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**The Importance of Local and Global Externalities  
for the Urban Industrial Development.  
A Dynamic Factor Analysis**

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The importance of local and global externalities  
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**Abstract**

This paper proposes new measures of the degree of specialization (diversification) and equalization (integration) of the U.S manufacturing industry. For this purpose, we use a *dynamic factor model* and a modified version of the estimation procedure recently proposed by Forni and Reichlin (2001). These measures are used to derive indirect evidence on the role of local and global externalities. Our findings suggest that there is not a single type of externalities predominates in the explanation of the urban industrial development.

JEL: C53, L60, R11

Keywords: Sectoral Growth, U.S Metropolitan Areas, Externalities, Dynamic Factor Analysis

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# 1 Introduction<sup>0</sup>

Specialization of the industrial structure is an indicator of the presence of MAR (Marshall-Arrow-Romer) externalities, while diversification of economic activities of the relevance of Jacobs externalities. Intra-industry or MAR externalities lead to localization of the same activities in the same metropolitan area (or city), while inter-industry or Jacobs externalities lead to agglomeration of firms of different industries in the same city, in other words they induce a local "variety" of economic activities. Firms of the same industry located in different cities may also be linked by global (i.e inter-city) MAR externalities. If these externalities are important, similar economic activities also tend to be concentrated geographically (equalization). Finally, if inter-industry and inter-city relationships are strong and global Jacobs externalities important, economic activities spread over the economy, i.e. they are localized in diversified cities (integration).

This paper studies the degree of specialization (diversification) and equalization (integration) of the U.S manufacturing industry by analyzing the features of the sectoral income growth of 20 manufacturing sectors in 61 metropolitan areas (cities). For this aim, we use a *dynamic* factor model<sup>1</sup> and a simple estimation procedure build on Forni and Reichlin (2001). As also these authors stress, the main advantage of this estimation procedure with respect to alternative econometric strategies is that it is adequate to study the features of data set characterized by high cross-sectional disaggregation and by dynamic complexity while retaining both sophisticated dynamic modelling and parameter heterogeneity. The difference between our model with respect to the Forni and Reichlin's one is that we have four dynamic factors instead of three dynamic factors and hence we also have to adapt the estimation procedure to this complexity.

Our statistical representation isolates the following four dynamic factors: (i) the income dynamics common to all sectors in all cities (aggregate component), (ii) the income dynamics which is common to all sectors in a city but orthogonal to the other cities (city-specific or urban component), (iii) the income dynamics which is common to each sector of all the cities but orthogonal to the other cities (sector-specific or sectoral component), (iv) the income dynamics completely idiosyncratic both to cities and sectors (idiosyncratic component). The aggregate component is used as a measure of economic integration, the urban component of diversification, the sectoral component of equalization, while the idiosyncratic component is regarded as a measure for specialization of the economic activities. The decomposition of income growth in these dynamic components allows us to

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<sup>1</sup>In general factor analysis concerns static models. Appendix B in Pistorresi and Strozzi (2001) discusses static and dynamic factor models. See also note 38 of that paper for the references concerning static factor models.

have indirect evidence of the role of local and global MAR (Jacobs) externalities inducing these different industrial structures.

Why the dynamic structure of our statistical model is so relevant? More properly, why is it important to take into account the heterogeneity in the dynamics of the common (national or common across sectors or cities) components of the models? It is because it can take into account phenomena like different propagation mechanisms of the technological innovation (e.g. Lippi and Reichlin, 1994) or of the location-specific information (e.g. Jaffe *et al.*, 1993) across cities and sectors<sup>2</sup>. For example, the dynamic specification of the aggregate component may allow us to consider the possibility that a common (national/international) productivity shock may generate a certain kind of response in one sector at a specific moment and in a particular city (or area) and a response of the same or different sign and magnitude in a different sector and/or city at a certain time.

Related empirical studies consider the role played by MAR and Jacobs externalities (e.g. Glaeser *et al.* 1992, Henderson *et al.*, 1995, Feldmann and Audretsch, 1999, Forni and Paba, 2001). However, this literature focusses only on the local dimension of this type of externalities. At the same time, recent theoretical papers on the new economic geography show that global MAR and Jacobs externalities may play an important part in urban growth (Englemann and Walz, 1995, Walz, 1996, Martin and Ottaviano, 1999). In our paper, hence, we consider all these types of externalities simultaneously in a unique econometric model in particular by taking also into account the impact of global spillovers on the urban growth.

Our empirical investigation suggests that there is not a single type of externality that predominate in the explanation of the U.S urban industrial development, in other words local/global MAR and local/global Jacobs externalities are equally represented.

The remainder of the paper is organized as follows. Section 2 introduces the concepts of specialization (diversification) and equalization (integration) based on the role of local MAR (local Jacobs) and global MAR (global Jacobs) externalities. Section 3 describes the statistical model and the estimation procedure. Section 4 presents the dataset and discusses the results. Section 5 concludes.

## 2 Local and global dimensions of urban growth

In this section we present the patterns of aggregate and local development of the industrial growth. Moreover, we show that these patterns of development generate common or idiosyncratic income dynamics with respect to cities and sectors. Table 1 summarizes the local versus global and sectoral versus inter-sectoral dimensions of urban growth as follows

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<sup>2</sup>Jaffe *et al.* (1993) found that location-specific information spreads out slowly, making geographic access to that knowledge important to firms. The dynamics in our model takes into account both the possibility of a slow and heterogenous process of diffusion of the information across firms or industries.

**Table 1 Patterns of aggregate and local development**

	Sectoral	Inter-Sectoral
City	<i>Specialization</i> LOCAL MAR	<i>Diversification</i> LOCAL JACOBS
Inter-city	<i>Equalization</i> GLOBAL MAR	<i>Integration</i> GLOBAL JACOBS

1. Specialization

Specialization of the industrial structure may be due to the fact that spatial proximity of firms with the same activities creates local external economies or localization economies. These MAR externalities (Glaeser et al., 1992, Henderson et al., 1995) are created for example by a learning-by-doing process in which local firms of a same sector have an advantage to compose knowledge by a repetitive communication. This process leads to a urban sectoral concentration (Premer and Walz, 1994) and may favor local competition. This local competition may stimulate innovation at the urban level (Bairoch, 1985, Porter, 1990). The specialization of the industrial structure at the city-level generates an income dynamics idiosyncratic both to cities and sectors. This may be considered the idiosyncratic component of the national income growth.

2. Diversification

The diversification of the industrial structure, that is the agglomeration of firms of different sectors in the same urban area, may be the consequence of urbanization economies expressed by an improvement of factors productivity. These Jacobs' type externalities (Jacobs, 1969, Glaeser and al., 1992) come from the construction of a technological potential which is build on knowledge diversity. Performance of a sector in a urban area may be influenced by the performance of firms in other sectors. The diversification of the industrial structure generates an income dynamics which is common to all sectors in a city but orthogonal to the other cities. This may be considered as the urban component of the national income growth.

3. Equalization

Equalization of the industrial structure, that is the interactions of firms of a same sector located in different urban area, may be linked by global (i.e. inter-urban) MAR externalities (Englmann and Walz, 1995, Walz, 1996). For example, a good transport network may explain this kind of inter-urban externalities (Kubo, 1995). The equalization of the industrial structure generates an income dynamics which is common to each sector

of all the cities but orthogonal to the other cities. This is the sectoral component of the national income growth.

#### 4. Economic integration

Inter-sectoral and inter-urban relations can be developed if an economic tendency exists which weakens local markets and if the national territory has a sufficient structure to permit a high level of economic integration. From a theoretical point of view, this configuration appears, for example, when transport costs are low and may lead to complete urban/regional specialization, in association with an important inter-urban/regional trade (Walz, 1996, Martin and Ottaviano, 1999). The economic integration induces the income dynamics to be common to all sectors in all cities.

### 3 Dynamic factor analysis

Now we present the statistical model used to measure the degree of specialization (diversification) and equalization (integration) of the U.S manufacturing industry. The analysis is performed through the estimation of a dynamic factor model as in Forni and Reichlin (2001). The income growth,  $y_t^{ij}$ , for the  $j$ -th sector of city  $i$  at time  $t$  is modeled as follows<sup>3</sup>

$$y_t^{ij} = a^{ij}(L)n_t + b^{ij}(L)s_t^j + c^{ij}(L)l_t^i + d^{ij}(L)\varepsilon_t^{ij} \quad (1)$$

for  $i = 1, \dots, I$  and  $j = 1, \dots, J$ .  $a^{ij}(L)$ ,  $b^{ij}(L)$ ,  $c^{ij}(L)$ ,  $d^{ij}(L)$  are rational functions in the lag operator  $L$ ;  $n_t$ ,  $s_t^j$ ,  $l_t^i$ ,  $\varepsilon_t^{ij}$  are unobserved white noises mutually uncorrelated at all leads and lags. In particular,  $n_t$  is an aggregate shock (national or international) common to all cities and sectors;  $s_t^j$  is a sector-specific (sectoral) shock common across cities but orthogonal to the other sectors;  $l_t^i$  is a city-specific shock common across sectors belonging to the same city but orthogonal to the other cities;  $\varepsilon_t^{ij}$  is an idiosyncratic shock. These shocks define the following components:  $a^{ij}(L)n_t$  = the *aggregate component*, it captures the income dynamics which is common to all sectors in all cities;  $b^{ij}(L)s_t^j$  = the *sector-specific* or *sectoral component*, it describes the income dynamics which is common to each sector of all the cities but orthogonal to the other cities;  $c^{ij}(L)l_t^i$  = the *city-specific* or *urban component*, it reflects the income dynamics which is common to all sectors in a city but orthogonal to the other cities;  $d^{ij}(L)\varepsilon_t^{ij}$  = *idiosyncratic component* it describes the income dynamics completely idiosyncratic both to cities and sectors. Note that there is a correspondence between the patterns of regional development showed in Table 1 and the the common

<sup>3</sup>We take the first differences of the variables (in logs), because the hypothesis they are I(1) processes is not rejected. The results on the degree of integration are available on request. Note that the series are washed out by the drift. In other words, we use zero-mean first differences.

and idiosyncratic components isolated using our dynamic factor model. Table 2 describes this correspondence.

**Table 2 Measuring the patterns of development by using a dynamic factor model**

	Sectoral	Inter-Sectoral
<b>City</b>	<i>Specialization</i> Idiosyncratic component	<i>Diversification</i> Urban component
<b>Inter-city</b>	<i>Equalization</i> Sectoral component	<i>Integration</i> Aggregate component

The dynamic specification of the propagation mechanism in (1) is related to two sources of heterogeneity: (i) an heterogeneity due to different responses of the variables to common shocks,  $n_t, s_t^j, l_t^i$  and (ii) an heterogeneity due to different responses to idiosyncratic shocks  $\varepsilon_t^{ij}$ . In the first case, the response functions are described by  $a^{ij}(L)n_t, b^{ij}(L)s_t^j, c^{ij}(L)l_t^i$ , while in the second case by  $d^{ij}(L)\varepsilon_t^{ij}$ . Heterogeneity of type (i) implies that, for example, the responses of each sector of each city to an aggregate shock can be characterized by completely heterogeneous sectoral impulse response functions: the sectoral-urban responses to an aggregate shock can be different in magnitude, in sign, and also in timing. In the long run, the common components cannot diverge in a permanent way because they are driven by a unique shock: they are cointegrated and strictly comove. On the contrary, the heterogeneity of type (ii) implies that the sectoral-urban responses to idiosyncratic shocks are by definition always different both in the short and long run because these shocks are mutually orthogonal. Finally, note that  $n_t, s_t^j, l_t^i, \varepsilon_t^{ij}$  can be transitory or permanent shocks.

The model can be estimated by OLS equation by equation following a five steps procedure. The unobservable shocks  $n_t, s_t^j, l_t^i$  are proxied by weighted averages of the variables calculated for different dimensions: aggregate, sectoral and urban level. The importance of the idiosyncratic shock  $\varepsilon_t^{ij}$  is represented by the OLS residuals. This is a modified version of the estimation procedure proposed by Forni and Reichlin (2001) and presented in the next section.

### 3.1 The estimation procedure

In the following, we present a modified version of the estimation procedure proposed by Forni and Reichlin (2001). Their procedure is adapted to estimate four dynamic factors as in model (1). It is a five steps procedure based on the implications of the Law of Large Numbers<sup>4</sup>.

<sup>4</sup>On this point see Granger (1987) and Forni and Lippi (1997) Chapter 1.

**Step 1.** We perform an OLS estimation of the growth rate of income in each sector-city  $y_t^{ij}$  on the simple aggregate average:  $y_t = \frac{1}{I} \frac{1}{J} \sum_{i=1}^I \sum_{j=1}^J y_t^{ij}$

$$y_t^{ij} = \alpha^{ij}(L)y_t + e_t^{ij}, \quad (2)$$

for each  $i = 1, \dots, I$  and  $j = 1, \dots, J$ .  $\alpha^{ij}(L)$  is specified as a second order polynomial<sup>5</sup>. The var-covar matrix of the residuals is used to construct the matrix of weights  $\omega^{ij}$  useful to compute the new (weighted) aggregate average<sup>6</sup>:  $\bar{y}_t = \sum_{i=1}^I \sum_{j=1}^J \omega^{ij} y_t^{ij}$ . This average is almost-collinear to the aggregate component  $a(L)n_t$  because of the aggregation process (Law of Large Numbers)<sup>7</sup>, that is

$$\bar{y}_t \approx \bar{a}(L)n_t, \quad (3)$$

where  $\bar{a}(L) = \sum_{i=1}^I \sum_{j=1}^J \omega^{ij} a^{ij}(L)$ . In other words, the unobservable factor  $a(L)n_t$  in model (1) can be proxied by using the observable  $\bar{y}_t$ .

**Step 2.** Now we regress OLS equation by equation  $y_t^{ij}$  on  $\bar{y}_t$  obtained above and on the simple average of each city:  $y_t^i = \frac{1}{J} \sum_{j=1}^J y_t^{ij}$ .

$$y_t^{ij} = \bar{\alpha}^{ij}(L)\bar{y}_t + \gamma^{ij}(L)y_t^i + h_t^{ij}. \quad (4)$$

As in Step 1, the var-covar matrix of the OLS residuals  $h_t^{ij}$  can be used to obtain the weights to construct new urban averages (relative to each city):  $\bar{y}_t^i = \sum_{j=1}^J \bar{\omega}^j y_t^{ij}$ . Also in this case we use a second order specification for  $\bar{\alpha}^{ij}(L)$  and  $\gamma^{ij}(L)$ . As in the case of the weighted aggregate average, the weighted average of the city is almost collinear to the aggregate and local components that is

$$\bar{y}_t^i \approx \bar{a}^i(L)n_t + \bar{c}^i(L)l_t^i, \quad (5)$$

where  $\bar{c}^i(L) = \sum_{j=1}^J \bar{\omega}^j c^{ij}(L)$  and  $\bar{a}^i(L) = \sum_{j=1}^J \bar{\omega}^j a^{ij}(L)$ .

<sup>5</sup>We tried different specifications for  $\alpha^{ij}(L)$ , including leads and lags of  $\bar{y}_t$ . We found that on average a two lags specification could not be rejected by the F-test.

<sup>6</sup>For the optimal weighting procedure see Forni and Reichlin (2001).

<sup>7</sup>When  $I$  and  $J$  are relatively large, the orthogonality of the sectoral, urban and idiosyncratic shocks implies that the variances of the sectoral, local and idiosyncratic components are small compared to the total one.

**Step3** Similarly to Step 2, we regress OLS equation by equation  $y_t^{ij}$  on the weighted aggregate average  $\bar{y}_t$  and on the simple average of each sector:

$$\bar{y}_t^j = \frac{1}{I} \sum_{i=1}^I y_t^{ij}, \text{ i.e.}$$

$$y_t^{ij} = \tilde{a}^{ij}(L)\bar{y}_t + \beta^{ij}(L)y_t^j + k_t^{ij}. \quad (6)$$

We use a second order specification for  $\tilde{a}^{ij}(L)$  and  $\beta^{ij}(L)$ . The var-covar matrix of the residuals,  $k_t^{ij}$ , can be used to obtain the weights to construct a new sectoral averages:  $\bar{y}_t^j = \sum_{i=1}^I \tilde{\omega}^i y_t^{ij}$ . It is almost collinear to the aggregate and sectoral components:

$$\bar{y}_t^j \approx \tilde{a}^j(L)n_t + \bar{b}^j(L)s_t^j, \quad (7)$$

where  $\bar{b}^j(L) = \sum_{i=1}^I \tilde{\omega}^i b^{ij}(L)$  and  $\tilde{a}^j(L) = \tilde{\omega}^i a^{ij}(L)$ .

**Step 4** Now we can obtain the sectoral and local components. In particular, the local component of each  $i$  is the OLS residual of a regression of the weighted urban average and weighted aggregate average obtained in Step 1 and 2:

$$\bar{y}_t^i = \alpha^i(L)\bar{y}_t + \xi_t^i, \quad (8)$$

where  $\xi_t^i = \bar{c}^i(L)l_t^i$ .

The sectoral component is obtained in a similar way by using the weighted aggregate average and weighted sectoral average obtained in Step 1 and 3:

$$y_t^j = \alpha^j(L)\bar{y}_t + z_t^j, \quad (9)$$

where  $z_t^j = \bar{b}^j(L)s_t^j$ .

**Step 5.** The final step allows us to derive the idiosyncratic components. First, we regress  $y_t^{ij}$  on the weighted aggregate averages:

$$y_t^{ij} = A^{ij}(L)\bar{y}_t + x_t^{ij} \quad (10)$$

Then, the OLS residuals  $x_t^{ij}$  are regressed on the residuals  $\xi_t^i$  and  $z_t^j$  representing respectively the local and sectoral components. Hence,

$$x_t^{ij} = B^{ij}(L)z_t^j + C^{ij}(L)\xi_t^i + \varkappa_t^{ij} \quad (11)$$

where  $A^{ij}(L)\bar{a}(L) = a^{ij}(L)$ ,  $B^{ij}(L)\bar{b}^j(L) = b^{ij}(L)$ ,  $C^{ij}(L)\bar{c}^i(L) = c^{ij}(L)$ .

## 4 Data and results

The dataset we use is REIS (Regional Economic Information System). It stems from the U.S Department of Commerce, Economic and Statistic Administration, Bureau of Economic Analysis. We consider the growth rate of *earnings* of 20 manufacturing sectors (2-digit) belonging to 61 US Metropolitan Statistical Areas (MSAs). The span of the analysis is 1969-1993. In Appendix we report the complete list of sectors and metropolitan areas used. The series are deflated by the national consumer price index. From now on we will refer indifferently to earnings or income and to metropolitan areas or cities.

Table 3 shows the variance decomposition derived by model (1). It focuses on the relative weight of common, urban, sectoral and idiosyncratic components. It suggests that there is no evidence that a particular type of externalities prevail to explain the urban industrial development.

Local factors explain 53% of the total variance of income growth, in particular the urban component explains 26.23% while the idiosyncratic component the remaining 26.87%. This outcome suggests that local factors and local MAR and Jacobs externalities are important to explain the industrial development.

Aggregate factors also play an important role to explain the urban industrial structure (46.9%). For example, an expansive monetary policy or a technological shock that hit the whole industrial system, or a particular national policy act to help a particular industry equally represented in all the cities and global MAR and Jacobs externalities represent factors that contribute to explain the common and sectoral variance of income growth.

If we focus on the sectoral vs. inter-sectoral dimensions of urban growth, both at the local and the global levels, we find that the sectoral dimension represents 54.13% of the variance of urban growth while the inter-sectoral dimension represents only 45.87% of this variance. In other words, the sectoral dimension of urban growth plays a slightly more important role than the inter-sectoral one in the explanation of US SMA growth between 1969 and 1993.

**Table 3 Percentage of variance explained by the common, urban, sectoral and idiosyncratic components**

	Sectoral	Inter-Sectoral
City	Idiosyncratic = 26.87%	Urban = 26.23%
Inter-City	Sectoral = 27.26%	Common = 19.64%

## 5 Conclusions

This paper contributes to the empirics of externalities. In particular, it proposes new measures of the degree of specialization (diversification) and equalization (integration) of 20 U.S manufacturing sectors belonging to 61 U.S metropolitan areas (MSAs). These measures are used to derive indirect evidence of the presence of local MAR (Jacobs) and global MAR (Jacobs) externalities. For this aim, we use a *dynamic factor model* and a modified version of the estimation procedure proposed by Forni and Reichlin (2001).

Our empirical investigation suggests that no one type of externality predominates in the explanation of the U.S (urban) industrial development, i.e. local/global MAR and local/global Jacobs externalities are equally represented. With respect to the existing empirical literature on this topic, we analyze local or global externalities in a unique model, i.e. they are modeled simultaneously.

Our methodology can be extended in a number of directions. For example, it is possible to replicate the analysis focusing on the distinction between high-tech and low tech sectors to check if MAR externalities are important for both groups whereas Jacobs externalities are important only for high-tech sectors (Henderson et al., 1995). Moreover, it is possible to derive a more precise indication of the role of innovation spillovers distinguishing between long run and short run features of the data and their variance decomposition.

## References

- [1] Bairoch P. (1985), *De Jéricho à Mexico, villes et économie dans l'histoire*, Gallimard, Paris.
- [2] Blanchard, O. and Katz, L.F. (1992), "Regional Evolutions", *Brookings Papers on Economic Activity*, 1, 1-75.
- [3] Englmann, F.C. and Walz, U (1995), "Industrial centers and regional growth in the presence of local inputs", *Journal of Regional Science*, 35(1), 3-27.
- [4] Feldman, M.P. and Audretsch D.B. (1999), "Innovation in cities: Science-Based diversity, specialization and localized competition", *European Economic Review*, 43, 409-429.
- [5] Forni, M. and Lippi, M. (1997), *Aggregation and the Microfoundations of Macroeconomics*, Oxford Economic Press.
- [6] Forni, M. and Paba, S., (2001), "Knowledge Spillovers and the Growth of Local Industries", CEPR, 2934, forthcoming *Journal of Industrial Economics*.
- [7] Forni, M. and Reichlin L., (2001), "Federal policies and local economies. Europe and the United States", *European Economic Review*, 45(1), 109-34.

- [8] Glaeser, L., Kallai H.D., Scheinkman J.,A., and Shleifer A. (1992), "Growth in Cities"; *Journal of Political Economy*, 100 (61), 1126-1152.
- [9] Granger, C.W.J. (1987), "Implication of aggregation with common factors", *Econometric Theory*, 3, 208-22.
- [10] Englemann, F.C. and Walz, U. (1995), Industrial centers and regional growth in the presence of local inputs, *Journal of Regional Science*, 35(1), 3-27.
- [11] Henderson, V., Kuncoro, A., and Turner M. (1995), "Industrial Development in Cities", *Journal of Political Economics*, 103(51), 1067-1090.
- [12] Jacobs J. (1969), *The economy of the cities*, New York, Random House.
- [13] Kubo Y. (1995), "Scale economies, regional externalities and the possibility of uneven regional development", *Journal of Regional Science*, 35(1), pp. 29-42.
- [14] Jaffe, A.B., Trajtenberg M., and Henderson, R. (1993), "Geographical Localization of Knowledge Spillovers as Evidenced by Patent Citations", *Quarterly Journal of Economics*, 108, 577-98.
- [15] Lippi, M. and Reichlin, L. (1994), "Diffusion of technological change and the decomposition of output into trend and cycle", *Review of Economic Studies*, 61, 19-30.
- [16] Martin, P., and Ottaviano, G.I.P. (1999), "Growing locations: industry location in a model of endogenous growth", *European Economic Review*, 43, 281-302.
- [17] Pistoresi, B. and Strozzi, C. (2001), Rent sharing in wage determination, CEPR discussion paper, 2939.
- [18] Porter M., (1990)}, *The competitive advantage of nations*, The MacMillan Press LTD, London and Basingstoke.
- [19] Premer M., and Walz U. (1994), "Divergent regional development, factor mobility and nontraded goods", *Regional Science and Urban Economics*, 24, p. 707-722.
- [20] Walz, U., (1996), Transport costs, intermediate goods and localized growth, *Regional Science and Urban Economics*, 26, 671-695.

# APPENDIX

In the following we list the metropolitan areas and manufacturing sectors used in the empirical analysis

## Metropolitan Areas

- 1) Akron (OH)
- 2) Bakersfield (CA)
- 3) Bangor (ME)
- 4) Benton Harbor (MI)
- 5) Bergen-Passaic (NJ)
- 6) Buffalo-Niagara Falls (NY)
- 7) Chicago (IL)
- 8) Cleveland-Lorain Elyria (OH)
- 9) Colorado Springs (CO)
- 10) Dallas (TX)
- 11) Detroit (MI)
- 12) El Paso (TX)
- 13) Elkhart - Goshen (IN)
- 14) Erie (PA)
- 15) Eugene - Springfield (OR)
- 16) Flint (MI)
- 17) Fort Lauderdale (FL)
- 18) Fort Myers-Cape Coral (FL)
- 19) Fresno (CA)
- 20) Hamilton - Middletown (OH)
- 21) Jackson (MI)
- 22) Jersey City (MI)
- 23) Lakeland-Winter Haven (FL)
- 24) Lancaster (PA)
- 25) Los Angeles - Long Beach (CA)
- 26) Lubbock (TX)
- 27) Madison (WI)
- 28) Melbourne - Titusville - Palm Bay (FL)
- 29) Miami (FL)
- 30) Milwaukee - Waukesha (WI)
- 31) Modesto (CA)
- 32) Massau - Suffolk (NY)
- 33) New York (NY)
- 34) Oakland (CA)
- 35) Orange County (CA)
- 36) Phoenix - Mesa (AZ)
- 37) Portland (ME)
- 38) Provo-Oren (UT)

- 39) Racine (WI)
- 40) Reading (PA)
- 41) Reno (NV)
- 42) Riverside-San Bernardino (CA)
- 43) Salinas (CA)
- 44) San Diego (CA)
- 45) San Francisco (CA)
- 46) San Jose (CA)
- 47) S. Barbara-S.Maria - Lompoc (CA)
- 48) Santa Rosa (CA)
- 49) Seattle-Bellevue-Everett (WA)
- 50) South Bend (IN)
- 51) Spokane (WA)
- 52) Springfield (MA)
- 53) Stockton-Lodi (CA)
- 54) Tacoma (WA)
- 55) Trenton (NJ)
- 56) Tucson (AZ)
- 57) Ventura (CA)
- 58) Waco (TX)
- 59) West Palm Beach - Bocaaton (FL)
- 60) Williansport (PA)
- 61) York (PA)

### Manufacturing sectors (2-digit)

- 1) Food and kindred products
- 2) Textile mill products
- 3) Appareal and other textile products
- 4) Paper and allied products
- 5) Printing and publishing
- 6) Chemicals and allied products
- 7) Petroleum and coal products
- 8) Rubber and miscellaneous products
- 9) Leather and leather products
- 10) Lumber and wood products
- 11) Furniture and fixtures
- 12) Primary metal industries
- 13) Fabricated metal products
- 14) Machinery and computer equipment
- 15) Electric equipment, exclude computer equipment
- 16) Transport equipment exclude motor vehicles
- 17) Motor vehicles and equipment
- 18) Stone, clay and glass products
- 19) Instruments and related products
- 20) Miscellaneous manufacturing industries



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2. Sergio Lugaesi [1986] "Le imposte nelle teorie del sovrappiù", pp. 26
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4. Gian Paolo Caselli e Gabriele Pastrello [1986] "Un suggerimento hobsoniano su terziario ed occupazione: il caso degli Stati Uniti 1960/1983", pp. 52
5. Paolo Bosi e Paolo Silvestri [1986] "La distribuzione per aree disciplinari dei fondi destinati ai Dipartimenti, Istituti e Centri dell'Università di Modena: una proposta di riforma", pp. 25
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18. Mario Forni [1986] "Aggregazione ed esogeneità", pp. 13
19. Sergio Lugaesi [1987] "Redistribuzione del reddito, consumi e occupazione", pp. 17
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76. Enrico Giovannetti [1990] "Crisi e mercato del lavoro in un distretto industriale: il bacino delle ceramiche. Sez. II", pp. 145
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77. Antonietta Bassetti e Costanza Torricelli [1990] "Il portafoglio ottimo come soluzione di un gioco bargaining", pp. 15
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123. Giovanni Bonifati [1995] "Cambiamento tecnico e crescita endogena: una valutazione critica delle ipotesi del modello di Romer" pp. 21
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130. Carlo Alberto Magni [1996] "Vaghezza e logica fuzzy nella valutazione di un'opzione reale" pp. 20
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133. Carlo Alberto Magni [1996] "Un esempio di investimento industriale con interazione competitiva e avversione al rischio" pp. 20
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137. David Avra Lane, Irene Poli, Michele Lalla, Alberto Roverato [1996] "Lezioni di probabilità e inferenza statistica - Esercizi svolti -" pp. 302
138. Barbara Pistoresi [1996] "Is an Aggregate Error Correction Model Representative of Disaggregate Behaviours? An example" pp. 24
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155. Paolo Silvestri, Giuseppe Catalano, Cristina Bevilacqua [1996] "Le tasse universitarie e gli interventi per il diritto allo studio: la prima fase di applicazione di una nuova normativa" pp. 159
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157. Paolo Silvestri, Giuseppe Catalano [1996] "Le risorse del sistema universitario italiano: finanziamento e governo" pp. 400
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160. Tito Pietra, Paolo Siconolfi [1996] "Extrinsic Uncertainty and the Informational Role of Prices" pp. 42
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162. David Lane [1996] "Is what is good for each best for all? Learning from others in the information contagion model" pp. 18

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171. Mario Forni, Lucrezia Reichlin [1997] "National Policies and Local Economies: Europe and the US" pp. 22
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181. Luisa Malaguti e Costanza Torricelli [1997] "The Interaction Between Monetary Policy and the Expectation Hypothesis of the Term Structure of Interest rates in a N-Period Rational Expectation Model" pp. 27
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184. Francesca Bergamini e Stefano Bordini [1997] "Una verifica empirica di un nuovo metodo di selezione ottima di portafoglio" pp. 22
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211. Carlo Alberto Magni [1997] "Critica alla definizione classica di investimento: un approccio sistemico" pp. 17
212. Alberto Roverato [1997] "Asymptotic prior to posterior analysis for graphical gaussian models" pp. 8
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215. Tindara Addabbo [1998] "Lavoro non pagato e reddito esteso: una applicazione alle famiglie italiane in cui entrambi i coniugi sono lavoratori dipendenti" pp. 54

216. Tindara Addabbo [1998] "Probabilità di occupazione e aspettative individuali" pp. 36
217. Lara Magnani [1998] "Transazioni, contratti e organizzazioni: una chiave di lettura della teoria economica dell'organizzazione" pp. 39
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219. Lara Magnani [1998] "L'organizzazione delle transizioni di subfornitura nel distretto industriale" pp. 40
220. Antonio Ribba [1998] "Recursive VAR orderings and identification of permanent and transitory shocks" pp. 12
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223. Paolo Bosi, Maria Cecilia Guerra e Paolo Silvestri [1998] "La spesa sociale nel comune Modena Rapporto intermedio" pp. 37
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240. Costanza Torricelli e Gianluca Di Lorenzo [1998] "Una nota sui fondamenti matematico-finanziari della teoria delle aspettative della struttura della scadenza" pp. 15
241. Christophe Croux, Mario Fonti e Lucrezia Reichlin [1998] "A Measure of Comovement for Economic Indicators: Theory and Empirics" pp. 23
242. Carlo Alberto Magni [1998] "Note sparse sul dilemma del prigioniero (e non solo)" pp. 13
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253. Luigi Brighi [1998] "A Case of Optimal Regulation with Multidimensional Private Information" pp. 20
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255. Paola Mengoli e Margherita Russo [1998] "Technical and Vocational Education and Training in Italy: Structure and Changes at National and Regional Level" pp. 25
256. Tindara Addabbo [1998] "On-the-Job Search a Microeconomic Analysis on Italian Data" pp. 29
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258. Mario Forni e Marco Lippi [1999] "The generalized dynamic factor model: representation theory" pp. 25
259. Andrea Ginzburg e Annamaria Simonazzi [1999] "Foreign debt cycles and the 'Gibson Paradox': an interpretative hypothesis" pp. 38
260. Paolo Bosi [1999] "La riforma della spesa per assistenza dalla Commissione Onofri ad oggi: una valutazione in corso d'opera" pp. 56
261. Marcello D'Amato e Barbara Pistoresi [1999] "Go and soothe the row. Delegation of monetary policy under private information" pp. 23
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265. Graziella Bertocchi e Michael Spagat [1999] "The Politics of Copulation" pp. 14
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270. Tito Pietra e Paolo Siconolfi [1999] "Volume of Trade and Revelation of Information" pp. 31
271. Antonella Picchio [1999] "La questione del lavoro non pagato nella produzione di servizi nel nucleo domestico (Household)" pp.58
272. Margherita Russo [1999] "Complementary Innovations and Generative Relationships in a Small Business Production System: the Case of Kervit" pp. 27
273. André Dumas [1999] "L'Economie de la drouge" pp. 12
274. André Dumas [1999] "L'Euro à l'heure actuelle" pp. 12
275. Michele Lalla Gisella Facchinetti [1999] "La valutazione della attività didattica: un confronto tra scale di misura e insiemi sfocati" pp.32
276. Mario Biagioli [1999] "Formazione e valorizzazione del capitale umano: un'indagine sui paesi dell'Unione Europea" pp.21
277. Mario Biagioli [1999] "Disoccupazione, formazione del capitale umano e determinazione dei salari individuali: un'indagine su microdati nei paesi dell'Unione Europea" pp. 15
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279. Luca Gambetti [1999] "The Real Effect of Monetary Policy: a New Var Identification Procedure" pp. 22
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282. Silvia Muzzioli Costanza Torricelli [1999] "A Model for Pricing an Option with a Fuzzy Payoff" pp. 13
283. Antonella Caiumi Federico Perali [1999] "Povertà e Welfare in Italia in Relazione alla Scelta della Scala di Equivalenza" pp.25
284. Marcello Galli Tommaso Minerva [1999] "Algoritmi Genetici per l'Evoluzione di Modelli Lineari *Metodologia ad Applicazioni*" pp. 36
285. Mario Forni Sergio Paba [1999] "Knowledge Spillovers and the Growth of Local Industries" pp. 20
286. Gisella Facchinetti Giovanni Mastroleo [1999] "Un confronto tra uno score card ed un approccio fuzzy per la concessione del credito personale" pp.27
287. Gisella Facchinetti Giovanni Mastroleo e Sergio Paba [1999] "A Statistical and Fuzzy Algorithm for the Identification of Industrial Districts" pp. 6
288. Tommaso Minerva [1999] "Didattica e Informatica- *Una indagine Statistica relativa alla Provincia di Modena sul rapporto tra Insegnanti e Nuove Tecnologie*" pp. 46
289. Andrea Ginzburg [1999] "Sraffa e l'analisi sociale: alcune note metodologiche" pp. 37
290. Consolato Pellegrino Carla Fiori [1999] "Piani Formalmente Euclidei" pp. 11
291. Nicolina A. Malara, Maria Teresa Brandoli e Carla Fiori [1999] "Comportamenti di Studenti in Ingresso all'Università di Fronte allo Studio di Disequazioni" pp. 15
292. Consolato Pellegrino Maria Teresa Brandoli [1999] "Il Principio D'Induzione Euristica-Mente Parlando" pp. 11
293. Paolo Bertella Farnetti [1999] "Winston Churchill e l'unità europea" pp. 25
294. Tindara Addabbo Massimo Baldini [1999] "Safety net and poverty dynamics in Italy in the early nineties" pp. 23
295. Margherita Russo [2000] "Innovation Dynamics and Industrial Dynamics in a Local Production System. Changes in the Agents/Artifacts Space in Tile Decoration: from Silk Screen to Laser Engraved Silicon Cylinder" pp. 45
296. Gianluca Masci e Margherita Russo [2000] "L'attività brevettale nel distretto ceramico, 1971-1998" pp. 41
297. Paola Mengoli e Margherita Russo [2000] "Competenze, innovazione e sviluppo locale" pp. 31
298. Gian Paolo Caselli e Tommaso Minerva [2000] "The Transition Process in Russia and China and the Ising Model" pp. 30
299. Gisella Facchinetti, Giovanni Mastroleo e Sergio Paba [2000] "A Fuzzy Approach to the Empirical Identification of Industrial Districts" pp. 7
300. Tommaso Minerva, Irene Poli and Sebastiano Brusco [2000] "A Cellular Automaton as a Model to Study the Dynamics of an Industrial District" pp. 6
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302. Marco Mazzoli [2000] "Investments and Financial Structure with Imperfect Financial Markets: an Intertemporal Discrete-Time Framework" pp.13
303. Giuseppe Marotta [2000] "Il credito commerciale in Italia: evidenza su dati d'impresa" pp. 29
304. Marco Mazzoli [2000] "Credit Channel and Industrial Firms' Market power" pp. 15
305. Gisella Facchinetti e Giovanni Mastroleo [2000] "The Mamdani and the  $\alpha$ -operator in a Fuzzy Logic Control System" pp. 17
306. Giovanni Solinas e Giovanni Mastroleo [2000] "Benchmarking certificazione della qualità e piccole imprese. La sperimentazione di un modello europeo nelle piccole imprese in Emilia Romagna" pp. 45
307. Margherita Russo, Giorgio Allari, Silvano Bertini, Paolo Bonaretti, Elio De Leo, Giuseppe Fiorani and Gianni Rinaldini [2000] "The Challenges for the Next Debit: Notes for a debate on the Development of the Emilia-Romagna Region" pp. 27
308. Giovanni Mastroleo [2000] "L'integrazione dell'indagine statistica con l'approccio fuzzy nel controllo di efficacia: il monitoraggio sugli obiettivi raggiunti nell'ambito di un P.O.M." pp. 24
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311. Tommaso Minerva e Sandra Paterlini [2000] "Tecniche Computazionali per la Statistica, l'Economia e la Finanza, *Materiale Didattico a Supporto del Corso di Statistica Computazionale*" pp.52
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313. Marco Mazzoli e Roberto Negrini [2000] "Strumenti finanziari negoziabili e incentivo-compatibili per le imprese cooperative. *Alcune considerazioni teoriche e di policy*" pp. 32
314. Giacomo Galeotti e Tommaso Minerva [2000] "Algoritmi ibridi per l'ottimizzazione di un Portafoglio Azionario. *Simulazione stocastica filtrata mediante wavelet decomposition*" pp.33
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316. Carlo Alberto Magni [2000] "Scomposizione di sovrappiù: Economic Value Added e valore aggiunto sistematico" pp. 25
317. Carlo Alberto Magni [2000] "Decomposition of a Certain Cash Flow Stream: Systemic Value Added and Net Final Value" pp. 30
318. Carlo Alberto Magni [2000] "Systemic Value Added, Residual Income and Decomposition of a Cash Flow Stream" pp 27
319. Gisella Facchinetti e Giovanni Mastroleo [2000] "La valutazione del rischio di frode nel ramo assicurativo R.C. auto: una proposta in logica Fuzzy" pp. 16

320. Gian Paolo Caselli e Gabriele Pastrello [2000] "Eltsin: Dimissioni o Licenziamento?" pp. 18
321. Gisella Facchinetti, Carlo Alberto Magni e Giovanni Mastroleo [2000] "Real Options: a Fuzzy Approach for Strategic Investments" pp.44
322. Stefano Bordoni [2000] "Applicazione Fuzzy per la determinazione del premio assicurativo" pp. 35
323. Gabriele Pastrello [2000] "Una distrazione di Marx" pp. 17
324. Marco Mazzoli [2000] "Canale creditizio, struttura di mercato, modifiche istituzionali e meccanismo di trasmissione della politica monetaria" pp. 18
325. Paola Bertolini e Luca Riazzi [2000] "L'applicabilità dello strumento futures al Mediterraneo: riflessioni su un fallimento" pp.28
326. Enrico Giovannetti [2000] "Istituzioni e costi transattivi: l'impatto della regolazione dell'offerta nelle filiere agroindustriali" pp. 26
327. Gian Paolo Caselli e Marta Rosso [2000] "La moneta elettronica: aspetti di regolamentazione finanziaria".
328. Barbara Pistoiesi e Chiara Strozzi [2000] "Labor Productivity and Labor Cost Dynamics in Italy: the Role of Wage Bargaining" pp. 23
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330. Carlo Alberto Magni [2000] "On Decomposing Net Final Values: Svsstemic Value Added and Shadow Project" pp. 26
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332. Paolo Bosi, Massimo Baldini, Maria Cecilia Guerra e Paolo Silvestri [2000] "La scelta tra ICI e Addizionale all'Irpef nella Politica tributaria locale: aspetti distributivi" pp. 27
333. Marina Murat e Sergio Paba [2000] "Flussi migratori e modelli di sviluppo industriale- L'esperienza italiana dal dopoguerra agli anni novanta" pp. 32
334. Marco Mazzoli e Roberto Negrini [2000] "Incentive-Compatible Financial Instruments for Co-Operative Firms: a Few Policy Considerations" pp. 27
335. Massimo Baldini e Paolo Bosi [2000] "Riforme trasparenti e proposte opache" pp. 10
336. Paolo Bosi [2000] "La selettività nelle politiche sociali in Italia: riflessioni sull'esperienza dell'Isce" pp. 16
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338. Tindara Addabbo e Massimo Baldini [2000] "The Gender Impact of Workfare Policies in Italy and the Effect of Unpaid Work" pp. 15
339. Gian Paolo Caselli e Thoma Grid [2000] "La storia economica albanese 1912-1939 e lo stabilirsi dell'egemonia italiana" pp. 46
340. Tommaso Minerva [2000] "La costruzione di modelli con algoritmi genetici" pp. 183
341. Giovanni Bonifati [2000] "PRODUZIONE, INVESTIMENTI E PRODUTTIVITA'. Rendimenti crescenti e cambiamento strutturale nell'industria manifatturiera americana (1960-1994)" pp. 43
342. Luciano Messori [2000] "Struttura e quantificazione di una imposizione fiscale Pigouviana sulla benzina" pp. 20
343. Carlo Alberto Magni [2000] "Zelig and the Art of Measuring Residual Income" pp. 18
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345. Enrico Giovannetti [2001] "Processi di vita delle imprese cooperative: mezzo secolo di cooperazione a Modena, dal dopoguerra a oggi" pp. 34
346. Giuseppe Marotta [2001] "Is Trade Credit More Expensive Than Bank Loans? Evidence from Italian Firm-level Data" pp. 26
347. Massimo Baldini e Paolo Bosi [2001] "Flat Rate Tax, Dividendo sociale e riforma dei programmi di spesa di assistenza" pp. 34
348. Paolo Bosi e Maria Cecilia Guerra [2001] "Meno Tasse per tutti: lusinghe e ambiguità di uno slogan" pp. 17
349. Danilo Mercurio e Costanza Torricelli [2001] "Estimation and Arbitrage Opportunities for Exchange Rate Baskets" pp. 27
350. Gian Paolo Caselli e Grid Thoma [2001] "L'economia albanese durante il secondo conflitto mondiale e il primo tentativo di pianificazione" pp n. 33
351. Massimo Baldini e Carlo Mazzaferro [2001] "Sistema pensionistico e distribuzione dei redditi in Italia dal 1997 al 1998: un'analisi sull'archivio storico dell'indagine campionaria della banca d'Italia" pp.16
352. Silvia Giannini [2001] "La tassazione del reddito d'impresa e le scelte di investimento, finanziamento e localizzazione dell'attività produttiva" pp. 13
353. Michele Baccarini [2001] "Un quadro normativo delle fattispecie contrattuali "atipiche" in Italia. *Disciplina legislativa e definizioni statistiche del lavoro a tempo parziale*" pp. 29
354. Michele Baccarini [2001] "Sul grado di volontarietà e di sottoccupazione del lavoro dipendente "atipico". *Un'analisi delle valutazioni dei lavoratori*" pp. 43
355. Maria Cecilia Guerra [2001] "La Previdenza Complementare deve essere incentivata fiscalmente?" pp. 22
356. Gabriele Pastrello [2001] "An Oversight of Marx's" pp. 66
357. Alberto Roverato e Consonni Guido [2001] "Compatible prior distributions for DAG models" pp. 28
358. Luigi Brighi e Reinhard John [2001] "Characterizations of Pseudomonotone Maps and Economic Equilibrium" pp.25
359. Luigi Brighi [2001] "A Stronger Criterion for the Weak Weak Axiom" pp.16
360. Luigi Brighi [2001] "The Weak Axiom, the  $\sigma$ -Axiom and Complete Non-Transitive Rationality" pp.14
361. Luigi Brighi e Reinhard John [2001] "Some Conditions for Wald's Weak Axiom" pp. 10
362. Sebastiano Brusco, Tommaso Minerva e Giovanni Solinas [2001] "Un automa cellulare per lo studio dei distretti industriali" pp. 30
363. Nicola Walter Palmieri [2001] "Internet e la libertà di espressione" pp. 65
364. Marco Mazzoli [2001] "A Simple Enquiry on Heterogeneous Lending Rates and Lending Behaviour" pp. 37
365. Massimo Baldini e Paolo Onofri [2001] "Transizione demografica e mercati finanziari" pp. 19
366. Marco Mazzoli [2001] "Industrial Firms' Market Power and Credit Market Oligopsony in Developing Countries" pp.14
367. Gisella Facchinetti, Silvio Giove e Nicoletta Pacchiarotti [2001] "Optimisation of a Fuzzy non Linear Function" pp. 10
368. Silvia Muzzioli e Costanza Torricelli [2001] "Implied Trees in Illiquid Markets: a Choquet Pricing Approach" pp. 18
369. Cinzia Mortarino [2001] "A Decomposition for a Stochastic Matrix with an Application to Manova" pp.
370. Sandra Paterlini e Tommaso Minerva [2001] "Evolutionary Cluster Analysis" pp. 8
371. Paola Bertolini [2001] "Globalisation et Systèmes Agro-alimentaires de qualité en Italie. Le cas du District de Trasformation des Viandes Porcines" pp. 28
372. Sandra Paterlini, Francesco Pattarin e Tommaso Minerva [2001] "Time Series and Data Clustering with Evolutionary Approaches" pp. 26

373. Giovanna Procacci, Luigi Tommasini, Nicola Labanca, Giancarlo Falco, Fabrizio Bienintesi, Alessandro Polsi, Paul Corner e Leonardo Paggi [2001] "Assistenzialismo e politiche di controllo sociale nell' Italia liberale e fascista" pp. 240
374. Andrea Ginzburg e Antonio Ribba [2001] "Vizi e virtù del monetarismo democratico: un promemoria per il futuro" pp. 31
375. Giuseppe Marotta [2001] "La direttiva comunitaria contro i ritardi nei pagamenti tra imprese. Alcune riflessioni sul caso italiano" pp. 20
376. Carlo Mazzaferro e Stefano Toso [2001] "La spesa per previdenza ed assistenza: riforme in corso e nuovi scenari" pp.16
377. Silvia Giannini e Maria Cecilia Guerra [2001] "Requiem per la riforma Visco?" pp.25
378. Andrea Francalanci e Stefano Toso [2001] "Spesa sociale e meccanismi di mercato: i buoni servizio (*vouchers*)" pp. 25
379. Maria Elena Bontempi, Silvia Giannini, Maria Cecilia Guerra e Angela Tiraferri [2001] "Incentivi agli investimenti e tassazione del reddito di impresa: una valutazione delle recenti innovazioni normative" pp. 33
380. Marina Murat [2001] "Growth, Trade and Unemployment" pp.34
381. Tindara Addabbo F. Olivier [2001] "Offerta di lavoro e servizi all'infanzia in Italia" pp.23
382. Enrico Giovannetti [2001] "Evoluzione delle imprese cooperative: un'analisi con i modelli di durata" pp.22
383. Luigi Brighi e Marcello D'Amato [2001] "Two-Dimensional Screening: A Case of Monopoly Regulation" pp. 20
384. Enrico Giovannetti [2001] "Le virtù dei commons: imprese cooperative e formazione di beni pubblici di filiera" pp. 30
385. Enrico Giovannetti [2001] "La divisione del lavoro è limitata dalla divisione del lavoro" pp. 26
386. Paola Bertolini, Michele Bruni e Enrico Giovannetti [2001] "Struttura produttiva e mercato del lavoro nell'agroindustria: evoluzione tecnologica e bisogni formativi" pp. 174
387. Luca Gambetti e Barbara Pistoresi [2001] "Policy Matters. The Long Run Effects of Aggregate Demand and Mark Up Shocks on the Italian Unemployment Rate" pp. 19
388. Paola Bertolini e Montanari Marco [2001] "Valutazione dell'allargamento dell'unione europea ad Est attraverso un modello gravitazionale" pp. 20
389. Massimo Baldini [2001] "Politiche Pubbliche Locali e Diseguaglianza dei Redditi" pp. 39
390. Carlo Mazzaferro [2001] "Uno schema per la valutazione del trattamento fiscale del risparmio pensionistico" pp.16
391. Paolo Bertella Farnetti [2001] "Disegni d'Europa. La lotta per l'unità europea negli Stati Uniti, 1940-1945" pp. 46
392. Claudio Marra [2001] "Fattori sociologici e fattori psicologici nello studio delle relazioni interetniche: il concetto di atteggiamento" pp. 119
393. Anna Maria Sala [2001] "Marchio di qualità e servizi turistici" pp.
394. Michele Lalla [2001] "Struttura e cambiamento nelle relazioni tra le imprese metalmeccaniche nella provincia di Modena. II Distribuzioni degli addetti e pesi per le stime dei parametri" pp. 24
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396. Elena Pirani e Margherita Russo [2001] "Struttura e cambiamento nelle relazioni tra le imprese metalmeccaniche nella provincia di Modena. III Aspetti metodologici dell'indagine empirica: fase di rilevazione, controlli e statistiche preliminari" pp
397. Margherita Russo e Rossella Ruggeri [2001] "Memoria e identità: un binomio creativo. *Proposta per il recupero di parte dell'edificio della più antica fabbrica metalmeccanica di Modena: Officine Rizzi*" pp. 38
398. Margherita Russo e Elena Pirani [2001] "Struttura e cambiamento nelle relazioni tra le imprese metalmeccaniche nella provincia di Modena. IV Primi risultati dell'indagine empirica" pp. 88
399. Giovanni Solinas [2002] "La certificazione come strumento per la politica industriale. *L'esperienza dell'Emilia Romagna*" pp. 28
400. Antonio Ribba [2002] "Persistent Disinflationary Effects on Unemployment in a Small Open Economy: Italy 1979-1995" pp. 20
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402. Paolo Bosi e M. Cecilia Guerra [2002] "The Role of Tax Incentives in Voluntary Pensions Schemes in Italy: what can other Countries learn from this?"
403. Baldini Massimo e Paolo Bosi [2002] "L'imposta sul reddito nel disegno di legge delega della riforma fiscale del Governo Berlusconi: effetti di gettito e distributivi" pp. 30
404. Donoghue, Baldini, Bosi, Mantovani, Toso et Al.[2002] "The Impact of Means Tested Assistance in Southern Europe" pp.20
405. Bertella Farnetti [2002] "George Kennan e la divisione dell'Europa dopo la seconda guerra mondiale" pp. 111
406. Francesco Forte Gisella Facchinetti Michela Mantovani e Giovanni Mastroleo [2002] "Auction Reserve Prices Modelled by Fuzzy Export System" pp.16