions of foreign firms, while European regional policies play a key role in integrating the economic lagging regions in the European economy and in reducing the economic

43

disparities, which hinder European economic and political integration. On the contrary, in a modern knowledge economy, there is the need to overcome the negative effects of closure of the various national innovation systems. Thus, international strategic alliances and joint ventures between the firms and international knowledge and innovation networks and bridging institutions, to be created by the European innovation policy, may be appropriate instruments, in order to promote a greater cognitive proximity between the various actors, to facilitate creativity through diversity and to accelerate the time of innovation.

Therefore, the process of internationalization is different from the growth of exports or also from the trade of patents and codified knowledge. It is based on a tight integration not only of the markets of products, but also of the internal organization and production processes of the firms, as these latter become capable to tightly work together with firms of other countries. Moreover, the internationalization process is affecting not only the industrial production, but also the service sectors and the public administrations. The increased flows of intermediate products, services and production factors and the increased international sharing of codified and tacit knowledge require appropriate forms of governance through common private organizations and public, hard and soft, institutions.

In fact, a first key difference of interregional relations with respect to international relations is the mobility not only of the final goods but also of the intermediate products and production factors. Thus, the international relations are becoming increasingly similar to interregional relations due to the process of globalization and international integration. This process may be interpreted as a learning process extending the model of cooperation between many various private and also public actors existing within a cluster or a local production system to an international dimension.

However, a second difference is represented by the fact that institutional integration is the lowest in the international framework and reaches its maximum within an individual country, as all regions within a country have in common the same institutional framework due to the existence of the state, laws, rules and institutions. In all countries, the process of economic integration at the interregional level, which implies the interregional mobility of intermediate products, material production factors and knowledge, would not be possible without a common institutional framework and the existence of trust relationships, common routines, norms, intermediate and also formal political institutions.

In particular, the European Union with its large share in the international trade and on the global GDP is a paradigmatic model of how a high and increasing market integration is necessarily tightly linked with and stimulated by a process of building common political institutions and adopting common public policies (Cappellin, 2004b, 2004c, 2005).

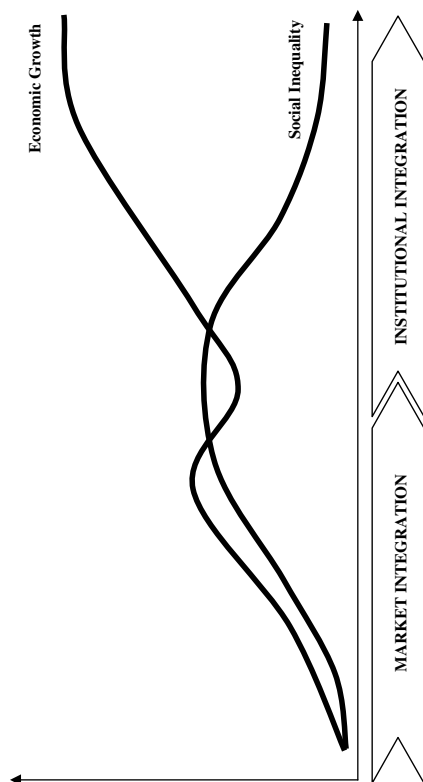


Figure 11: The trade-off between economic growth and social inequality

Economic growth increases as a result of increasing international openness and market integration, which promotes the mobility of final and intermediate products (Figure 11). However, the mobility of production factors and knowledge may be hindered or have a negative effect, thus determining an increase of regional growth disparities, disparities between the insiders and outsiders and various economic, social and environmental problems for specific firms, sectors or workers within the various regions. That may also determine a declining speed of economic growth. Thus, the increasing European market integration should be accompanied by policies aiming at more institutional integration, reducing the "organizational and institutional distance" between regions and sectors. Institutional integration may promote a continuation of economic growth and decrease the economic, social and environmental problems, by promoting knowledge creation, accessibility and receptivity to local and external knowledge and to other scarce resources and their use in innovative productions.

Thus, according to the model of interactive learning between firms, illustrated in this book, a European economy, which is moving towards the model of the knowledge society, requires new tools in innovation policy for promoting and managing international knowledge and innovation networks between SMEs in medium technology sectors. The next section will deal with these necessary policy changes at the European level.

45

Cappellin, R. (2013), Regional research in Italy and the role of institutions: new industries and sustainability, paper presented at the International Conference on: The Mediterranean cities between local development and international cooperation, University Parthenope, Naples, 15 April 2013.

## 2. A geographical perspective of national growth

The process of national growth has different characteristics in the various areas. Italian territory is organized in 20 Regions, 110 Provinces and 8.012 Municipalities. For research purposes the National Statistical Office ([http://www3.istat.it/salastampa/comunicati/non\\_calendario/20051216\\_00/](http://www3.istat.it/salastampa/comunicati/non_calendario/20051216_00/)) subdivides the national territory in 686 labour market areas. As indicated in figures 2.2 most of areas, especially in North and Central Italy, have a clear industrial specialization, while the major urban areas have a high sectoral diversification and other areas, especially in South Italy do not have a clear sectoral specialization. Figure 11 indicates that many areas have a tourist specialization and among them there are not only mountain or coastal areas but also urban areas.

Urban areas define corridors along the major transport routes, as indicated in figure 1, and the spatial concentration of population is very uneven in the various areas. However, almost 46% of the national population is concentrated in small municipalities with less than 10.000 inhabitants and cities with more than 250.00 inhabitants represent only 15% of population. The spatial diffusion of industrial activities is even greater than that of population and the largest municipalities represent only 11% of industrial employment.

The patterns of development in the industrial, urban and rural areas of Italy and of the Arab countries: Egypt, Tunisia and Morocco, illustrates the changes in the structure of the territory during the various development phases of the national economy.

In Italy, the industrial areas or so called "industrial districts" are characterized by clusters of SMEs. Italian SMEs have evolved in the last three decades and now have decentralized productions in distant countries, are increasingly organized in financial groups and sectoral supply chains led by medium or large firms, have integrated advanced services with material manufacturing activities and have developed extensive technological cooperations with universities and also with foreign firms. Many studies on the industrial and technological transformation of these areas are published in the books of the AISRe series by Franco Angeli Editor.

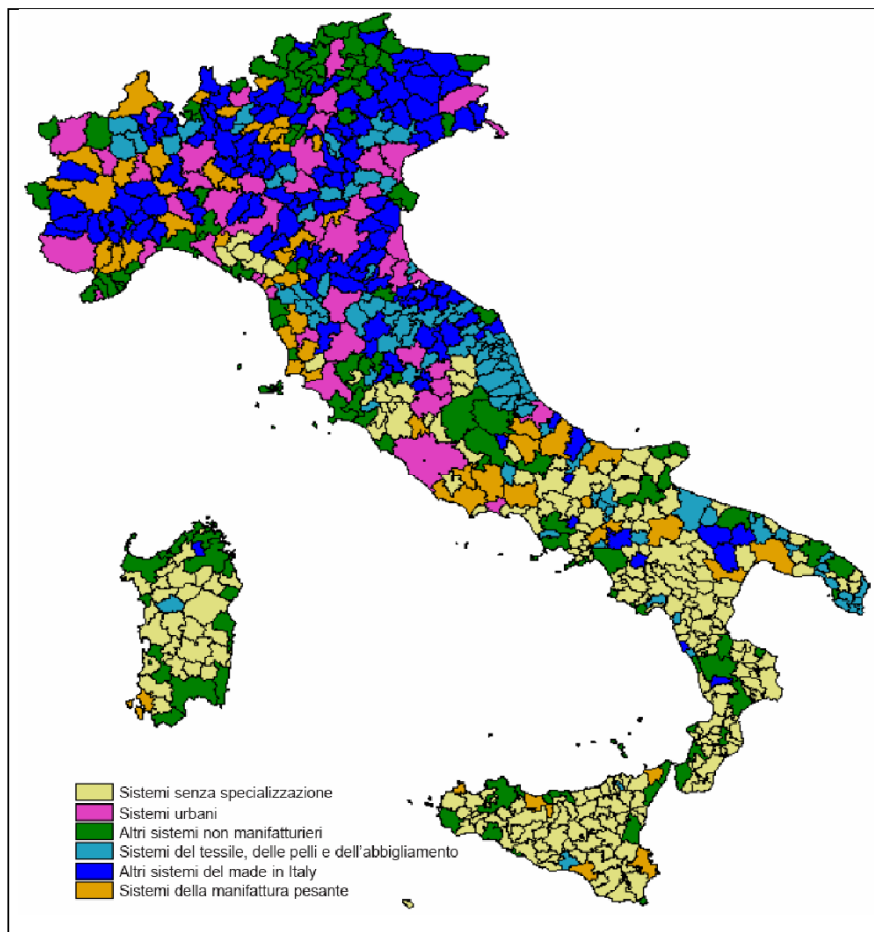
The urban and metropolitan areas in Italy are characterized by a post-industrial transformation. The quality of life in Italian cities is indicated by their capability to attract a great share of the tourist flows. Italy (165.2) is second only to Spain (213.3) for the total nights spent (million nights) by non residents and France (120.4) is third (source: Regional Yearbook 2102, Eurostat [http://ecpp.eurostat.ec.europa.eu/portal/page/portal/product\\_details/publication?p\\_product\\_code=KS-HA-12-001](http://ecpp.eurostat.ec.europa.eu/portal/page/portal/product_details/publication?p_product_code=KS-HA-12-001)). The economy of the largest cities is increasingly specializing into the knowledge economy or in post-industrial activities. They are characterized by an increasing decentralization of industrial activities, by a decrease of population and also by increasing social problems, as indicated in a recent book of the Torino 2011 AISRe congress published in the AISRe series by Franco Angeli Editor. On the contrary, many cities especially in the regions of Center and South Italy are not characterized by an industrial heritage and have many similarities with other Mediterranean cities in Arab speaking cities. In all cities a crucial problem is to create new jobs for the workers dismissed by the old large industrial plants which are closing and to promote a specialization in the more modern knowledge intensive private and public services and a reconversion from the traditional activities of the retail trade sector.

The rural and mountain areas of the Alps and the Apennines have been characterized by depopulation and emigration toward the urban areas during the 50'ties and 60'ties. Instead, they are rediscovering an autonomous economic and social development related to tourism and other modern activities during the at



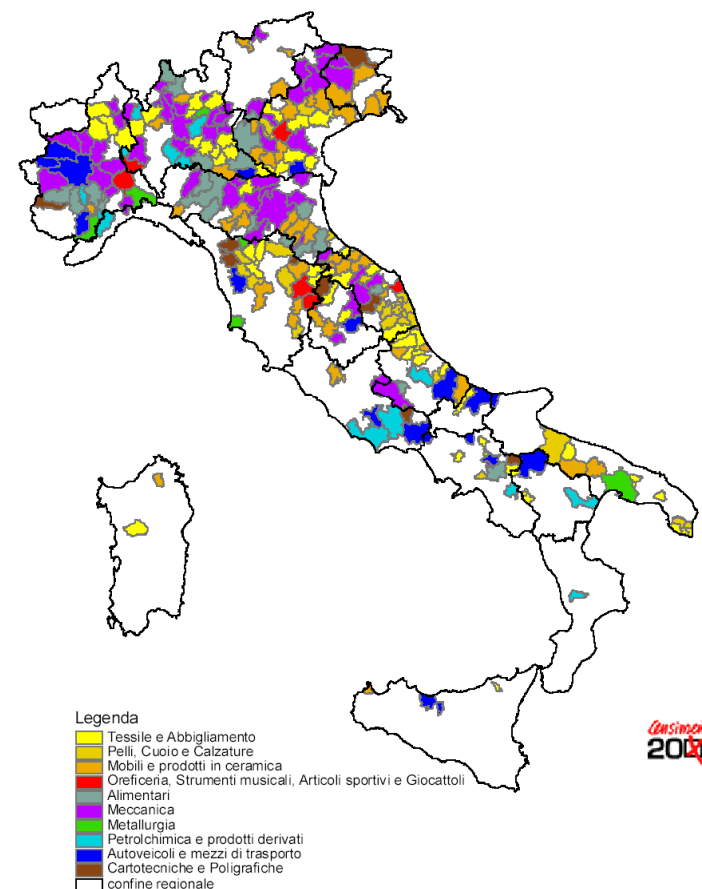
least the last two decades. The development in these areas and especially of the rural areas and mountain areas in Apennines and in South Italy can be rather similar to those of the interior areas in Arab countries. The transformation of the rural areas close to the urban centers and the conflicts between agricultural and residential/tourist or industrial use may also be similar. Various Italian studies on these issues are published in a recent book of the AISRe series by Franco Angeli Editor (in print).

Fig. 2.2 – Sistemi locali del lavoro per sotto-classe di specializzazione



Fonte: elaborazioni su dati Istat, 8° Censimento generale dell'industria e dei servizi

cartogramma 10: SLL 2001 – Manifatturieri per tipologia produttiva



cartogramma 11: SLL 2001 – Turistici

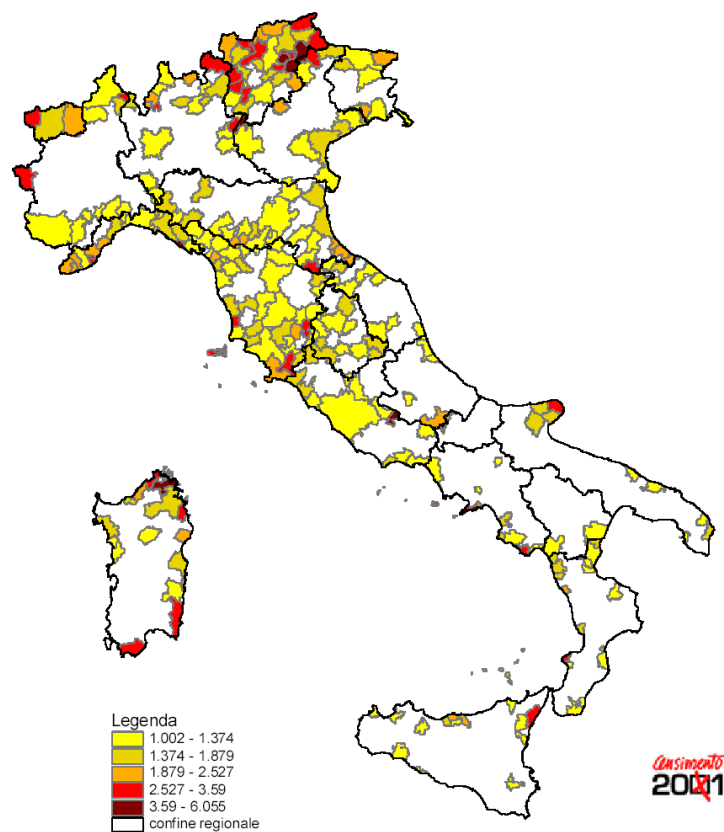
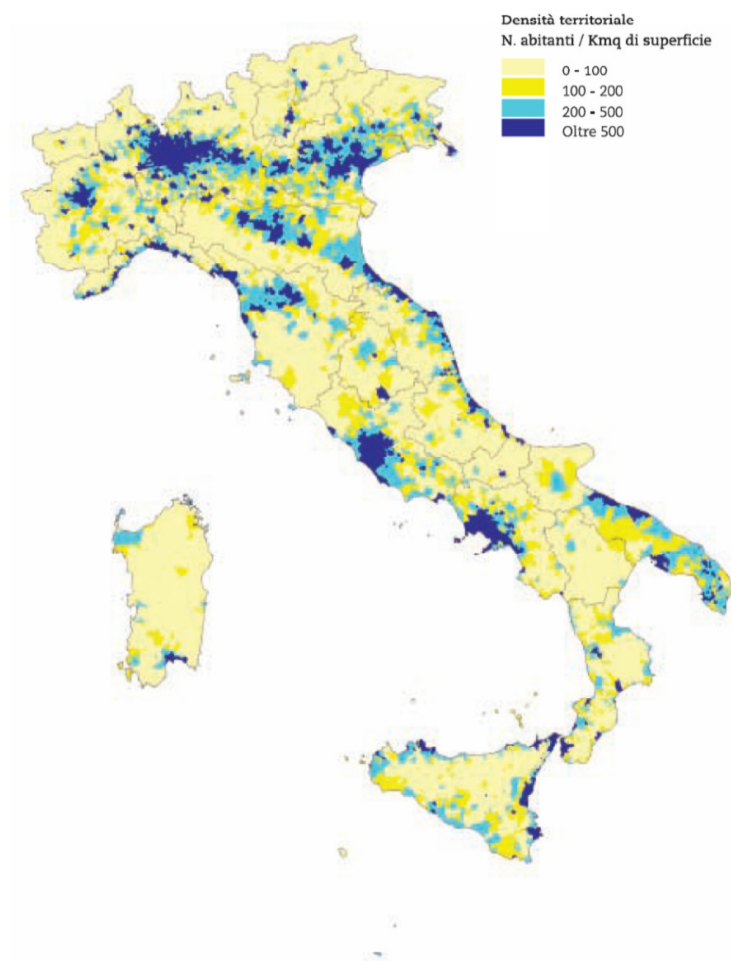


Figura 1 La densità territoriale dei comuni italiani, 2008



Fonte: elaborazione Cittalia su dati Istat (2008)

**Tabella 2 La densità territoriale dei comuni italiani, per classe di ampiezza demografica, 2008**

Classe di ampiezza dei Comuni	Superficie territoriale Km <sup>2</sup>	Popolazione residente 2008		Densità territoriale (Ab./Km <sup>2</sup> )
		Valore assoluto	Percentuale	
0 - 1.999	83.882	3.394.918	6%	40
2.000 - 4.999	78.944	6.977.613	12%	88
5.000 - 9.999	50.451	8.468.283	14%	168
10.000 - 19.999	35.809	9.476.722	16%	265
20.000 - 59.999	32.923	13.419.578	22%	408
60.000 - 249.999	16.024	9.251.597	15%	577
> 250.000	3.303	9.056.357	15%	2.742
<b>ITALIA</b>	<b>301.336</b>	<b>60.045.068</b>	<b>100%</b>	<b>199</b>

Fonte: elaborazione Cittalia su dati Istat (2008)

**Tabella 57 Il numero degli addetti nelle unità locali nei comuni italiani, per classe demografica, 2006**

Classi di ampiezza dei Comuni	Numero di Addetti alle Unità Locali					Totale
	Industria in senso stretto	Costruzioni	Commercio	Alberghi e ristoranti	Altri servizi	
0 - 1.999	-	-	-	-	-	-
2.000 - 4.999	-	-	-	-	-	-
5.000 - 9.999	788.965	262.729	386.129	130.880	457.409	2.026.113
10.000 - 19.999	934.985	304.131	534.779	166.789	683.633	2.624.316
20.000 - 59.999	984.233	384.516	818.123	212.937	1.221.567	3.621.376
60.000 - 249.999	601.085	278.955	640.679	172.300	1.306.434	2.999.454
> 250.000	408.746	233.566	628.217	219.681	1.835.074	3.325.283
<b>ITALIA</b>	<b>3.718.015</b>	<b>1.463.897</b>	<b>3.007.928</b>	<b>902.587</b>	<b>5.504.116</b>	<b>14.596.543</b>

Fonte: elaborazione Cittalia su dati Istat-ASIA (2006)

Source: [http://www.cittalia.it/images/file/COMUNI\\_ITALIANI10\\_1.pdf](http://www.cittalia.it/images/file/COMUNI_ITALIANI10_1.pdf)

### 3. A network approach in the analysis of regional growth

Differently from a traditional geographic perspective, the literature on Regional Science indicates that the spatial structure is not the result of the impact or the localization of the national economic growth on the territory, but rather that spatial or regional factors are important factors in determining the size and patterns of national economic growth.

Thus regional and urban policies and strategies have a great importance in promoting national economic growth and the regions and cities should have a greater role in determining the national development strategy.

From a methodological perspective it is clearly a challenge to illustrate that the theories and the policy strategies which have been developed in Europe during the last fifty years are relevant not only for explaining and stimulating growth in a wide variety of European regions, from large metropolis such as London or Paris to rural areas in Portugal or Greece, but also as a reference guide for designing the development policies in the urban, industrial and rural areas of South Mediterranean countries, such as Egypt, Tunisia and Morocco.

Moreover, the analysis of new types of regions and countries and the comparison with the most similar cases in Europe lead to adapt previous theoretical approaches and to extend them into new specific fields.

**According to a traditional demand model (Keynesian and planning approach)**, the economic growth is driven by the competitiveness and the expansion of the production capacity in the export sectors, the attraction of foreign investments or by the increase of the internal demand driven by an increase of public services and public investments. To this purpose the government should expand public expenditure and increase the money supply and decrease interest rates.

**According to a supply model (neoliberal approach)**, the economic growth proceeds spontaneously according to the increase of productivity and government should only remove the constraints which may be represented by excessive public deficit, public debt and expenditure on interest on public debt, imbalance in the external trade and amount of foreign reserves, and contain the inflation rate and adjust the exchange rate.

**A regional and industrial model (local networks approach)** is based on a local endogenous approach, which differs from the previous aggregated approaches because it considers the economy and society as a complex system made by many actors linked by network relations.

In fact according to many contributions in Regional Science research, local development has an endogenous character or it is not only determined by the exports of local productions, the immigration of people with advanced competences or the capability to attract investments and firms from the other regions, but also by the capability to promote the full use of the local, human and productive, resources and the synergic relationships between the various sectors and the various local actors, institutions and development factors existing within a given "local production system".

According to this "model of territorial networks" (Cappellin and Wink, 2009) a local production system is made by actors, firms and institutions which interact between themselves, reciprocally adapt and learn from each other. Economic growth is linked to change and innovation. Thus it is linked to the shift of employment from the less productive sectors to the more modern sectors, to the birth of more competitive firms and to the closure of old and inefficient firms within each sector and also from the reallocation of the internal material and immaterial resources within the firms from the less efficient processes and from the less profitable products to the more innovative processes and products.

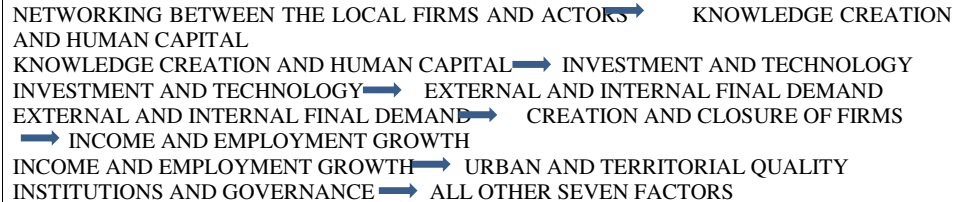
Three related conceptual tools are crucial in this “**system or local network approach**” to economic development:

- cognitive and institutional proximity between the actors;
- territory and infrastructures, as the physical support space of the economic and social system;
- institutions, social capital and governance of the relationships between the actors.

In particular, regional income and employment growth is determined by seven factors:

- 1) the stimulus coming from the external openness and the foreign demand as also from the changes in the internal final demand,
- 2) the growth of the production capacity linked to the use of new technologies, the innovation and the investment,
- 3) the process of knowledge creation and learning which improve the human and organizational capital in the local firms,
- 4) the process of firm turnover of the firms or the creation of new firms and the closure of old firms,
- 5) the network relations between the local firms and actors, due to flows of technological and organizational information, capital and people,
- 6) the characteristics of the regional territory and of the regional urban system, the structure of the transport networks and the urban and territorial quality,
- 7) the institutions, the social capital and the forms of governance of the relationships between the various local private and public actors.

The analysis of regional development in Europe indicate that these seven factors interact between them and lead to a continuous increase of employment, production and also of the quality of life in the area.



In fact, an increase of the network relations between the local firms leads to the development of learning processes by the workers and entrepreneurs and to the creation of new knowledge. That promotes innovation, the change of technologies and new investments in the firms.

That increases and attractiveness of the local economy and the growth of exports and the attraction of foreign capitals as also of external entrepreneurial capabilities.

Networking between the local firms and actors stimulates the growth of new firms in new productions and these firms substitute the firms which naturally close being specialized in obsolete productions.

Table 1

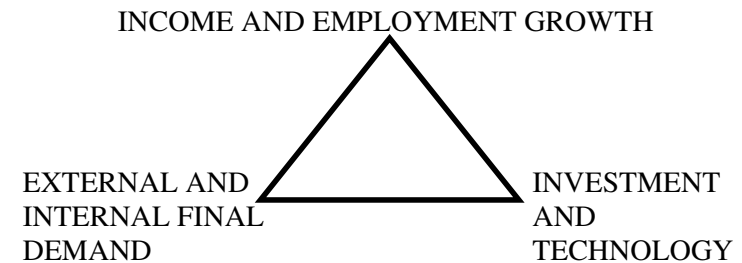
### THREE MODELS OF DEVELOPMENT

#### DEMAND DRIVEN MODEL: Keynesian and planning approach

Income growth is determined by the growth in exports, imports, private and public consumption and private and public investments and economies of scale insure greater productivity and international competitiveness

#### SUPPLY DRIVEN MODEL: neoliberal approach

Percapita income growth is determined by productivity, employment and population growth and by external and internal financial constraints (external deficit and public deficit and “competition-flexibility and structural reforms”).



#### REGIONAL-INDUSTRIAL MODEL: local networks approach

Income and employment growth is determined by 7 factors:

- external and internal final demand,
- investment and technology,
- knowledge creation and human capital,
- creation and closure of firms,
- networking between the local firms and actors,
- urban and territorial quality,
- institutions and governance.

The economic development of the region modifies the structure of the territory, determines the sprawl of the urban centers and stimulates the improvement of the transport infrastructures, but it may also have negative effects on the natural environment and on the quality of life in the urban areas.

Finally, local policies and the governance of the relations between the local actors should not only positively intervene on the individual factors indicated above, but they should also adjust the relationships between these factors in order to activate a virtuous cycle of development.

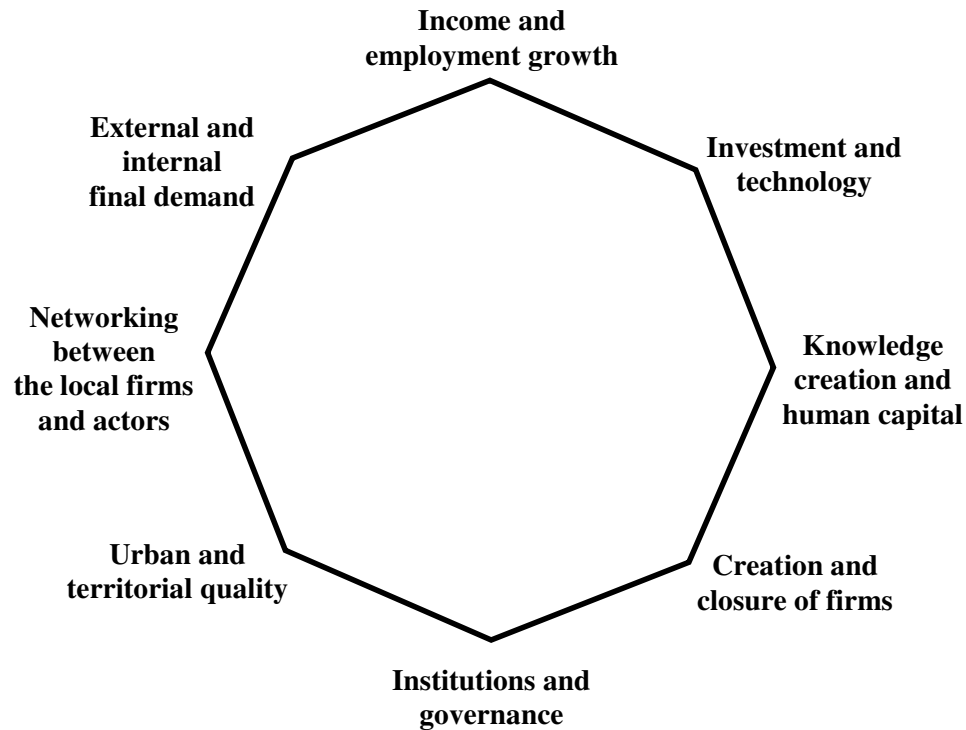


Figure 1  
The local network model of regional development  
Source: Cappellin and Wink, 2009

In particular, the first three variables in this local network model of regional development:

- a) income and employment growth,
- b) external and internal final demand,
- c) investment and technology.

are considered also in the more traditional demand model and in the supply model, which usually highlights the following relationships.

First, according to a demand perspective, investment and innovation determine international competitiveness and exports and these latter determine income and employment growth, which on their turn stimulate investments and innovation.

On the other hand, according to a supply perspective, investment and innovation increase production capacity and employment and that leads to an increase of exports in perfectly competitive markets and to the increase of foreign reserves and flows of international capitals which lead to greater investments and innovation.

While traditional theories have focused on the role of exports as the driver of regional growth, the internal demand, such as investment in housing and infrastructure or personal consumption, can also be a crucial autonomous factor of employment and GDP growth especially in large urban areas (Cappellin 2012b).

In fact, the analysis of economic growth in the Arab countries clearly indicates the importance of external and internal demand. The flows coming from outside, such as the increase of international tourism or the income remittances of emigrants in European countries have a clear importance as factors leading to local development. The exports of agricultural goods and of manufacturing products are also a driver of regional economic growth. Moreover, it is important to promote the development of many modern small and medium size firms (SMEs) capable to compete in the international markets.

However, also the importance of internal demand is increasing, as the growth of population and the growth of the average percapita income lead to an increasingly greater local market, especially in the largest cities, and to a greater demand for a wide variety of consumer goods, from soap to air conditioning, and also of modern personal services, such as entertainment, beauty, sports or health. That leads to the creation of new firms and of new jobs. In this perspective, also an increase of the demand and supply of public services, such as transport, education and health, may represent a driver of national growth, although it has to be financed by an appropriate increase of government taxes. Thus, the individual and social needs for a better quality of life may be a stimulus for the development of new productions and employment.

However, what makes the regional/industrial model different from the two aggregated model of demand driven or supply driven growth are the other five variables indicated in the figure 1: knowledge creation and human capital, creation and closure of firms, networking between the local firms and actors, urban and territorial quality, governance and institutions. These variables are especially important in the growth of the urban, industrial and rural areas in the European countries and also in the Arab countries.

#### KNOWLEDGE CREATION AND HUMAN CAPITAL

- CREATION AND CLOSURE OF FIRMS
- INVESTMENT AND TECHNOLOGY
- NETWORKING BETWEEN THE LOCAL FIRMS AND ACTORS
- EXTERNAL AND INTERNAL FINAL DEMAND
- URBAN AND TERRITORIAL QUALITY

**First, the knowledge creation and the human capital** is the key factor in determining the birth of new firms and the growth of the existing firms, as also in hindering the closure of old firms.

Often the growth of firms is not limited by the constraints of financial funds for investment but by the lack of knowledge of the entrepreneurs and the workers, as that hinders the adoption of modern technology, which would insure the profitability of investments.



In that perspective, knowledge creation and the human capital play a crucial role in the transformation of the firms in the informal economy which may be considered as the incubator of modern activities. That requires a gradual learning processes and the complex combination of tacit with codified knowledge and of artistic, organizational, engineering and scientific knowledge.

Knowledge and learning are the result and also stimulate the networking between the local firms and actors in the framework of "innovation networks", as the increase of the capabilities of the external suppliers leads firms to increase the outsourcing of the non strategic activities to the former. That leads to a continuous diversification and growth of the local economy, as in the Marshall's districts (Cappellin, 2012).

Knowledge creation and learning are also important in the continuous changes of the preferences and needs of the final users and citizens and that may stimulate the growth of new firms new public services, such as health, culture, leisure services.

Finally, knowledge creation and learning are important in the management of many public services and in the design of public policies and that has a positive impact on urban and territorial quality.

#### CREATION AND CLOSURE OF FIRMS

- ➡ INCOME AND EMPLOYMENT GROWTH
- ➡ INVESTMENT AND TECHNOLOGY
- ➡ NETWORKING BETWEEN THE LOCAL FIRMS AND ACTORS

**Second, the creation and closure or turnover of firms**, is crucial in order to allow an increase of employment and a decrease of unemployment rates between the youths. The creation of new firms is occurring first of all in the informal economy and then these firms gradually move into the formal economy, as they become more efficient and adopt technological and organizational innovation.

The creation of new more productive firms and the closure of less productive firms is stimulating the adoption of innovation and of new technologies.

The creation of new firms is also related to the increasing outsourcing of specific production phases from existing firms, to the diversification of the production systems, and to the creation of network relationships between the firms.

#### NETWORKING BETWEEN THE LOCAL FIRMS AND ACTORS

- ➡ KNOWLEDGE CREATION AND HUMAN CAPITAL
- ➡ EXTERNAL AND INTERNAL FINAL DEMAND
- ➡ URBAN AND TERRITORIAL QUALITY
- ➡ CREATION AND CLOSURE OF FIRMS

**Third, the networking between the local firms and actors** is leading to various forms of interactive learning and creation of new knowledge, which is the prerequisite for innovation and adoption of new technologies within the firms.

The networking between the local firms and actors is related to the development of the "social capital" or the "relational capital", such as various forms of associations, and it increases the social integration and it decreases social disparities. These associations are crucial for the management of "common goods", such as water and green areas, and also for the production of specific "club goods", such as private health and education services. That is especially important as there is a continuous evolution of the social needs of

the citizens and these types of goods are important in order to tackle the problems of urban poverty and unemployment.

The networking between people is also leading to changes in the final demand by the citizens and by the firms. In fact, major factors of economic and also political changes are the changes of customs by the people and especially those of young people. The changes of the way of life and the request of a greater political freedom are the result of the impact by international tourism, the emigration to European countries and the diffusion of international TV, movies, music and Internet, as also by the increasing university education among the youths and the woman.

The process of networking and the combination of market and non-market relationships allow the gradual development of new services and soft infrastructures, which were initially produced within the family or the communities and then evolve into specialized market activities.

The networking between the actors requires and stimulates the development of public services and of modern bank and credit institutions, which perform the role of soft or immaterial infrastructures in the relationships between the local actors.

#### URBAN AND TERRITORIAL QUALITY

- ➡ EXTERNAL AND INTERNAL FINAL DEMAND
- ➡ NETWORKING BETWEEN THE LOCAL FIRMS AND ACTORS
- ➡ CREATION AND CLOSURE OF FIRMS

**Fourth, an increase of urban and territorial infrastructures**, such as: energy production, ports and highways, and also housing, hospitals and schools, is leading to a greater public expenditures and this latter stimulates production and employment in the public sector and in the economy.

An increase of urban and territorial infrastructures facilitates the cohesion among actors, increases the networking between the local actors and it decreases social inequalities and improves the quality of life.

An increase of urban and territorial infrastructures decreases the agglomeration diseconomies, allows the availability of industrial areas and it facilitates the formation of new firms.

An increase of urban and territorial infrastructures can be financed by greater taxes on income and employment growth but it should also be complemented by the design of more effective taxes on the huge and increasing land rents which are accruing to the real estate sector and determine huge wealth and income disparities, but may also become a key source of infrastructure financing.

Workshop AISRe  
Dipartimento ABC Politecnico di Milano  
  
La frontiera del dibattito  
in economia regionale e urbana

5-6 marzo 2015  
Aula Castigliano

The model of the cross-sectoral demand and supply  
and the role of investment and innovation

Riccardo Cappellin  
[cappellin@economia.uniroma2.it](mailto:cappellin@economia.uniroma2.it)  
<https://uniroma2.academia.edu/RiccardoCappellin>

Riccardo Cappellin, Corso di Economia dell'Innovazione – Economia Regionale, Università di Roma "Tor Vergata".

Table 1: Contribution to GDP growth by the final demand components						
Table 1.1						
	2008	2013	Difference 2008-2013	Growth rate 2008-2013	Share 2013	Change in share 2008-2013
<b>Euro countries 12</b>						
Gross domestic product at market prices	8,577.351,9	8,394.525,4	-182.826,5	-2,13	100,00	0,00
Household and NPISH final consumption expenditure	4,787.620,7	4,706.392,6	-81.228,1	-1,70	55,82	0,25
Final consumption expenditure of general government	1,758.938,1	1,806.121,5	47.183,4	2,68	20,51	1,01
<b>Gross capital formation</b>	<b>1,864.302,3</b>	<b>1,494.421,7</b>	<b>-369.880,6</b>	<b>-19,84</b>	<b>21,74</b>	<b>-3,93</b>
Exports of goods and services	3,556.620,4	3,842.499,6	285.879,2	8,04	41,47	4,31
Imports of goods and services	3,388.448,2	3,450.241,2	61.793,0	1,82	39,50	1,60
External balance of goods and services	168.172,2	392.258,4	224.086,2	133,25	1,96	2,71
Source: elaboration on Eurostat data						

Table 1.4						
	2008	2013	Difference 2008-2013	Growth rate 2008-2013	Share 2013	Change in share 2008- 2013
<b>Italy</b>						
Gross domestic product at market prices	1,475.412,4	1,365.226,8	-110.185,6	-7,47	100,00	0,00
Household and NPISH final consumption expenditure	861.925,0	802.990,1	-58.934,9	-6,84	58,82	0,40
Final consumption expenditure of general government	295.442,3	282.702,4	-12.739,9	-4,31	20,71	0,68
<b>Gross capital formation</b>	<b>312.906,0</b>	<b>228.155,8</b>	<b>-84.750,2</b>	<b>-27,08</b>	<b>16,71</b>	<b>-4,50</b>
Exports of goods and services	416.005,6	415.163,6	-842,0	-0,20	30,41	2,21
Imports of goods and services	410.432,7	364.641,6	-45.791,1	-11,16	26,71	-1,11
External balance of goods and services	5.572,9	50.522,0	44.949,1	806,57	3,70	3,32

LA CRISI DEGLI INVESTIMENTI

	2008	2014	2014/ 2008	2014-2008	Quota sul PIL	Peso sulla variazione del PIL
Prodotto interno lordo ai prezzi di mercato	1.670.241,95	1.537.258,07	-8,0%	-132.983,88	100,0%	-8,0%
Spesa per consumi finali delle famiglie residenti e delle istituzioni sociali private senza scopo di lucro al servizio delle famiglie	983.461,09	918.032,13	-6,7%	- 65.428,96	59,7%	-3,9%
Spesa per consumi finali delle amministrazioni pubbliche	324.581,82	313.864,36	-3,3%	- 10.717,46	20,4%	-0,6%
Investimenti fissi lordi	357.274,63	259.093,98	-27,5%	- 98.180,65	16,9%	-5,9%
Importazioni di beni e servizi fob	- 445.035,53	- 400.107,73	-10,1%	44.927,80	-26,0%	2,7%
Esportazioni di beni e servizi fob	441.173,49	448.899,10	1,8%	7.725,61	29,2%	0,5%

Variazione sullo stesso trimestre dell'anno precedente									
	T1-2013	T2-2013	T3-2013	T4-2013	T1-2014	T2-2014	T3-2014		
prodotto interno lordo ai prezzi di mercato	-2,46%	-2,24%	-1,83%	-1,16%	-0,33%	-0,37%	-0,52%		
importazioni di beni (fob) e servizi	-4,95%	-4,12%	-1,70%	0,52%	-0,05%	1,76%	-0,69%		
spesa per consumi finali delle famiglie	-3,42%	-3,42%	-2,45%	-1,58%	-0,28%	0,45%	0,43%		
spesa per consumi finali delle amministrazioni pubbliche	-1,35%	-0,33%	-1,45%	0,39%	-0,31%	-0,43%	0,18%		
investimenti fissi lordi	-7,57%	-6,17%	-4,26%	-3,44%	-1,43%	-2,17%	-3,08%		
esportazioni di beni (fob) e servizi	1,25%	0,39%	0,37%	1,43%	1,48%	2,45%	1,32%		

61

Tabella 4				
Investimenti fissi lordi per tipo di bene (valori concatenati con anno di riferimento 2010)				
	Beni	2013/ 2008	2013-2008	Quota
	totale beni fissi	-23,10%	-82.413,46	100,00%
	mezzi di trasporto	-26,10%	-6.581,48	8,00%
	apparecchiature per informatica e telecomunicazioni	-11,60%	-1.386,09	1,70%
	altri macchinari e attrezzature, armamenti	-23,80%	-19.510,41	23,70%
	abitazioni (inclusi i costi di trasferimento di proprietà)	-25,30%	-25.008,52	30,30%
	altre costruzioni (inclusi i costi di trasferimento di proprietà)	-28,60%	-27.474,17	33,30%
	prodotti di proprietà intellettuale	-5,90%	-2.555,83	3,10%

Tabella 5			
Investimenti fissi lordi per settore istituzionale (milioni di euro a prezzi correnti)			
Settore istituzionale	2013/2018	2013-2008	Quota
S1 : totale economia	-16,80%	-58.082,80	100,00%
S11 : società non finanziarie	-14,60%	-25.606,00	44,09%
S12 : società finanziarie	-36,60%	-1.931,40	3,33%
S13 : amministrazioni pubbliche	-21,10%	-10.255,00	17,66%
S1M : famiglie e istituzioni sociali private senza scopo di lucro al servizio delle famiglie	-17,30%	-20.290,40	34,93%



## References

Cappellin, R. (2014), *Politica industriale e regionale e crisi delle politiche macroeconomiche, Eyestreg, Giornale di Scienze Regionali*, Volume 4, Numero 6 – novembre 2014.

<http://www.eyestreg.it/2014/politica-industriale-e-regionale-e-crisi-delle-politiche-macroeconomiche/>

Cappellin, R. (2014), *Innovation and investments in an urban cross-sectoral growth model: a change of course is needed in macroeconomic policies, relazione alla Riunione Scientifica della SIE – Società Italiana degli Economisti, Università di Trento, 23-25 ottobre 2014.*

<https://uniroma2.academia.edu/RiccardoCappellin>

Cappellin, R. and Wink, R. (2009), *International Knowledge and Innovation Networks: Knowledge Creation and Innovation in Medium Technology Clusters*. Edward Elgar Publishing, Cheltenham.

[http://books.google.it/books?id=1Bpe1Qekx18C&printsec=frontcover&source=gbs\\_navlinks\\_s#v=onepage&q=&f=false](http://books.google.it/books?id=1Bpe1Qekx18C&printsec=frontcover&source=gbs_navlinks_s#v=onepage&q=&f=false)  
download from: <https://uniroma2.academia.edu/RiccardoCappellin>

## A SCHUMPETERIAN APPROACH: THE MODEL OF CROSS-SECTORAL DEMAND AND SUPPLY



[www.shutterstock.com](http://www.shutterstock.com) · 2987704

**INDUSTRIAL POLICIES PROMOTE A DYNAMIC BALANCE  
BETWEEN THE NEW DEMAND BY THE INNOVATIVE CONSUMERS AND  
THE NEW SUPPLY BY THE INNOVATING FIRMS**

Table 2: Productivity and employment by sector in the EU-12

	Productivity	Employment	Product change	Product change	Productivity change	Productivity change	Employment change	Employment change
Euro area (12 countries)	2013	2013	2008-00	2013-08	2008-00	2013-08	2008-00	2013-08
Real estate activities	694,78	1,214,50	15,71	3,89	- 2,85	10,45	19,11	- 5,93
No manufact. industry	122,63	1,774,20	9,12	- 1,98	9,43	- 2,79	- 0,28	0,84
Financial and insurance activities	110,86	3,927,90	22,53	1,07	18,05	3,42	3,79	- 2,27
Information and commun.	104,33	3,925,50	45,81	7,15	30,64	7,57	11,61	- 0,40
Industry (except construction)	67,96	21,729,10	11,29	- 3,55	17,67	6,66	- 5,42	- 9,58
Manufacturing	63,10	19,954,90	11,67	- 3,82	18,54	7,34	- 5,80	- 10,40
Total - All NACE activities	53,95	140,728,10	15,51	- 1,68	6,06	1,82	8,91	- 3,44
Professional, scientific and technical activities; administrative and support service activities	43,68	17,899,30	20,35	- 1,05	- 9,70	- 3,57	33,27	2,61
Public administration, defence, education, human health and social work act.	43,51	33,420,10	12,31	3,82	2,04	1,88	10,07	1,90
Construction	43,16	8,733,20	9,49	- 21,14	- 0,20	0,36	9,72	- 21,42
Wholesale and retail trade, transport, accommodation and food service activities	41,24	34,533,00	16,14	- 4,31	4,74	- 1,41	10,89	- 2,94
Agriculture, forestry and fishing	28,04	4,710,30	5,46	- 6,81	22,56	1,55	- 13,96	- 8,23
Arts, entertainment and recreation; other service activities; activities of household and extra-territorial org. and bodies								
	25,15	10,635,10	11,91	- 0,42	- 4,61	- 2,75	17,32	2,39

Source: elaboration on Eurostat data

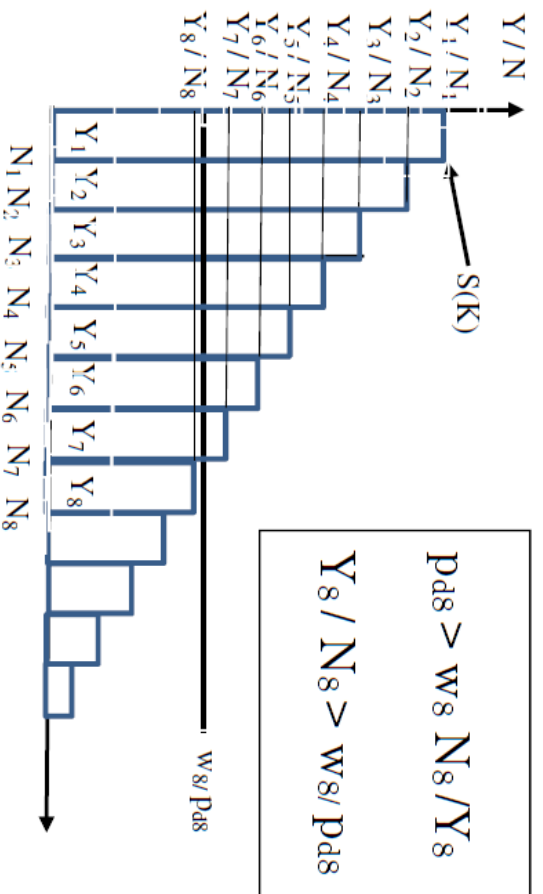
The growth rate of the GDP is an average of the growth rate of the various sectors.

The sectors can be ranked according to a decreasing rate of labor productivity.

65

## The cross-sectoral supply side of the economy and the employment and GDP levels

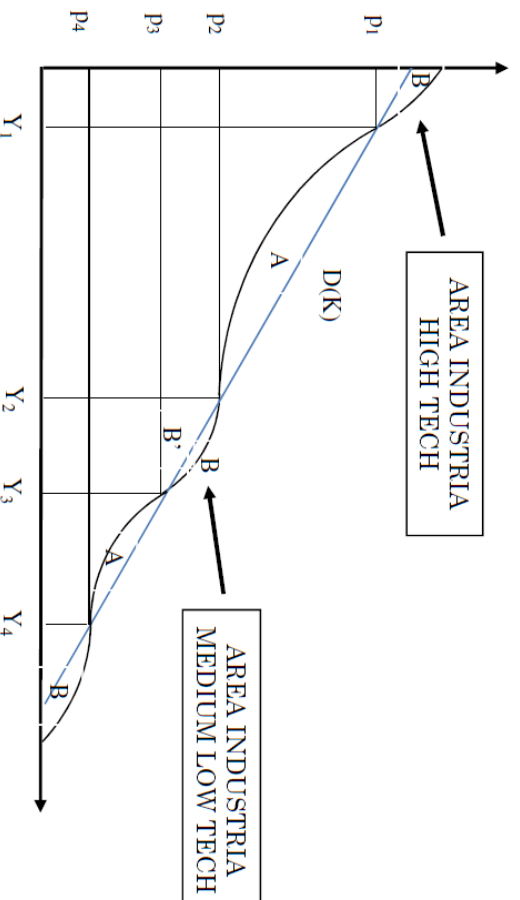
Riccardo Cappellin, Corso di Economia Regionale, Università di Roma "Tor Vergata"



Since the conditions for profitability indicated above are not satisfied, the sector 8 is eliminated from the economic production range: due to a too low productivity ( $Y/N$ ) or to a too high unit labor cost ( $w$ ), given the actual market price ( $p$ ).

66

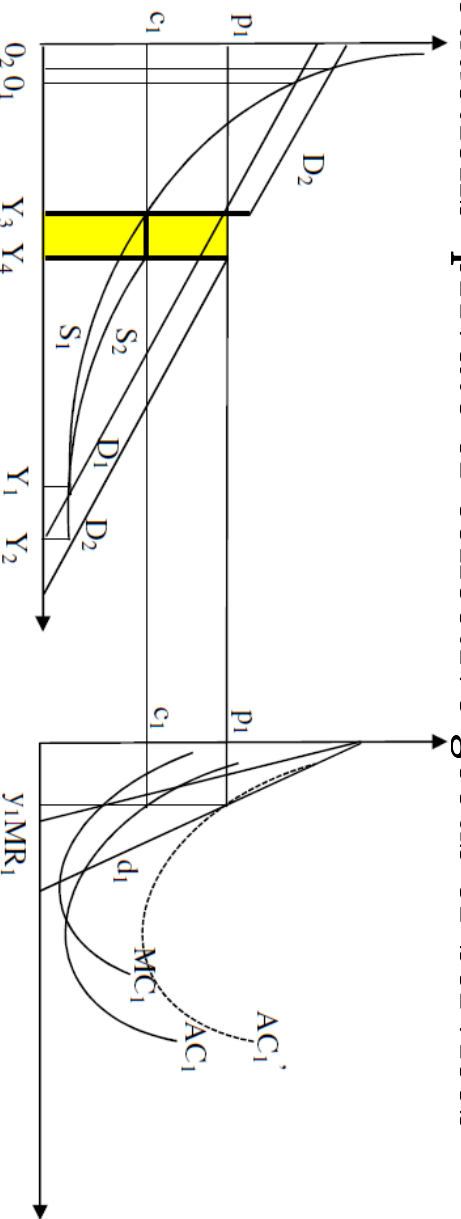
## The cross-sectoral demand and supply schedules in the general case



The areas  $A$  and  $B$  between the cross-sectoral demand and the cross-sectoral supply curves respectively indicate when “*ex ante*” the expected market price is **greater (A)** or **lower (B)** than the unit production cost for the various sectors.

67

## The effect of investment on the creation of new productions: private or collective goods or services



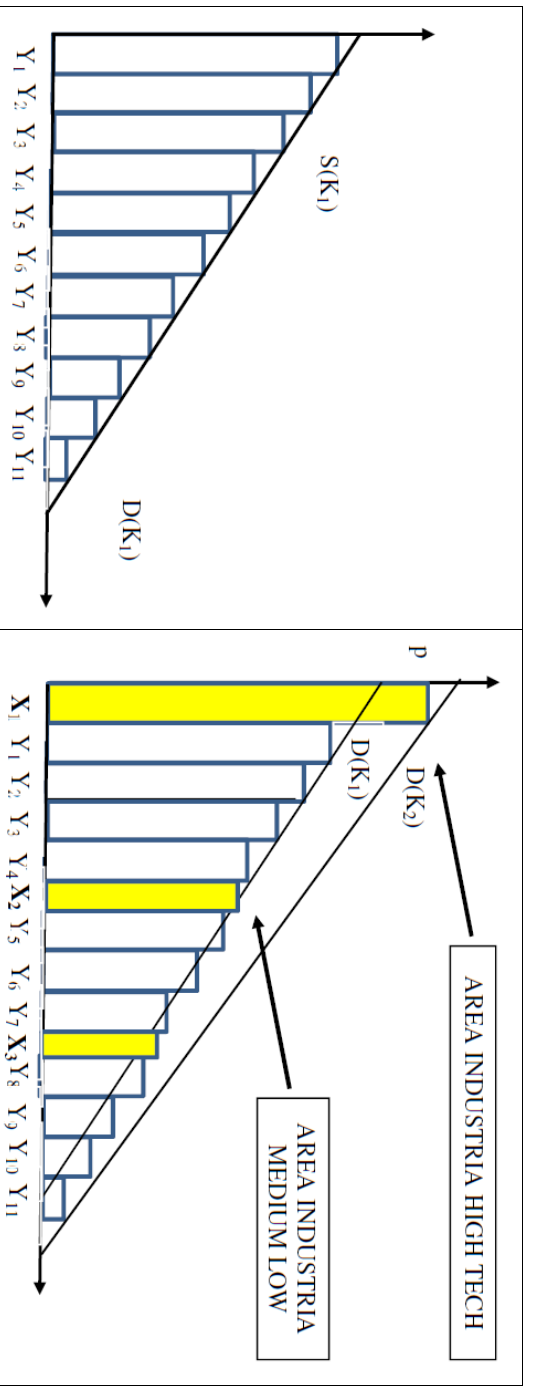
68

The **expectations by the innovative firms** on the new needs by the citizens and on the possible growth of new productions may lead the firms to the **design of innovative investment projects** and to demand new funds to the financial markets. Once **these projects are realized they increase the supply of new productions**. Moreover, the revenues created by the new jobs and the investment made in order to create them are capable to **sustain the overall cross-sectoral demand** and to increase the revenues of the firms in the various sectors of the economy. That may also leads **validate the expectations** by the innovative firms that **market price of new product and services will be greater than their production costs**.

69

Riccardo Cappellin, Corso di Economia Regionale, Università di Roma "Tor Vergata"

The creation of new sectors is determined by a shift of the cross-sectoral demand and supply



- 1) An increase of the knowledge and of the needs by the users and also an increase of the total investments by the firms determine **an upward shift of the cross-sectoral demand**.
- 2) The investment and the increase of production capabilities determine **a shift of the curve  $S$  to the right** and the production of the new goods and services ( $X_i$ ), additional with respect to the previous productions ( $Y_i$ ). The **new productions develop "at the margins" of existing productions**.

70

## A cross-sectoral model of GDP growth

- In the traditional macroeconomic model the (AS) curve describes the supply side of the economy. This function is based on the Phillips curve and on the aggregate production function and it shifts according to the inflation expectations.
- In a modern economy, the supply side is represented by the frontier of the production possibilities or by the scope of the production capabilities of the firms and its growth is determined by: a) creation of new sectors and firms, b) the product innovation and c) process innovation.
- The key drivers of growth are knowledge, the investments, the consumer's preferences and the governance of the changes and of the relationships between the actors.
- The model of the cross-sectoral demand (D) and cross-sectoral supply (S) indicates the relationships between the level of GDP and the price of production. It is compatible with the traditional (IS-LM) and (AD) model, but is alternative to the neoclassical (AS) model of neo-liberal macroeconomics.
- A change of course is needed in the economic policies, which should focus on the internal demand of the national economy and on the increasing needs for a better quality of life by the citizens especially in the urban areas. Only the adoption of strong industrial and regional policies can promote greater innovation and greater investments.

71

Nel processo di crescita ha un ruolo determinante l'investimento, che opera sia dal lato della offerta che dal lato della domanda. Questo può essere rappresentato dalla sequenza dei seguenti effetti:

- a) gli investimenti attivano il moltiplicatore keynesiano dei redditi e quindi la domanda aggregata e aumentano il PIL,
- b) gli investimenti permettono la creazione di nuova capacità produttiva nei settori produttivi innovativi e consentono la crescita dell'occupazione in tali settori,
- c) le nuove produzioni create distribuiscono maggiori redditi ai fattori di produzione: lavoro e capitale, e questi redditi sostengono la domanda aggregata e anche la domanda delle stesse nuove produzioni,
- d) nel caso di investimenti pubblici, la crescita futura del PIL consente di ripagare l'esborso iniziale. Nel caso di investimenti privati, gli investimenti devono essere finanziati non con sussidi pubblici ma dalle banche e da intermediari finanziari specializzati e questo richiede che le nuove produzioni di beni e servizi innovativi siano finanziariamente convenienti. I nuovi beni e servizi, se di elevata qualità e innovativi, potranno essere pagati prodotti alle imprese private dai cittadini che li acquisteranno sul mercato eventualmente a prezzi regolamentati o con il pagamento di tasse di scopo, se fossero prodotti da organizzazioni pubbliche. I maggiori ricavi delle imprese consentiranno alle stesse di sostenere i costi correnti e i costi in conto capitale delle nuove produzioni.

72



Maggiori investimenti hanno l'effetto sia di aumentare la domanda aggregata, tramite l'effetto del moltiplicatore keynesiano della spesa sul PIL, che di espandere la capacità produttiva nei singoli settori e quindi di aumentare l'occupazione e i redditi, che a loro volta determineranno un aumento della domanda aggregata. L'interdipendenza tra la domanda (D) e l'offerta è raffigurabile con il grafico della domanda e dell'offerta cross-settoriale (Cappellin 2014b), che indica per ogni settore da un lato il prodotto lordo (Y) e dall'altro il prezzo (P) e il costo, qualora i diversi settori siano ordinati per livelli decrescenti della produttività e dei prezzi-costi. Pertanto, la creazione di nuove produzioni è possibile solo se si superano le barriere all'entrata (come nelle aree A) e quindi è necessario aumentare i prezzi delle singole produzioni, che i consumatori sono disposti a pagare data la migliore qualità dei prodotti, con appropriate innovazioni di prodotto e maggiore conoscenza (K), e diminuire i costi di produzione con le innovazioni di processo. Se la scheda della domanda si sposta verso l'alto e la scheda dell'offerta verso destra, nuove produzioni diventano efficienti (si riducono le aree B) e aumenta il PIL.

Pertanto, l'obiettivo di una nuova politica industriale è promuovere un aggiustamento dinamico, sia della domanda che dell'offerta nei diversi settori produttivi e un cambiamento della struttura produttiva dell'economia, per creare nuove produzioni e aumentare sia l'occupazione che la produttività media (Cappellin 2014b, Bellandi e Rullani 2014, Sterlacchini 2014).

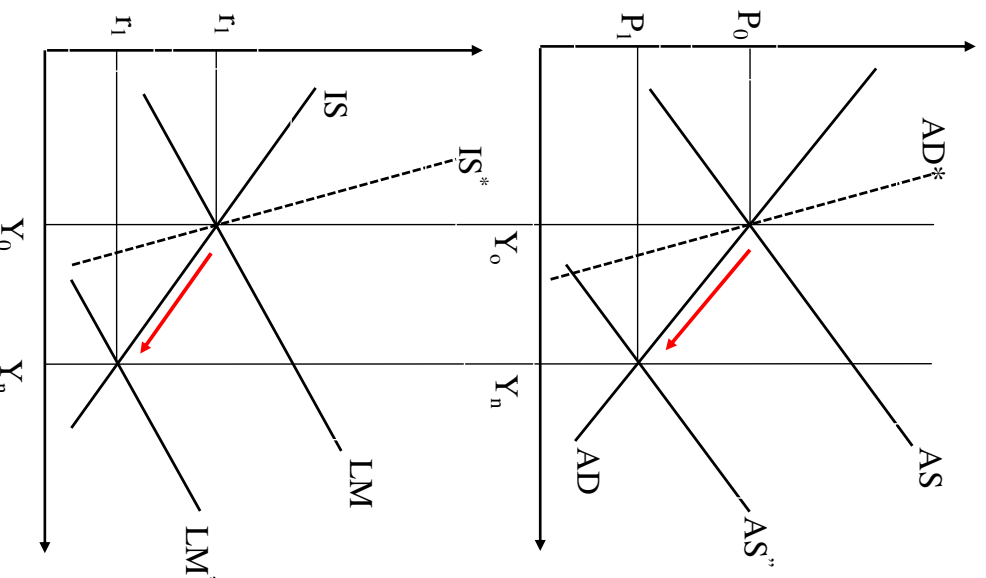
73

**ACCORDING TO THE NEO-LIBERAL MODEL THE FLEXIBILITY OF PRICES AND WAGES BRINGS BACK THE ECONOMY TO FULL EMPLOYMENT ( $Y_n$ )**

**IF INVESTMENTS ARE RIGID TO THE INTEREST RATE, THEN THE ( $IS^*$ ) AND ( $AD^*$ ) CURVES ARE RIGID**

**an expansionary monetary policy does not increase GDP, as the decrease of the interest rate does not increase investments. The AD curve is vertical and does not shift with monetary policies.**

**The structural reforms of the labor market decrease the wages but do not increase employment as they also decrease the labor incomes, the consumption and the aggregate demand. The joint shift down of the AS and the AD curves decreases the prices and creates a deflation, but do not increase the employment.**



74

## Innovation as the key factor of investment and GDP growth

The fall of the capital expenditure by the companies, the households and the governments is the main factor, which has determined the recession in Europe. Therefore, policies should identify the factors which have led to this fall of investments and those which may help in promoting investments.

Innovation is not only determined by factors internal to the large and small firms, while it is the result of a process of learning by interacting (Lundvall and Johnson 1994) by the firms with the various clients and suppliers firms, the universities and research centers, various public institutions, the banks and other financial organizations and the specialized consulting services. That process can hardly occurs spontaneously, such as in the well know "industrial districts", while it is the result of an explicit "dynamic coordination" or "governance" process by the local and national institutions, as in the modern "Regional or National Systems of Innovation".

The governance of large, complex and long term investment and innovation projects requires the creation of new specialized intermediary organizations and infrastructures for the governance of the innovation networks (Cappellin and Wink 2009).

The missing recovery of capital expenditure by the European firms is also the effect of the lack of an effective innovation and industrial policy in Europe, since the design of large innovation projects requires the preliminary public and private investments in building or strengthening open and flexible innovation networks.

75

In particular, product innovations require advanced capabilities and courageous strategic decisions by the individual firms as also a change in the behavior of the users. In fact, new needs are expressed by the most innovative users (Von Hippel 1994) and are tightly related to the increasing knowledge and education level of population, such as the needs for a better quality of life, environment, culture, communication and mobility. That implies a new demand for specific innovative goods and services and it stimulates the firms and the institutions to create new production capacity in new sectors. The demand by specific innovative users often anticipates the new productions introduced by the innovative firms or by the government.

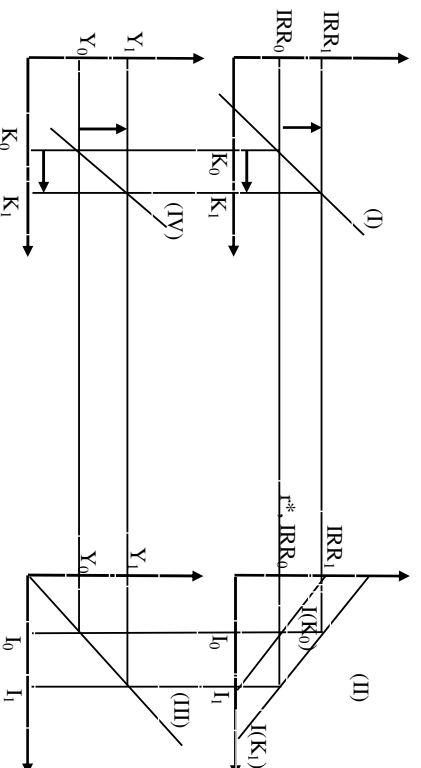


Figure 1: Knowledge and innovation promote investment and GDP growth

76

The economic theory of investment indicates that the internal rate of return (IRR) of planned investment projects should be greater than the interest rates adjusted for the level of risk. The IRR is the discount rate, which equalizes the flow of the revenues (R) and of the costs (C):

$$1) \sum_0^n (R_t (K_t, Z_t) - C_t (K_t, Z_t)) / (1 - IRR)^t = 0$$

Knowledge (K) and product innovations, together with other variables (Z), affect the revenues of the investment projects. Knowledge (K) and process innovations, together with other variables (Z), affect the costs of the investment projects. The length of the time horizon (t) is determined by technological and market factors and also by organizational and institutional capabilities and constraints and it is crucial in determining the financial viability of investment, since it determines the relative importance of the costs, which mainly accrue in the short term, and the revenues, which accumulate in a longer horizon.

Therefore, new knowledge and innovation (K) increase the demand by the users or the revenues ( $R_t$ ) of the firms and decrease their costs ( $C_t$ ). Thus, they increase the internal rate of return of a specific investment project (IRR), as indicated by the equation 1. That determines a positive relationship, which is indicated in the quadrant (I) of figure 1. If the internal rate of return increases by the same amount for all investment projects, the Keynesian investment schedule in quadrant II shifts upward from  $I(K_0)$  to  $I(K_1)$  and also the number of projects, which have an internal rate of return greater than the current rate of interest ( $r^*$  adjusted for the degree of risk), increases. That determines an increase of aggregate investment from  $I_0$  to  $I_1$  and an increase of the aggregate demand and GDP (Y) through the Keynesian multiplier. Therefore, in quadrant (IV), the level of the aggregate demand (Y) depends on the level of knowledge. Clearly, this increase of the

77

GDP would also imply a rightward shift of the IS curve and of the AD curve in the traditional macroeconomic model.

Innovation is not only occurring in the case of "private goods" and some new goods and services have a collective and not a private nature. Therefore, as in the case of "public goods" or of "common goods", the government policies are needed, in order to aggregate the individual demands.

Important areas where investments can be stimulated by appropriate industrial and regional policies in Europe are the sectors, which have an high capital intensity, such as construction and public utilities. Other strategic sectors are the sectors where the demand in the long term is dynamic and where it is most important to promote the creation of modern productions, such as transport, culture, health and tourism. As all these sectors are mainly concentrated in urban areas (Cappellin 1988), it is important that a European economic policy (European Commission 2008) aiming at promoting investments focuses on the innovations to be adopted in the urban areas (Ciciotti 2014).

In a stagnation situation or in a liquidity trap, such as the one which is occurring now in Europe, investments are not sensible to lower interest rates in the capital markets and can only be increased by major changes in the demand of productions due to technological breakthroughs or to the intelligent anticipation by the firms and the institutions of the ongoing changes in the consumer behaviors.

78



## The scope of industrial-regional policy

- A modern industrial policy, which **increases the knowledge or the innovation both on the supply** (by developing the production of new modern collective services) **and on the demand** (by stimulating the needs and the demand of these services by an increasing number of citizens) determines a shift to the right of the S curve and an upward shift of the D curve.
- The task of industrial policy is to promote a change in the sectoral structure of the economy and **a dynamic adjustment of the demand and supply in the various sectors**, leading to the creation of new productions and to the increase both of employment and of the average productivity of the economy.
- In fact, **the complex and original combination** of the new needs by **the users** and the improved competencies of **many complementary firms** and also the intelligent governance of these combinations by **the public institutions** seem to be the most significant dimension of the concept of the so-called **"smart innovation" strategy**.

That requires the design of **new instruments of public governance**, which facilitate the users to interact between themselves, to the producers to interact between themselves and with the users. For example, *Germany indicates a policy instrument, which may be adapted to other countries, such as that of the IBA (Internationale Bauausstellung), which is similar to a no-profit engineering company capable to promote large private and public investments for the renewal of large regional and urban areas.*

79

## Conclusions

The paper illustrates a theoretical model, where **the supply side** in a modern economy is represented by the **frontier of the production capabilities by the firms**. **The growth is based on the interdependent changes of the sectoral structure** of the supply and of the demand. **A crucial role in stabilization policies** is attributed to the **flows of new knowledge, innovation and investment**, as factors not only of the potential long term growth, but also of the current level of employment and GDP.

The model indicates a **new approach in the policy for the recovery** of the European economy. That implies a change of course:

- from an emphasis on the aggregate supply to an **emphasis on the aggregate demand**,
- from an increased international competitiveness to the **focus on the growth of the European internal demand, consumption and investments**,
- from a focus on the labor markets and labor costs to a **focus on the capital markets and the supply of finance**,
- from an overall "quantitative easing" of the money supply to a **reorganization of the financial intermediaries specialized in the investment finance** in the industrial and service firms.

**Only a step change toward more innovation in the firms and in the consumer preferences may stimulate investments in the current situation and that requires and also stimulates a major program of private and public investments capable to increase the domestic demand and the GDP.**

**Policy Workshop**

**del Gruppo di Discussione "Crescita Investimenti e Territorio"**

[www.economia.uniroma2.it/deidi/book-politiche-industriali/](http://www.economia.uniroma2.it/deidi/book-politiche-industriali/)

**"La ripresa economica e la politica industriale e regionale:  
dalla strategia ai progetti"**

**20 marzo 2015**

Sede del Policy Workshop:

Politecnico di Milano, Dipartimento ABC

Aula Consiglio - Edificio Retorato

Piazza Leonardo da Vinci, 32 - 20133 Milano

Preliminary draft

**The creation of new lead markets  
and new business opportunities in urban areas**

Riccardo Cappellin

[cappellin@economia.uniroma2.it](mailto:cappellin@economia.uniroma2.it)

81

Riccardo Cappellin, Corso di Economia Regionale, Università di Roma "Tor Vergata"

**DALLA CRISI ALLA TRANSIZIONE E AD UN NUOVO TIPO DI INDUSTRIA**

La crisi è di fatto un processo di transizione o di evoluzione verso un nuovo modello di industria e di economia. La recessione non è reversibile o non è destinata a terminare ritornando alla situazione iniziale. Come sotto la neve crescono le nuove culture, così sotto la compressione della stagnazione, che fa sembrare uguali tutte le imprese e tutti i settori produttivi, ci sono imprese che innovano e che emergeranno presto come esempi di successo. Non cogliere i cambiamenti in corso e non sostenerli porta come sta accadendo in Italia a prolungare la crisi in una stagnazione di lungo periodo. Invece, solo se riusciamo ad interpretare i segnali del cambiamento possiamo trasformare o fare evolvere la crisi in un processo di trasformazione del sistema produttivo italiano.

Le produzioni nuove del futuro per definizione non possono essere previste con certezza ora, ma dipendono dalle competenze già presenti nelle imprese e dallo sviluppo di processi di apprendimento e d'innovazione che richiedono un rapporto più stretto tra le diverse imprese all'interno delle reti di innovazione o dei sistemi nazionali e regionali di innovazione. Le idee nuove richiedono un investimento rilevante in progettazione e ricerca sostenuto nel tempo per svilupparsi e trasformarsi in nuove produzioni. Le imprese innovative sono quelle che investono mentre le imprese che non investono e innovano sono destinate a scomparire.

E' possibile individuare tre diverse dimensioni del processo di evoluzione dell'industria:

- L'evoluzione della domanda dei consumatori italiani
- L'evoluzione delle tecnologie
- L'evoluzione dei processi di internazionalizzazione

I bisogni dei circa 60 milioni di cittadini italiani si stanno trasformando, non solo come effetto della crisi economica ma anche in una prospettiva di lungo termine e strutturale. Il cambiamento nell'economia italiana è sempre più determinato dall'evoluzione continua e sempre più rapida dei bisogni e della domanda finale dei cittadini e anche della domanda intermedia delle imprese. I bisogni e i comportamenti dei cittadini e dei consumatori italiani cambiano velocemente e il più delle volte anticipano le capacità produttive e gli investimenti delle imprese ed anche le politiche industriali delle istituzioni. In particolare, la crisi porta a far crescere il desiderio di partecipazione e cresce la domanda di quei beni e soprattutto di quei servizi (salute, formazione, tempo libero, cultura, mobilità, comunicazioni, ecc.) che consentono lo sviluppo delle relazioni e di socializzare nella comunità locale.

Un altro driver dell'innovazione è l'evoluzione delle tecnologie, quali quelle collegate con la riduzione del consumo energetico, l'aumento delle capacità delle information technologies, lo sviluppo di nuovi sistemi di trasporto e logistica e il cambiamento organizzativo interno delle imprese.

Solo una minima parte delle imprese (*leader*), siano queste piccole imprese nuove che imprese medie e già consolidate, è sistematicamente impegnata in processi di innovazione, ma successivamente l'innovazione si diffonde gradualmente alle altre imprese (*follower*), anche se molte imprese sono incapaci di trasformarsi e sono destinate a scomparire. Infatti, la grande parte delle imprese italiane anche come risposta alla recessione ha smesso da diversi anni di investire in tecnologia e in nuove prodotti. Gli effetti si vedono in termini di chiusura di molte imprese di piccole dimensioni, di minore competitività delle esportazioni e soprattutto di aumento delle

83

acquisizioni delle imprese italiane da parte delle imprese estere e di rare acquisizioni di imprese estere importanti da parte delle imprese italiane.

Anche il fenomeno recente del "reshoring" o del ritorno in Italia di produzioni prima decentrate all'estero è il risultato di un cambiamento della domanda dei consumatori, delle capacità produttive delle imprese e dell'evoluzione della concorrenza internazionale, dato che le capacità di innovazione sono divenute più importanti dei bassi costi di produzione.

## MILANO IERI - 1924



Figure 1

The industrial city is a combination of structures, such as plants, houses and transport modes, and not a community of people (Mario Sironi, 1924)

85

## MILANO OGGI - 2014



Figure 2

The post-industrial city is a network of information, knowledge and people flows and of material and immaterial structures (Financial Times, December 7, 2014)

86

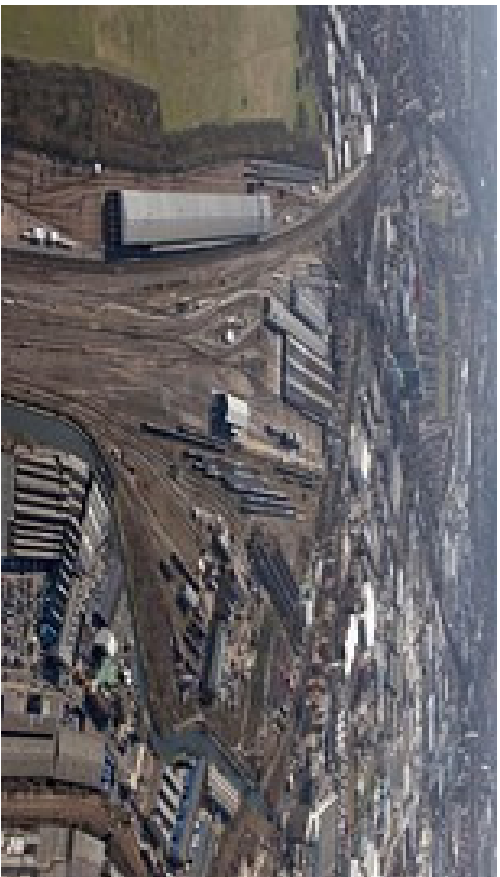
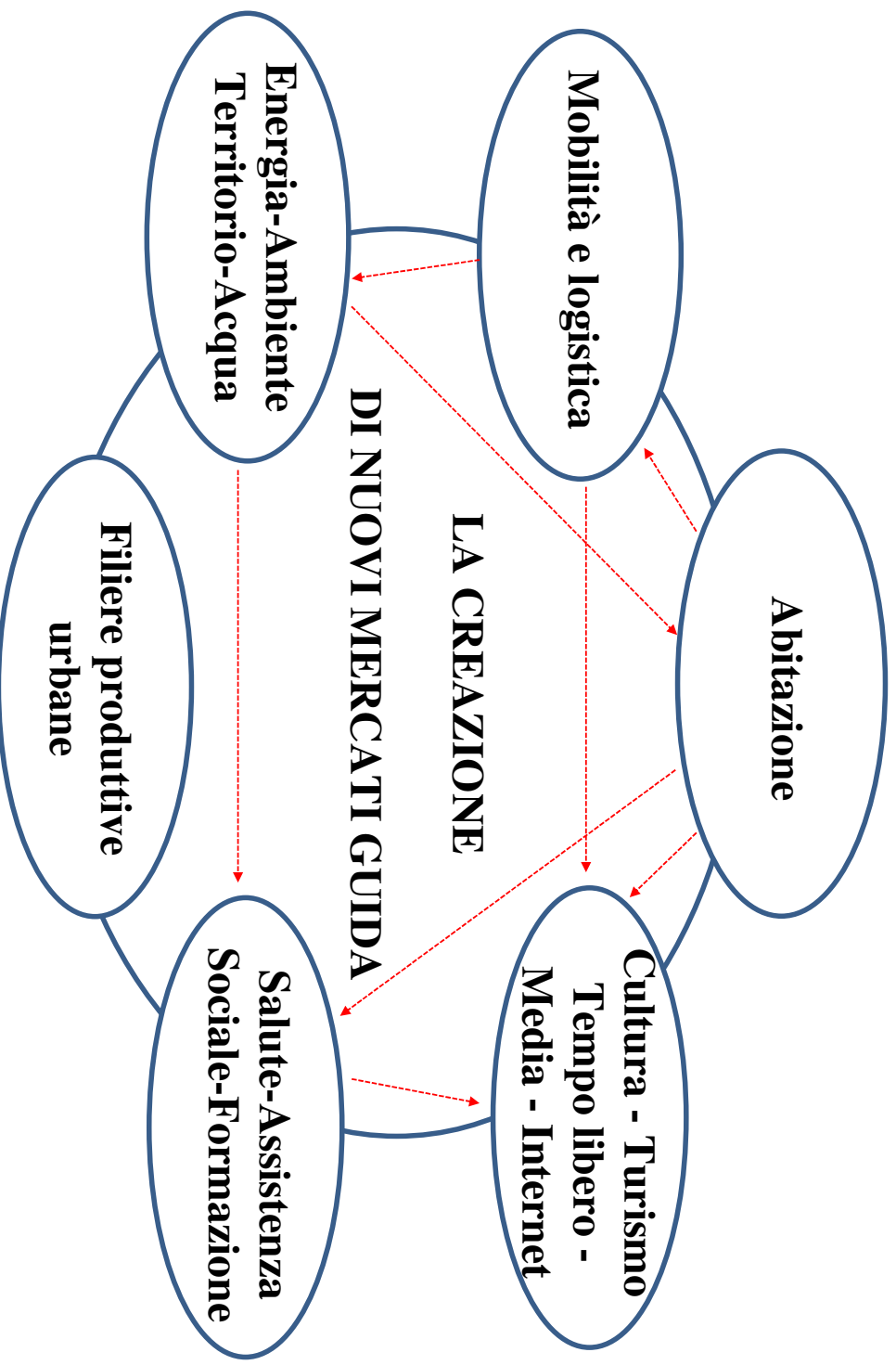


Figure 3

The urban regeneration in the largest cities in Italy represents an opportunity to relaunch investments and to create 10 thousands of new jobs in the various large Italian cities. Large semi-industrial, semi-derelict sites are common in many cities and give an almost unprecedented opportunity to transform these area into a thriving new part of the cities, with unrivalled transport links to the city center, the rest of the regions and the country and beyond.



AMBITI DEI GRANDI PROGETTI URBANI  
INDICATI DAL GRUPPO DI DISCUSSIONE “CRESITA INVESTIMENTI E TERRITORIO”

Gruppo di Discussione: “Crescita Investimenti e Territorio”  
16 febbraio 2015

- Abitazione
- Mobilità e logistica
- Energia e ambiente, territorio e acqua
- Cultura e turismo e tempo libero
- Salute, sanità e assistenza sociale
- Filiere produttive urbane

ATTORI CRUCIALI DEL RINNOVO URBANO

- Mondo della ricerca universitaria e delle professioni
- Mondo della finanza
- Mondo della impresa
- Mondo del sindacato e delle associazioni non profit
- Istituzioni europee, nazionali, regionali e locali
- Mondo della comunicazione e media

PROBLEMI DEI PROGETTI URBANI

- Interconnessione tra i cinque ambiti in aree – settori tematici
- Interazione e cooperazione tra i quattro attori cruciali
- Procedure di governance e strumenti di finanziamento

89

Riccardo Cappellin, Corso di Economia Regionale, Università di Roma “Tor Vergata”

Tabella 6: Spesa media mensile familiare

	Totale	Totale	persona sola con meno di 35 anni	persona sola con meno di 35 anni	persona sola con 65 anni o più	persona sola con 65 anni o più
TABELLA FINALE	2008	2013	2008	2013	2008	2013
alimentari e bevande	19,1%	19,5%	16,7%	15,5%	21,0%	21,6%
altri beni	14,9%	12,5%	13,0%	15,1%	11,4%	11,9%
abitazione	26,9%	29,4%	31,6%	27,8%	38,8%	39,1%
energia ambiente territorio	5,2%	5,8%	4,8%	4,7%	7,1%	6,9%
salute sanità assistenza sociale formazione	6,0%	5,9%	4,2%	3,9%	6,2%	6,5%
mobilità e logistica e comunicazioni	16,3%	16,1%	16,7%	17,6%	8,7%	7,3%
assicurazioni e onorari professionisti	1,5%	1,2%	1,2%	1,3%	0,9%	0,5%
tempo libero turismo cultura	9,9%	9,6%	11,7%	14,0%	6,1%	6,2%
	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Totale servizi	65,8%	68,0%	70,2%	69,3%	67,8%	66,5%

I servizi, che sono prodotti a livello locale, rappresentano il 65-70 % dei consumi e il loro peso aumenta sia nel tempo che con l'età più giovane delle persone



## Tabella 7

### Il consumo per gruppo di spesa

	ALIMENTARI E BEVANDE	176.678,69	19,1%	19,5%
	alimenti e bevande			
	ALTRI BENI			
	altri beni e servizi: borse, valigie ed altri effetti personali; argenteria, gioielleria, bigiotteria e orologi; prodotti per la cura personale; mobili, elettrodom. e servizi per la casa; abbigliamento e calzature; tabacchi	113.255,57	14,9%	12,5%
	ABITAZIONE			
	abitazione (principale e secondaria)	266.377,10	26,9%	29,4%
	ENERGIA AMBIENTE TERRITORIO			
	combustibili ed energia	52.550,58	5,2%	5,8%
	SALUTE SANITA' ASSISTENZA SOCIALE FORMAZIONE	53.456,63	6,0%	5,9%
	Sanità, barbieri, parrucchiere, istituti di bellezza, istruzione			
	MOBILITA' E LOGISTICA E COMUNICAZIONI			
	trasporti, comunicazioni	145.873,17	16,3%	16,1%
	ASSICURAZIONI E FINANZA			
	assicurazioni vita e malattie, onorari liberi professionisti	10.872,53	1,5%	1,2%
	TEMPO LIBERO TURISMO CULTURA			
	pasti e consumazioni fuori casa; tempo libero, cultura e giochi, alberghi, pensioni e viaggi organizzati	86.980,28	9,90%	9,60%
		906.044,55	100%	100%

**Tabella 8: La quota delle voci di spesa dei consumi su valore aggiunto, lavoro e investimenti**

[illegible]

12	Servizi immobiliari	-9,5	201,6	192.659,97	0,2%	2,7%	-33,50%	-3.638,15	2,60%	7.230,46	10.868,61	139.779	
MOBILITÀ E LOGISTICA													
trasporti													
7	Servizi di vendita all'ingrosso e al dettaglio; servizi di riparazione di autoveicoli e motocicli	-298,7	3365,5	152.998,43	-11,5%	0,9%	-19,70%	-10.377,41	15,40%	42.215,88	52.593,29	25.029	
8	Servizi di trasporto e magazzinaggio	-76,6	1088,6	74.382,64	-8,3%	0,0%	-	-			-	26.672	
TEMPO LIBERO TURISMO CULTURA COMUNICAZIONE													
pasti e consumazioni fuori casa; tempo libero, cultura e giochi, alberghi, pensioni e viaggi organizzati, comunicazioni													
9	Servizi di alloggio e di ristorazione	-7,7	1310,5	51.694,51	-0,7%	0,0%	-	-			-	90.827	
10	Servizi di informazione e comunicazione	-15,2	561,9	59.755,72	-1,1%	4,8%	-7,50%	-1.122,21	5,00%	13.805,03	14.927,24	34.645	
18	Servizi nel campo dell'arte, dello spettacolo e del tempo libero	3	330,2	16.359,76	-0,4%	0,2%	-17,80%	-668,25	1,10%	3.083,34	3.751,59	20.815	
19	Altri servizi	1	660,1	22.390,59	3,2%	0,0%	-17,80%	-479,25	0,80%	2.211,32	2.690,57	19.956	
ASSICURAZIONI E FINANZA													
assicurazioni vita e malattie, onorari liberi professionisti													
11	Servizi finanziari e assicurativi	-42,5	619,9	79.585,94	9,4%	0,2%	-33,60%	-2.034,96	1,50%	4.017,27	6.052,23	48.688	
13	Servizi professionali, scientifici e tecnici	22,9	1627,4	88.278,72	-11,2%	1,5%	-28,60%	-2.080,96	1,90%	5.182,51	7.263,47	8.687	
SALUTE SANITÀ ASSISTENZA SOCIALE FORMAZIONE													
Sanità; barbiere, parrucchiere, istituti di bellezza; istruzione													
14	Servizi amministrativi e di supporto	75,9	1050,3	41.523,48	-2,3%	0,0%	-28,60%	-3.160,75	2,90%	7.871,67	11.032,42	7.875	
15	Servizi di pubblica amministrazione e difesa; servizi di assicurazione sociale obbligatoria	-73,1	1284,6	100.566,55	-2,0%	0,0%	-21,40%	-7.089,63	9,50%	26.083,65	33.173,28	934	
16	Servizi di istruzione	-139,9	1501,3	63.406,01	-1,0%	0,0%	-21,40%	-538,7	0,70%	1.981,93	2.520,63	10.777	
17	Servizi sanitari e di assistenza sociale	48,2	1640,4	83.136,67	-2,7%	0,0%	-21,40%	-1.802,97	2,40%	6.633,37	8.436,34	17.731	
20	Servizi di datore di lavoro svolti da famiglie e convivenze; produzione di beni e servizi per uso proprio da parte di famiglie e convivenze	73,9	1721,2	18.613,25	4,6%	0,0%	-	-		-		14.654	
Totale		-1.495,80	23527,5	1.399.690,47	-6,8%	100,0%	-23,10%	-82.355,06	100,00%			940.666	

93

Come indicato dalla tabella 7, se si considerano gli acquisti di beni, gli alimentari e bevande sono la voce di spesa maggiore nei consumi privati (19,5%) ed è molto minore il peso degli altri beni (12,5%). Invece, il peso degli acquisti di servizi, compresi quelli abitativi, è molto superiore e complessivamente pari a circa il 68%.

Questo dimostra la straordinaria importanza dei consumi di servizi rispetto a quelli di beni e quindi anche le potenzialità per le produzioni delle imprese italiane possono avere i consumi di servizi, tenuto conto che le possibilità di importazioni di servizi sono molto limitate data la necessità di una stretta contiguità e persino di una forte interazione tra il produttore e l'utilizzatore di servizi. La quota sui consumi è quindi un indicatore cruciale per indicare le potenzialità di mercato delle produzioni di servizi e indirettamente l'importanza di concentrare gli investimenti fissi lordi delle imprese in questi settori.

L'abitazione rappresenta il 29% dei consumi (affitti figurativi inclusi) con un mercato stimato di 266 miliardi. Il secondo settore per importanza è quello della mobilità e logistica che pesa per il 16% o circa 145 miliardi. Il terzo settore è quello molto diversificato al suo interno del tempo libero e turismo e cultura, che rappresenta il 9,6 % e per circa 87 miliardi. Quote minori hanno sui consumi privati da un lato la salute e la formazione, dato che l'offerta di questi servizi è svolta soprattutto dal settore pubblico, e dall'altro i consumi di combustibili e energia, che possono di fatto essere considerati sia beni che servizi dato che la produzione avviene da parte di grandi imprese di servizi di pubblica utilità (Public Utilities).

Come indicato la tabella 8 consente di ricavare delle indicazioni quali: quantitative dell'importanza delle sei classi di bisogni o mercati in termini di valore aggiunto, occupazione e investimenti, dato



che per ciascun tipo di spesa sono indicati i settori produttivi (i 20 settori della matrice intersettoriale) che risultano più importanti nella produzione del bene o servizio considerato. Questo permette di avere un'indicazione quali-quantitativa del peso strategico di ciascun tipo di spesa o mercato sull'economia nazionale, considerando indicatore chiave come il valore aggiunto, l'occupazione e gli investimenti.

In particolare, l'**abitazione** rappresenta un bene-servizio in cui sono cruciali i settori 5) acqua e reti, 6) costruzioni e 12) servizi immobiliari e che occupano complessivamente 1,9 milioni di lavoratori, hanno fatto investimenti per 88 miliardi. La diminuzione degli investimenti nel periodo 2008-2013 in questo mercato è stata pari a 30,7 miliardi. Questo dato indica il gap o il potenziale di crescita in termini di maggiori investimenti che potrebbero essere svolti in questo settore, se l'obiettivo fosse quello di coprire il gap rispetto al 2008. La diminuzione dell'occupazione in questo mercato o in questi settori è stata pari a -345 mila occupati: valore che indica il possibile obiettivo di crescita dell'occupazione negli stessi settori.

Nel caso della **mobilità e logistica** si possono considerare come settori fornitori sia i servizi di trasporto che i settori del commercio. Complessivamente, gli occupati sono pari a 4,45 milioni e la diminuzione degli occupati nel periodo 2008-2013 è stata di 315 mila lavoratori. Gli investimenti sono stati 42 miliardi (nota: non sono disponibili dati degli investimenti nel settore dei trasporti) e sono diminuiti di circa 10 miliardi nel periodo considerato.

Nel caso della domanda di **servizi per il tempo libero**, possono essere considerati i settori degli alloggi e ristorazione, i servizi di informazione e comunicazione e quelli nel campo dello spettacolo oltre ad altri servizi. Complessivamente il peso occupazionale di tali settori è di 2,86 milioni di

95

occupati e la diminuzione è stata pari a -19 mila addetti. Gli investimenti erano pari a 19 miliardi nel 2013 e sono diminuiti nel periodo 2008-2013 di 2,3 miliardi.

Il mercato della **salute e formazione**, è collegato con i settori 14) servizi amministrativi, 15) servizi di pubblica amministrazione, 16) servizi di istruzione, 17) servizi sanitari e 20) servizi svolti da famiglie e convivenze. Esso ha una notevole rilevanza occupazionale dato che gli occupati sono pari a 7,2 milioni e la diminuzione è stata pari a -15 mila addetti. Gli investimenti erano 42,6 miliardi nel 2013 e sono diminuiti nel periodo 2008-2013 di 12,6 miliardi.

Il mercato dell'**energia** aveva investimenti per 13,18 miliardi e questi sono diminuiti nel periodo 2008-2013 di 5,9 miliardi. L'elevata intensità di capitale spiega il limitato peso occupazionale che era pari a 80 mila addetti che sono diminuiti di 1,4 migliaia nel periodo considerato.

Infine, il **mercato degli altri beni** è collegato con il settore 3) manifattura e 2) miniere e Aveva un'occupazione di 3,53 milioni di occupati e questi sono diminuiti di 682 mila lavoratori. Gli investimenti erano pari a 51 miliardi e questi sono diminuiti nel periodo 2008-2013 di 13,6 miliardi.

# La crescente finanziarizzazione delle imprese scoraggia l'investimento in capitale fisso

Dal 30/09/2011 al 30/09/2014 (dati in milioni di euro):

- I **depositi bancari e risparmio postale in Italia delle società'** non finanziarie sono aumentati da 186.430.934,00 a 218.533,356.
- I **depositi bancari e risparmio postale in Italia delle famiglie consumatrici** sono aumentati da 805.492.918,00 a 920.293,188.

Fonte: Banca d'Italia, Bollettino Statistico

Nel periodo 2008-2013, l'indagine Mediobanca sulle maggiori 2050 società italiane indica che (dati in milioni di euro):

- il **risultato d'esercizio** è praticamente uguale ai **dividenti distribuiti** (rispettivamente 28.480 e 25.149 nel 2008 e 13.008 e 13.913 nel 2013.
- i **presiti obbligazionari** aumentano (da 50.772 a 90.481) e i **debiti verso banche** diminuiscono (da 88.802 a 55.959)
- **aumenta la liquidità** (casse e banche e titoli a reddito fisso) delle imprese italiane (da 35.184 a 53.508);
- **aumenta il valore delle partecipazioni finanziarie** (da 142.631 a 199.039);
- **gli investimenti netti sono negativi** e si verifica un processo di disinvestimento, dato che diminuisce il valore delle immobilizzazioni materiali nette (da 285.071 a 257.658);
- i **dipendenti** diminuiscono da 1.402.163 nel 2008 a 1.330.383 nel 2013.

97

## Why entrepreneurs do not innovate and invest ?

The TKM - Territorial Knowledge Management approach indicates six complementary drivers in the process of interactive learning and innovation (Cappellin and Wink 2009):

- External stimulus
- Accessibility
- Receptivity and attractivity
- Common identity and trust
- Creativity: interaction and combination
- Governance and finance

98

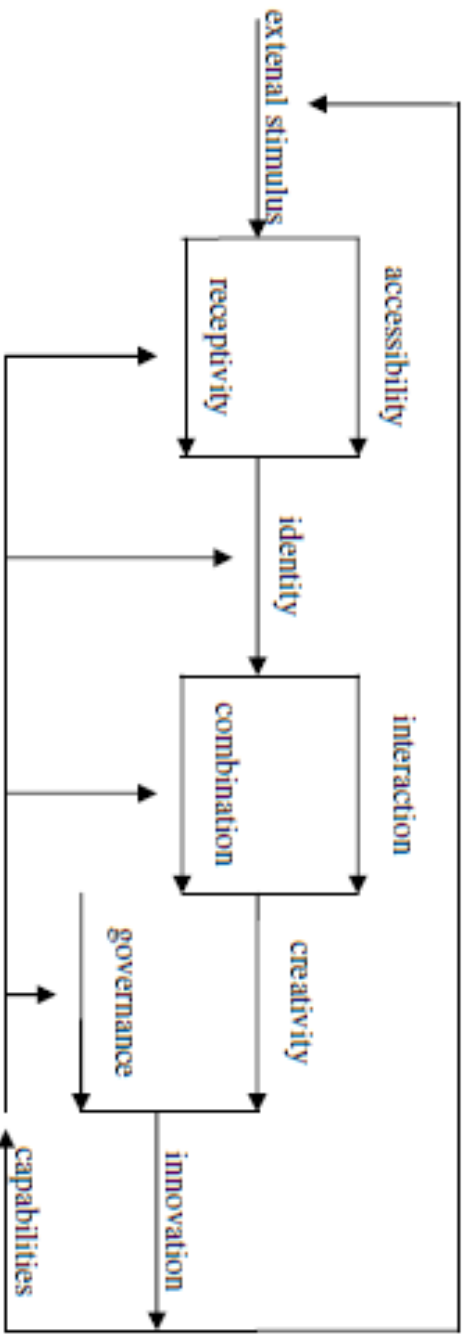


Figure 1: The process of interactive learning and innovation

## The six drivers of innovation and interactive learning in the Territorial Knowledge Management approach

99

Riccardo Cappellin, Corso di Economia Regionale, Università di Roma "Tor Vergata"

### Perché le imprese non investono ?

Le sei leve dei processi di innovazione e apprendimento interattivo secondo il modello del Territorial Knowledge Management possono indicare alcuni fattori che possono facilitare o ostacolare la ripresa degli investimenti delle imprese:

- **L'investimento dipende dalle relazioni di prossimità tra le imprese** e dalla ricettività delle singole imprese agli stimoli delle altre imprese che favoriscono la collaborazione.
- L'investimento congiunto con altre imprese dipende dall'**individuazione di un obiettivo comune**, dalla creazione di alleanze strategiche, dalle relazioni di fiducia tra le imprese, dalla condivisione di esperienze e modelli culturali comuni.
- L'investimento congiunto e lo **sviluppo della creatività e dell'innovazione** dipende da **processi interattivi di apprendimento** tra le imprese che a loro volta dipendono dalla **interazione tra molte imprese** e soggetti con competenze diverse e complementari sia locali che anche esterni alle singole aree e settori considerati e dalla **combinazione originale di conoscenze** tacite e codificate tra loro diverse e complementari in tecnologie e comparti produttivi diversi.
- Infine, **gli investimenti e le innovazioni dipendono da processi di governance** a livello locale e a livello settoriale o da politiche regionali e da politiche industriali che sono in grado di **spingere alla collaborazione soggetti diversi** come le imprese singole di settori diversi, le università, i sindacati, le banche e le amministrazioni pubbliche.

Tra i più rilevanti **fattori interni** alle singole imprese possono essere indicati:

- una **diminuzione della propensione al rischio**, connessa con la crisi finanziaria, che porta a rinviare impegni futuri,
- una prospettiva miope, una **riduzione dell'orizzonte temporale delle decisioni** e tempi attesi di ritorno dell'investimento troppo ristretti e un'adeguata valutazione del ruolo che le imprese estere concorrenti stanno attribuendo nello stesso periodo a innovazione e investimenti
- un **modello di corporate governance che porta a premiare il "value" rispetto al "growth"**, punta alla riduzione dell'indebitamento tramite processi di disinvestimento, sacrifica gli investimenti rispetto all'obiettivo di aumento della liquidità ed esclude categoricamente un ricorso all'indebitamento per finanziare l'aumento delle spese in ricerca e sviluppo,
- i **progetti esistenti sono poco innovativi ed hanno un tasso di rendimento interno troppo limitato** e le imprese hanno compiuto uno sforzo inadeguato in progettazione e in ricerca sviluppo, senza il quale non è possibile individuare campi di business convenienti,
- una **scarsa propensione alla collaborazione con le altre imprese**, con il sindacato, la pubblica amministrazione e le istituzioni finanziarie,
- la **mancata partecipazione dell'impresa singola a reti di innovazione** con altre imprese della filiera produttiva e nel sistema produttivo locale nel quale si sviluppano processi di apprendimento interattivo e lo sviluppo della creatività e dell'innovazione,

101

Certamente rilevanti sono i **fattori esterni** che hanno penalizzato le decisioni di investimento delle imprese:

- l'**instabilità macroeconomica o sulla stabilità finanziaria** degli Stati sovrani, delle banche, dell'Euro e il timore della uscita dall'area Euro o dall'Unione Europea di determinati paesi, connessa con interventi in ritardo o sbagliati della BCE e della Unione Europea,
- la **riduzione del fatturato e della domanda determinato dalla crisi economica**, che peraltro è stata a sua volta determinata dal crollo degli investimenti oltre che dalle politiche di austerità fiscali,
- la **riduzione del credito bancario** soprattutto alle PMI e lo sviluppo inadeguato di intermediari finanziari non bancari,
- la **scarsa innovazione da parte delle imprese concorrenti** o l'esistenza di accordi collusivi tra le imprese che spinge ciascuna impresa a confidare sulla non urgenza di procedere ad innovazioni ed investimenti,
- l'**isolamento della impresa singola nelle sue decisioni di investimento e di innovazione** e la scarsa collaborazione della amministrazione pubblica, delle altre imprese, del sindacato e del sistema finanziario e l'esistenza di tempi di realizzazione troppo lunghi per i problemi di coordinamento con altri attori privati e con il pubblico,
- la **manca di una strategia di sviluppo industriale** che permetta di inquadrare le decisioni di investimento delle singole imprese in una prospettiva nazionale a medio termine,
- il **mancato investimento in progettazione e ricerca e sviluppo delle amministrazioni pubbliche**, incapaci di elaborare un tale programma di sviluppo industriale,

102

## Le nuove politiche industriali e regionali

Le politiche pubbliche e le banche devono intercettare il nuovo che sta emergendo sia dal lato della domanda che dal lato delle nuove capacità produttive delle imprese e dei lavoratori. E' necessario sostenere le imprese nella fase di transizione verso un nuovo modello competitivo e di organizzazione. In questa fase di evoluzione dell'economia o di transizione a un nuovo modello di industria, la mancanza di politiche industriali e regionali è il fattore che spiega il perdurare della stagnazione in Italia più a lungo degli altri paesi europei, che sono già stati capaci di uscire dalla recessione.

La politica industriale e regionale per le PMI deve considerare cinque diverse dimensioni:

- promuovere l'innovazione e l'investimento in progettazione nelle imprese,
- individuare l'evoluzione del mercato e della domanda nel territorio e nelle aree urbane in particolare,
- sviluppare una nuova finanza per l'investimento e fornire servizi di consulenza nello sforzo in progettazione da parte delle imprese,
- promuovere uno sviluppo continuo delle competenze del lavoro,
- definire nuovi modelli di governance delle relazioni tra le imprese in senso verticale nella filiera e orizzontale sul territorio.

103

E' necessaria un'integrazione più forte dell'impresa innovativa e che vuole investire con le altre imprese della filiera e tra la filiera e i rispettivi territori e le relative comunità di lavoratori, cittadini e consumatori. E' quindi necessaria una strategia di investimento orientata alla filiera ed al territorio. Sia il Sindacato che le Banche e le Istituzioni non devono considerare solo l'impresa singola ma soprattutto la filiera produttiva e le reti di relazioni territoriali.

E' necessario individuare i nuovi mercati delle nuove produzioni e non solo le nuove tecnologie e le nuove competenze lavorative necessarie. I nuovi mercati non sono tanto quelli esteri in paesi distanti, ma i mercati nuovi e emergenti di prodotti e servizi più sofisticati da parte dei cittadini e delle stesse imprese sul territorio italiano.

Dal punto di vista industriale, mancano progetti di filiera e d'area e non sono sufficienti progetti di singola innovazione in un'impresa specifica.

Dal punto di vista finanziario, manca un investimento in progettazione indispensabile per innovazioni di un certo rilievo e delle forme di finanziamento della stessa che non possono essere solo i profitti interni della singola impresa e neanche i contributi pubblici per la RS a fondo perduto.

Dal punto di vista delle politiche industriali nazionali e locali, è necessario focalizzarsi sulla *governance* delle relazioni tra le nuove produzioni delle imprese private e l'ambiente esterno, sia verticali all'interno della filiera che orizzontali nel territorio.

104

L'interazione dinamica tra la domanda e l'offerta di fondi nel processo di investimento è simile all'equilibrio dinamico nel processo di innovazione tra la domanda di nuove produzioni da parte degli utilizzatori e l'offerta di nuove produzioni da parte delle imprese. Esso può essere rappresentato come una barca che avanza se spinta dai remi a destra (offerta) e da quelli a sinistra (domanda) che spingono in direzione opposte e fanno avanzare la barca. Il timoniere come la politica industriale e regionale decide la velocità o il ritmo e guida la barca in una determinata direzione.

In questa prospettiva sono prioritari tre ambiti delle politiche industriali:

a) la dimensione nazionale. Si deve promuovere il ruolo delle grandi imprese (soprattutto le Public Utilities): Ferrovie dello Stato, Eni, Snam, Enel, Terna, Acea, A2A, Iren, Atlantia, varie concessionarie autostradali, Finmeccanica e Fiat e le grandi imprese multinazionali presenti in Italia e con competenze di eccellenza internazionale, perché rilancino gli investimenti nell'ambito di un Piano nazionale simile al Piano Jucker europeo,

b) la dimensione regionale e locale. Si devono ideare e realizzare alcuni grandi progetti strategici per migliorare la qualità della vita dei cittadini e soddisfare i bisogni emergenti e la nuova domanda e si devono creare reti di imprese sui progetti strategici e promuovere nuove filiere produttive urbane anche a scala regionale e nazionale. Si devono definire solide strutture organizzative di governance di queste reti a scala regionale e locale, ad esempio tramite la creazione di una "rete di centri di competenza" che stimolino le reti di innovazione tra le imprese a scala locale, regionale e anche internazionale,

105

c) la dimensione finanziaria è complementare a quella industriale e territoriale. Si deve promuovere il ruolo di intermediari finanziari non bancari: Cassa di Risparmio di Roma, Banche di sviluppo regionali, fondi di Private Equity nelle imprese e nelle infrastrutture, Development corporation, che facciano da broker tra l'offerta di fondi degli investitori istituzionali: grandi banche, assicurazioni, fondi pensione, fondi sovrani internazionali, e la domanda di fondi delle imprese.

Occorre, quindi, predisporre una "governance istituzionale" a scala regionale e nazionale nell'ambito della quale sia facilitato e reso efficace il processo di identificazione, valutazione della sostenibilità economico-finanziaria e selezione dei progetti che vadano a costituire un Piano di investimento regionale e nazionale mirato alla crescita dell'economia.

Si tratta di operare secondo la logica dello sviluppo sostenibile dal punto di vista economico sociale e ambientale, centrato su un modello che potremmo chiamare di *governance bottom-up* corretto. Infatti, si deve partire dal basso per far emergere i progetti in grado di risolvere i problemi urbani e coinvolgere gli attori locali più rilevanti ma, nello stesso tempo, questa azione va inquadrata in uno schema strategico territoriale più ampio, a scala regionale-nazionale, non solo per l'indicazione delle aree/settori di intervento, ma anche per fornire assistenza nella fase di progettazione e finanziamento e per l'integrazione delle singole progettualità secondo la logica delle reti di cooperazione e di sinergia e, quindi, per ottenere le economie di scala sul lato sia della domanda che dell'offerta.

Pertanto, il prerequisito per promuovere gli investimenti privati è che il Governo e le Regioni sostengano con risorse pubbliche i costi della progettazione o della R&S, ad esempio lanciando a

livello regionale e nazionale "bandi di idee" su grandi progetti strategici, riservati alle università e ai giovani ricercatori. La necessità di puntare a progettazioni qualificate, deve spingere la politica industriale e regionale a coinvolgere le migliori competenze esistenti sul territorio e innanzitutto quelle delle università e dei centri di ricerca.

Al posto delle centinaia di "tavoli di crisi" a livello nazionale e nelle diverse aree del paese sarebbe utile creare una *task force* in ogni Regione, che promuova la scoperta di nuove produzioni innovative, gli investimenti delle imprese private, l'attivazione dei necessari investimenti pubblici preliminari e complementari e che rinnova gli ostacoli amministrativi che rallentano la realizzazione dei progetti di investimento delle imprese. Tale *task force* pubblico-privata per la ripresa economica deve definire una piattaforma strategica comune o organizzare un numero limitato di "piani d'azione" (o "tavoli di sviluppo") nei cinque ambiti strategici delle infrastrutture e dei servizi d'interesse collettivo indicati sopra e in altre possibili produzioni innovative ritenute fattibili e prioritarie.

A tale *task force* deve essere assicurata la partecipazione sia degli operatori economici dei singoli settori considerati, che delle associazioni dei cittadini e degli utilizzatori dei servizi rispettivi, oltre che delle università, del mondo dei servizi professionali, della finanza di progetto, delle Pmi e delle imprese dei servizi di utilità collettivi (*public utilities*), dei sindacati, delle Camere di commercio e delle associazioni industriali.

107

In conclusione, la ripresa degli investimenti privati e pubblici, è legata a un rilancio della politica industriale e regionale, a una strategia di crescita basata sull'innovazione delle imprese e delle istituzioni e a un'efficace governance delle relazioni tra imprese, università, credito e amministrazioni pubbliche regionali, nazionali ed europee.

108