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Social Capital and the Creative Class

Civil Society, Regional Development and High-Tech Industry in Japan

Hans Westlund
National Institute for Working Life, Östersund, Sweden

Federica Calidoni-Lundberg
Swedish Institute for Growth Policy Studies, Östersund, Sweden

itps SWEDISH INSTITUTE FOR GROWTH POLICY STUDIES

ITPS, Swedish Institute For Growth Policy Studies
Studentplan 3, SE-831 40 Östersund, Sweden
Telephone: +46 (0)63 16 66 00
Fax: +46 (0)63 16 66 01
E-mail info@itps.se
www.itps.se
ISSN 1652-0483

For further information, please contact Federica Calidoni-Lundberg
Telephone 063 166 617
E-mail federica.calidonilundberg@itps.se

Foreword

Do the social and cultural environments have any impact on regional development, expressed in terms of e.g. entrepreneurship, innovations and growth of new industries? A rapidly increasing field of research has found many indications on that such an impact of the civil society exists. In the literature, two partly contradicting hypotheses can be discerned: 1. Putnam's hypothesis, saying that a homogenous civil society with common norms and values and trust between its citizens is having a positive impact on regional development, and; 2. Florida's hypothesis, saying that a heterogeneous civil society with diverse values combined with tolerance is influencing regional growth in a positive way.

This paper studies the validity of these two hypotheses on the current regional development in Japan, measured in the form of population growth and high-tech industry's regional distribution. As determining variables, we use data from the Japanese General Social Surveys' International Comparative Survey on Values and Behavioral Patterns, plus control variables in the form of market accessibility, human capital, measured in the share of university educated, and share of the population being born abroad. The analysis does not give any significant support to any of the civil society hypotheses. Some alternative explanations to this are discussed.

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Håkan Gadd
Director of Evaluation

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Table of Content

Introduction

Since the 1970s the core regions of the manufacturing industry have been suffering from crises, closedowns and most serious: lack of new, growing industries. The strong growth in e.g. information and communications industries, financial industries and media has occurred in other regions than the centers of manufacturing. Why has that happened? This paper discusses the role of a factor that increasingly has come into focus in the general debate and in research: the civil society.

As is the case with many other concepts, "civil society" has a number of various definitions.[1] Here we start from the working definition formulated by the Centre of Civil Society of the London School of Economics:

> *Civil society refers to the arena of uncoerced collective action around shared interests, purposes and values. In theory, its institutional forms are distinct from those of the state, family and market, though in practice, the boundaries between state, civil society, family and market are often complex, blurred and negotiated. Civil society commonly embraces a diversity of spaces, actors and institutional forms, varying in their degree of formality, autonomy and power. Civil societies are often populated by organisations such as registered charities, development non-governmental organisations, community groups, women's organisations, faith-based organisations, professional associations, trades unions, self-help groups, social movements, business associations, coalitions and advocacy group.*

(www.lse.ac.uk/collections/CCS/ what_is_civil_society.htm 2006-02-01).

The civil society is often defined and measured in quantitative terms, e.g. the number of Non-Governmental Organizations (NGOs) and their number of members. However, in this study we focus upon the qualitative aspects of civil society, i.e. the norms, values and attitudes and their possible impact on regional development.

An attempt to answer the question on civil society's impact on regions' growth and transformation can take classic economic theory as a starting point. Ever since Adam Smith (1776) the concept of *specialization* forms a fundamental explanation to economic growth. Specialization and division of work has been a main method in organization and streamlining of industrial production.

[1] For a comprehensive discussion of the concept, see Ehrenberg (1999).

Also in space, on local and regional level, corresponding specialization of production can be found throughout history. In many cases, spatial specialization have been based on specific natural assets, but already Marshall (1880) stressed the specific knowledge that seems to be in "the air" in specialized industrial districts and that contributes to raised productivity and competitiveness. Scholars like Porter (e.g. 1990) and Krugman (e.g. 1991) have developed theories of regional specialization and thereby contributed to the now very popular cluster policies.

Spatial specialization is not only applied to the economic sphere of society. The regional civil societies have been formed in interplay with the regional environments of production. In the typical Swedish community during the manufacturing industrial period, *brusorten* (the small industrial community), a homogeneous civil society with stabile relations and a joint understanding on the common interests of the local industry and the local community was formed. In the large industrial districts of continental Europe and the UK, the understanding between labor and capital was less extended, but the civil societies being formed were strongly characterized by the industrial environment: a "masculine" civil society with strong solidarity, powerful labor organizations and where the soccer club was an important symbol for the region.

The thesis on specialization as the key to economic growth is based on fundamental assumptions about how equilibrium emerges on the market. Economic theory has been very successful in explaining such equilibrium processes and it is no exaggeration to say that equilibrium theory is the core of economics. Much less attention has been given to processes disturbing economic and spatial equilibrium. Schumpeter stressed the role of the entrepreneur in disturbing equilibrium through new combination of production factors, which resulted in new production functions and new economic growth. However, Schumpeter's entrepreneur did not only create new growth, but did as well ruin the prerequisites for the old production. The entrepreneur did not only create new, more efficient firms, but also bankruptcies, unemployment and other problems when old firms could not survive. This double role of the entrepreneur makes it possible to realize why entrepreneurship often is met by resistance.

After the industrial crisis in the 1970s, the thoughts of Schumpeter has gained a renaissance and entrepreneurship is today a term of fashion. Other concepts closely connected to entrepreneurship are creativity and innovations. Today, it is a conventional wisdom that characteristics like these form prerequisites for economic growth. But which factors of society are spurring these highly coveted qualities? Could it be that creativity, entrepreneurship and innovations to a

certain extent are depending on norms, attitudes and values of the civil society? Schumpeter would likely have answered yes:

> *In the breast of one who wishes to do something new, the forces of habit rise up and bear witness against the embryonic project.... [Then there is] the reaction of the social environment against one who wishes to do something new.... any deviating conduct by a member of a social group is condemned, though in greatly varying degrees according as the social group is used to such conduct or not.... This opposition is stronger in primitive stages of culture than in others, but it is never absent. Even mere astonishment at the deviation, even merely noticing it, exercises a pressure on the individual. The manifestation of condemnation may even come to social ostracism and finally to physical prevention or to direct attack.... Surmounting this opposition is always a special kind of task which does not exist in the customary course of life, a task which also requires a special kind of conduct. (Schumpeter 1934, p. 86f).*

An entrepreneur of Schumpeter's type is not only threatening economic competitors but also the relative safety of a strong local community, be it a village, an industrial town or an administration city. Thus, it is hardly surprising if the norms of civil society have prevented entrepreneurship throughout history.

The various values of groups and individuals, as well as their organized expressions, are accommodated in the civil society. Old and new ideas and interests are confronted with each other, but normally there are during an era certain values being predominating in the civil society.[2] In general it is reasonable to assume some kind of interaction between the economic structures and civil society's predominating values. To start with, civil society's prevalent values are preventing new features, but if they slowly break through, civil society adapts. In this way it is possible to explain why the values of civil society have first resisted innovations, but after their breakthrough they have supported existing specialization, and prevented entrepreneurship in competing industries and other potential changes. This slowed down the pace of change during periods of transformation – but during industrial society's stabile growth periods it was contributing to increased growth.

Thus, when the industrial society was established and the wheels were rolling it was "more of the same" and no new entrepreneurship that favored growth at the most. However, when the crisis of the 1990s came, the industrial regions were equipped with obsolete trades and industries and a civil society lacking

[2] Hegel's concept *Zeitgeist* might be considered a denomination for these predominating values, at least in the modern use of the concept.

the creativity, entrepreneurship and capacity to innovate which would have been able to contribute to structural renewal.

The growth having occurred in the OECD countries after the 1970s has primarily taken place in regions where the manufacturing industrial "spirit" never prevailed, i.e. in metropolitan regions with universities and diverse business structures, and a number of medium-sized university cities. The established explanations to their growth, supported by a large amount of research in this field, is that the growing industries have been more knowledge intense and therefore easier developed in regions with a large supply of high educated labor, and that the larger labor markets of the metropolitan regions acted like a magnet, as they facilitate for people to change job without having to move. There is no doubt that these explanations have a large validity.

However, as argued above, there are good reasons to investigate a complimentary explanation to the growth of these regions, viz. their – in a broad meaning – civil societies. There are many observations of regional variations of the civil society within a country, both in terms of predominating values, the diversity of values and the organized expressions of this. The industrial town and the metropolitan city show up considerable differences in these respects.

Much of what is written on connections between civil society and its expressions in the form of social capital, values, lifestyles, leisure activities, culture, etc and regional growth is anecdotal "evidence", based on single examples. The two most systematic, comprehensive and significant contributions on civil society's impact on regional development have been made by Florida (2002, 2003, 2005) and Putnam (1993, 2000). There are large and important differences between their theoretical approaches, questions of issue, methods and conclusions. Of course it should also be underlined that their hypotheses include other active factors than the civil society. But they have in common the thesis that a region's civil society is having an impact on the region's economic development.[3]

According to Florida, the driving force in the knowledge economy is the "creative class" comprising more than 30 percent of the American population. It is where the members of this class chose to settle that decides where regional growth is taking place. Florida (2002) presents a number of factors which he considers to be important for the creative class' choice of region:

[3] It should be noted that neither Putnam nor Florida uses the concept of civil society. Putnam mostly used the term "civic community" and Florida talks of "creative centres", equipped with technology, talent and tolerance, as opposed to other community types.

- A large, dense labor market that facilitates job mobility
- A lifestyle with a broad supply of leisure activities
- Cafes and other meeting places for social interaction
- Diversity and tolerance of different ideas, lifestyles, cultures and ethnicity
- The regions'/place's authenticity in the form of own culture
- The region's/place's identity which have increased in importance when other forms of identity have decreased

By constructions of regional indexes over creativity and various lifestyle variables, Florida shows the existence of covariation between growth of high-tech industries, creativity and modern lifestyles. These factors are summarized under the "3T" concept (Technology, Talent and Tolerance). It does not seem as Florida considers one T being the cause of the others: "To attract creative people (…) a place must have all three" (Florida 2003, p. 10). On the other hand, he does suggest a cause and effect: "… talent or creative capital is attracted to places that score high on our basic indicators of diversity" (Florida 2003, p. 10), which can be interpreted as that tolerance is being an attracting force for talent (as Florida defines diversity as one component part of tolerance). However, Florida's basic model seems to be that "… regional growth comes from the 3Ts…" (Florida 2003, p. 11). We denominate this as "the Florida hypothesis".

Florida's factors of creative regions are to a large extent reflecting various aspects of the civil society (albeit he is not using that term). However, the civil society that Florida depicts is something completely different from the civic community that Putnam (1993, 2000) describes as the foundation for democracy and regional development. According to Putnam, it is not primarily a diversified community with many, loose networks where various lifestyles are tolerated that support regional development, but a community with strong social networks with homogenous norms and values. One of the key factors of a well-functioning community is *trust* between its actors. It can be argued that trust lowers transaction costs and thereby improves industry's conditions, as well as that trust creates a "good" community which attracts people – both factors having a positive impact on regional development. This is in this paper referred to as "the Putnam hypothesis".

The difference between the two scholars is reflected in their use of concepts. As noted, neither of them uses the term civil society, although both of them are discussing the norms, values and social networks of the civil society. Also, Florida

raises strong criticism against Putnam's view that "social capital" is a factor contributing to regional development. Instead, Florida has launched the term "creative capital".

However, in our opinion both of them are dealing with civil society's norms, values and the networks that these values and norms are distributed in, i.e. what usually is defined as social capital. The difference is that, while Putnam is relating to a homogeneous civil society with common norms and networks, Florida refers to an individualized, heterogeneous one with divergent norms and separate networks. Westlund (2005) has suggested that Putnam mainly is referring to the relatively stabile civil society which (after it had been established) was adapted to the industrial epoch's production and decision environments, while Florida is basing his reasoning on central characteristics of the knowledge economy's expanding regions.

The differences between Putnam and Florida can be connected to a discussion among American sociologists. While Putnam takes his theoretical base in Coleman's (1998) view that delimitation or enclosure is a source of social capital, Burt (1992) have launched the concept of "structural holes" between different groups/networks as a starting point for the emergence of new social capital, as a "broker" can create links across these holes and generate exchange between the separate groups/networks. Woolcock (1998) has classified the two types of links that Coleman and Burt respectively build their reasoning upon as bonding and bridging, a division with obvious relevance to Putnam's and Florida's divergent perspectives.[4] Both Burt and Woolcock are probably inspired by Granovetter's (1973) distinction between strong and weak ties.

This paper aims at investigating the possible validity of the two, partly contradicting, hypotheses on the impact of civil society on regional development in Japan, the world's second largest economy. Section 2 summarizes previous research on these issues. Section 3 describes the methods and the data used. Section 4 contains the empirical results and some concluding remarks.

[4] The terms bonding and bridging social capital are used in Putnam (2000) as well. However, Westlund and Bolton (2003) have pointed out that the distinction between bonding and bridging links is not as clear as it may seem, as bridging links on one level at the same time can constitute binding links from a superior perspective. The bridging social links that connect various groups in a region constitute at the same time the binding putty that holds the region together against the outside world, etc.

1 Previous research

1.1 Research connected to Putnam's and Florida's hypotheses

Research on social capital has been one of the most expanding fields of the social sciences the last 10 years. However, the empirical studies of the connections between social capital and economic development have been fairly limited, mainly due to a lack of consensus on appropriate measures (Beugelsdijk and van Schaik 2005). There are also a number of studies of regions or nations indicating a positive relationship between social capital and economic measures (e.g. Putnam 1993, Knack and Keefer 1997, Zak and Knack 2001, Beugelsdijk and Van Schaik 2005). On the other hand, Putnam's own observations of the United States indicate an almost opposite relationship between a main component of Putnam's social capital – trust – and regional development. Trust is highest in declining rural areas, while it is low in expanding metropolitan regions (Putnam 2001). Similar results have also been found in Europe. Another empirical observation which opposes Putnam's hypothesis is that economic growth boosted in the United States during the 1990s, in spite of the declining social capital of the civil society, the latter clearly documented in Putnam (2000).

Empirical studies of what here is denominated "the Florida hypothesis", i.e. the positive correlation between diversity and tolerance on the one hand and regional development are even less frequent than those of Putnam's. This is probably mainly explained by the fact that Florida's book came nine years after Putnam's and that it usually takes time for new hypotheses to be spread and subject of new studies. As mentioned in Section 1, Florida's own evidence is not based on very thorough scrutiny. European studies based on Florida's ideas are currently going on in a number of countries. In the U.S., Childs (2004) investigated the influence of "the creative capital" on metropolitan growth during the 1990s, but did not find any significant impact. On the other hand, a study by Ottaviano and Peri (2004) supports Florida's general ideas as it finds that ethnic and cultural diversity covariate with regional productivity.

A conclusion is that there so far are a relatively limited number of studies which empirically have tested the different connections between civil society and regional development, suggested by Putnam and Florida respectively. Putnam's hypothesis on the importance on social capital has been in focus of studies on both developed and developing countries, while the hypothesis of Florida so far seems to have been applied on studies of the United States and Europe. The world's second largest economy, Japan, has still not been the subject of any empirical studies.

1.2 The Japanese civil society[5]

A popular explanation to the remarkable economic growth in Japan up to 1990 has been the Japanese "culture". Zhang (1998) emphasizes the importance of the Japanese *group culture* and that Japan seems to have had a capacity for adapting it to societal changes. On the one hand, the Japanese group requires total devotion of its members and a high capacity for cooperation. On the other, an individual can change group when circumstances change. It is "groupism" that persists, not necessarily the particular group.

Zhang (1998) also points out the importance of Confucianism. Although both Japan and China have a strong Confucian heritage, the Confucianism of the two countries is different. While the Chinese applications of Confucianism have supported a relatively higher degree of individualism, the Japanese interpretations of Confucianism have resulted in a strong group culture and loyalty to the group. This group culture provided the basis of nationalism when the West challenged Japan in the 19th century. Catching up to the West by learning and carrying through a rapid industrialization became a matter of national pride. The traditional group culture supported the Japanese industrialization strategy extraordinary well.

A common opinion is that the development of civil society in Japan has been hampered by an unusually imperious state (Schwartz 2003). After World War II, the official nonprofit sector in Japan has consisted of legally well-defined organizations. Government at central and local level has had strong influence over these organizations and the bulk of their incomes have come from the public sector and service fees. Formally independent, these organizations have acted in symbiosis with the government. The last twenty years and in particular after the Kobe earthquake in 1995, has witnessed another type of nonprofit organizations, basically local grassroots groups, engaged in environmental issues, advocacy, community and international issues. Until 1998, these groups had no legal status and received little governmental support. However, the strict regulatory environment is still considered a major obstacle for the growth of the civil society (Schwartz 2003).

A feature of the Japanese civil society seldom mentioned or studied are the local community and residential networks operated by women while the men are at work. It is highly probable that these "invisible" woman networks have played an important role in shaping the social capital of the Japanese civil society – not least due to that many Japanese men have a working situation which does not spare much time for civil activities.

[5] This subsection is mainly based on Westlund (2004)

The Japanese civil society is still less studied than the European and the American and there are no inquiries on its connections to economic growth. If, as suggested above, the civil society of Japan to a certain extent has been carried up by housewives, while the men were at work, this might be interpreted as an indication of a very weak relationship between civil society and the economy. On the other hand, it is possible to argue that this civil society has created very favorable conditions for the men to concentrate on their job and that it thereby has contributed to economic growth.

Thus, the connections between civil society and economic development in Japan seem unclear and contradictory. The relative smallness of civil society suggest that it cannot have contributed much to economic growth, but the homogenous group culture and its importance for economic development is well in line with the "Putnam hypothesis".

Considering the "Florida hypothesis", it has often been argued that Japan is in shortage of some essential features of the knowledge society, primarily creativity and individualism, both strongly connected to entrepreneurship. Japan's long-term strategy of being a follower and an improver of foreign innovations has – in combination with traditional "hierarchical groupism" and risk aversion – come to a dead end when there is no one to follow. The crucial question is how much of the relations, norms and institutions of the industrial economy that are able to contribute to the knowledge economy's growth.

Being a society considerably more culturally and ethnically homogeneous than its American and European counterparts, the "Florida hypothesis" would suggest severe problems for the high-tech industries in Japan. Even if the fifteen years of economic stagnation after 1990 mainly can be explained by other factors (the finance bubble, the bank system and a political volition to avoid changes) the Florida hypothesis might perhaps serve as an additional explanation.

2 Methods and data

As was shown in the previous section, most studies on the impact of civil society on spatial development have focused on quantitative aspects of civil society, such as number of organizations and members, numbers and shares of ethnic or religious groups, bohemians, gays, etc. However, a decisive question is if quantitative measures of numbers and shares always are the best measures of civil society. The number of organizations and members do not say anything about their activity. The diversity of ethnic, religious and other groups in a region does not say anything about the degree of interaction between them. The numbers and shares of organizations, members, networks and groups of different kinds, etc, do not say anything about the norms, values and attitudes within and between these groups. In principle it would be possible to find civil societies with similar quantitative attributes, but with very different qualitative characteristics. Thus – in line with our reference to Schumpeter in Section 1 – there are good arguments to include norms, values and attitudes as explanatory variables if we want to investigate the possible influence of civil society on regional development.

Our data on civil society values are colleted from the Japanese General Social Surveys' International Comparative Survey on Values and Behavioral Patterns 2003, which consisted of 3663 valid responses. Based on the questions three indexes were constructed for 46 of Japan's 47 prefectures.[6] The construction of the indexes is presented in Appendix 1 and the percentage values are found in Appendix 2. It should be pointed out that the limited number of responses per prefecture means that the percentage values in Appendix 2 contains a certain degree of uncertainty.

Based on our summary of "the Florida hypothesis" we investigate if *tolerance, diversity* and *talent* are factors that promote regional development. Based on our summary of "the Putnam hypothesis" we examine whether *trust* and *homogeneity* are factors behind regional development. In addition to the abovementioned qualitative measures of the civil society, a quantitative measure of diversity was tested, viz. the share of foreigners of the total population. Thus, the impact of the *values of civil society* on regional development is measured by indexes of *tolerance* and *diversity* (Florida) and *trust* and *homogeneity* (Putnam). Diversity and homogeneity are considered as each others opposites and measured by a

[6] Due to its special conditions and remote location, the prefecture of Okinawa was not included in the analysis.

Homogeneity/Diversity index (see below). The impact of the *quantitative composition of the civil society* is measured by the *diversity of the population*.

Beside these measures of civil society, two more general explanatory factors of regional development were used. Based on data on inter-regional accessibility (inter-prefecture level-46 prefectures, except Okinawa; cost and time; railway and car) for 2002 a Population potential or *Aggregate Accessibility Index* was constructed for each prefecture.

$$A_i = \sum_{i=1}^{n} \frac{P_i}{D_{i,j}}$$

where P is the population of each prefecture and D is the average distance between prefecture i and prefecture j. The accessibility index is here used as an approximate measure of a number of variables which normally show spatial covariation: access to (spatially determined) markets for input (incl. labor) and output (incl. market segments for highly specialized products); access to university and industry R&D; access to venture capital and traditional forms of financial capital, etc. The other general variable was human capital, measured as the share of the population having university education. This variable is in principle a measure of Florida's *talent*[7] and can be considered a part of the Florida hypothesis, but it should be pointed out that the role of human capital for economic development was stressed already by Schultz (1961) and Becker (1964) and is thus nothing new.

As measures of the dependent variable, regional development, we use two alternative variables: *population growth* 2000–2005 and the share of *high-tech industry* 2003/2004 of the total workforce. Moreover, we double check our results substituting a measure of *value added growth* to the population growth. Having *employment in high-tech industry* as dependent variable is not wholly corresponding to Florida's statement that "a place must have all three", but as Florida's findings show spatial covariations between the 3Ts, we here test if such a pattern is existing in Japan.

The high-tech industry has been defined by the Milken Institute (DeVol 1999, p. 34) whose definition also was used by Florida (2002).[8] This could mean that

[7] "Talent is defined as those with a bachelor's degree and above" (Florida 2003, p. 10).

[8] The Milken Institute's American definition was based on the US Standard Industrial Classification (SIC). This was transformed to the OECD's International Standard Industrial Classification (ISIC) which in its turn was transformed to the Japanese Standard Industrial Classification (JSIC). Appendix 1 presents the industries denominated as high-tech in this study.

our test would favor Florida's hypothesis, as he puts the high-tech industry in the center of his analysis, while Putnam refers to more general measures of regional development. However, regions with expanding high-tech industries normally do very well also concerning general regional development, which would mean that Putnam's hypothesis would be valid for them too.

Data on population are taken from Japan Statistical Yearbook edited by Statistical Research and Training Institute (MIC); while data on employment were provided by the Japanese Ministry of Economy, Trade and Industry (METI) 2003. Data on employment in service sectors defined as high-tech were available only for 2004. The sum of these two variables formed total employment in high-tech 2003/2004. As no detailed data for the service sectors' are available on regional level for earlier years, estimations of the growth of the total high-tech industry was not possible.

Ordinary least square regressions were used in the estimations:

$$\dot{Pop}_{i,t-1,t} = \alpha + \beta_1 tr_{i,t-1} + \beta_2 tol_{i,t-1} + \beta_3 ho_{i,t-1} + \beta_4 acc_{i,t-1} + \beta_5 hk_{i,t-1} + \beta_6 for_{i,t-1} + \mu_t$$

$$L_{i,t} = \alpha + \beta_1 tr_{i,t-1} + \beta_2 tol_{i,t-1} + \beta_3 ho_{i,t-1} + \beta_4 acc_{i,t-1} + \beta_5 hk_{i,t-1} + \beta_6 for_{i,t-1} + \mu_t$$

Where $\dot{Pop}_{i,t-1,t}$ is the rate of growth of population by prefecture *i* between *t-1*(2000) and *t* (2004); $L_{i,t}$ is the share of employment in high tech over total employment in each prefecture *i* at time *t*. While $tr_{i,t-1}$, $tol_{i,t-1}$ and $ho_{i,t-1}$ are, the level of Trust, Tolerance and Homogeneity in 2000 respectively, as explained in Appendix 1; and $acc_{i,t-1}$, $hk_{i,t-1}$ and $for_{i,t-1}$ are the quantitative measures of Accessibility, Human capital and the share of Foreigners respectively.

3 Results and interpretation

A first test of the covariations between the population growth and the explanatory variables is shown in Table 1. All variables show positive correlations with population growth, but there is a clear difference between the variables measuring qualitative values of the civil society and the three quantitative variables, the latter showing considerably higher correlations. It should also be noted that there are strong correlations between the three quantitative variables and between the group Trust-Tolerance and the Homogeneity/Diversity Index.

Table 1 Correlation matrix of all the variables

	Pop 2000-04	**Emp2004**	**Trust**	**Tole-rance**	**Hom/ Div**	**Foreig-ners**	**HumanC**	**Access**
Pop 2000-04	1							
Emp 2004	0.5105	1						
Trust	0.1306	0.0149	1					
Tolerance	0.1742	0.0617	0.2604	1				
Hom/Div	0.111	-0.033	0.326	-0.084	1			
Foreigners	0.635	0.5569	0.0166	0.1091	-0.0797	1		
Human C	0.5967	0.3614	0.1738	0.2633	-0.0009	0.5506	1	
Access	0.6975	0.5283	0.0688	0.2664	-0.0212	0.7482	0.8141	1

The results of the regression analysis with population growth as independent variable are shown in Table 2 and 3. In Table 2 all the independent variables are included. In Table 3 each of the quantitative variables are analyzed separately to avoid the influence of collinearity.

Table 2 OLS regression between population growth (2000–2004) and the explanatory variables

	Growth of population 2000-2004
Trust Index	0.004 0.26
Tolerance Index	0.002 0.11
Homogeneity Index	0.098 1.14
Share of Foreigners	0.808 1.77
Human Capital	0.059 0.61
Accessibility	0.006 1.55
Constant	-0.041 -2.47
R-squared	0.54

In Table 1 the qualitative, civil society variables show positive sign except for "Homogeneity" which is weakly negative when correlated to the level of employment in high-tech. However, homogeneity is more positively significant than the other "civil variables" (trust and tolerance) when we regress all the variables against population growth, as shown in Table 2. Of the quantitative variables, accessibility and share of foreigners are significant with a positive coefficient, but as shown in Table 3 if the two other quantitative variables are omitted, each of the three variables is significant on 0.00 level. These changes do not cause any significant changes in the explanatory values for the "civil society variables".

Table 3 OLS regression including Trust and Tolerance Index and Homogenity Index in two steps

	Growth of population 2000–2004	**Growth of population 2000–2004**	**Growth of population 2000–2004**
Trust Index	0.006 0.31	-0.003 -0.15	0.008 0.42
Tolerance Index	0.015 0.87	0.005 0.25	-0.002 -0.14
Homogeneity Index	0.117 1.25	0.089 0.91	0.079 0.91
Share of Foreigners	1.726*** 5.41		
Human Capital		0.299*** 4.57	
Accessibility			0.010*** 6.14
Constant	-0.035 -2.40	-0.015 -0.96	-0.064 -4.21
R-squared	0.44	0.37	0.50

*Note: t-statistic in italics. *=0.10;**=0.05;***=0.00*

Thus, the measures of civil society are all far from being statistically significant, but the Homogeneity/Diversity Index is in all the specifications more significant than the Trust and Tolerance Indexes, which could be taken as an indication that Putnam's hypothesis gets a slightly better support than Florida's as a driving force for population growth (negative signs for the Homogeneity/Diversity Index would indicate support for Florida's *diversity* as a influencing variable).

The highly significant *share of foreigners* is, as said above, connected to the Florida hypothesis, but the variable's very strong correlation with accessibility is probably an indication on a general global pattern, viz. that the biggest cities with the highest national accessibility have higher international interaction and exchange. Thus, the share of foreigners is mainly an expression of the prefectures' size, something which probably is positively connected to creativity, but in this relation the share of foreigners seems to be a dependent variable, and accordingly, accessibility is the basic independent variable. More important is that the measure of *talent*, i.e. Human Capital shows a strong influence on population development. Even if human capital

was regarded important for economic growth and other development as early as the 1960s – and thus that Florida's emphasis on talent hardly brings something new – this gives support to a part of the Florida hypothesis.

Table 4 OLS regression between employment shares in high-tech industry (2003/2004) and the explanatory variables

	Share of employment 2000-2004
Trust Index	0.008 0.16
Tolerance Index	-0.017 -0.36
Homogeneity Index	-0.016 -0.07
Share of Foreigners	2.137* 1.68
Human Capital	-0.172 -0.63
Accessibility	0.014 1.40
Constant	-0.018 -0.32
R-squared	0.35

Table 5 OLS regression including Trust and Tolerance Index

	Share of employment 2000-2004	**Share of employment 2000-2004**	**Share of employment 2000-2004**
Trust Index	0.001 0.01	-0.012 -0.21	0.004 0.08
Tolerance Index	0.000 0.01	-0.010 -0.19	-0.031 -0.63
Homogeneity Index	0.019 0.08	-0.041 -0.15	-0.056 -0.23
Share of Foreigners	3.531*** 4.26		
Human Capital		0.443** 2.48	
Accessibility			0.019*** 4.03
Constant	0.033 0.86	0.070 1.64	-0.017 -0.42
R-squared	0.31	0.13	0.29

*Note: t-statistic in italics. *=0.10;**=0.05;***=0.00*

Table 4 shows the results of the regression analysis with the share of employment in high-tech industry as independent variable. Here three variables have turned negative compared with the single correlations: tolerance, homogeneity and human capital, all of them being far from significant. The share of foreigners is significant on 0.10 level. The collinearity between the quantitative variables is evident here too; both accessibility and share of foreigners are significant on 0.00 level and human capital on 0.05 level (positive too), if they are inserted as the only variable of the three (Table 5). None of the three qualitative civil society variables turn out as significant in the divided regressions.

As mentioned in Section 3, the Japanese General Social Surveys' International Comparative Survey on Values and Behavioral Patterns contains a small number of observations per prefecture, which means that the indexes measuring various aspects of civil society to a certain extent might divide from what a larger number of observations might give. In order to diminish the possible errors from the small number of observations, regressions were also run for the 23 prefectures (i.e. half the prefectures) with the largest population. However, the results do not deviate in any significant way from those of the previous tables; each of the

quantitative variables stays positively significant if being single, and the civil society variables mainly stay positive but insignificant.

The same regressions have been run inserting the growth rate of value added between 2000 and 2004 as a third, alternative dependent variable. The results do not differ consistently from the previous ones.[9]

This leaves us with the conclusion that, in form the hypotheses have been operationalized in this paper, the results do not give any significant support for the Putnam hypothesis, but a certain support for the Florida hypothesis concerning the quantitative measures of diversity and talent. However, as pointed out, the diversity measure is mainly a function of regions' accessibility, and the positive impact of human capital on regional development is in correspondence with established human capital theory and no new idea of Florida.

The basic hypothesis on an impact of civil society on regional development in Japan has not found any support in the study. What can be the reason for that? The following explanations are possible:

1 *The hypotheses might be of relevance only in a longer time perspective*. The time span of this analysis is limited to a relatively short period around the year 2000, the main reason being the availability of data. However, it is not improbable that the impact of sluggish, intangible factors of the type we here have tried to analyze is discernable only in the long run. The lack of data constitutes a problem for performing such long-term analyses.

2 *The civil society might have influence on regional economic development in the U.S. (and maybe Europe) but not in Japan*. Japan might be a too homogeneous country to give regional differences of the civil society any impact on regional development. Due to historical reasons, the civil society of Japan is a younger, less developed feature of society – and might therefore be less connected to regions' economic performance – compared with its European and American counterparts. Instead of the social networks of the civil society, it might be the social networks of business life (see e.g. Westlund and Nilsson 2005) that, together with other factors, influence regional economic development in Japan.

3 *Other aspects of the civil society than those measured in this study have an impact on regional development in Japan.* Trust, tolerance and diversity are without doubt important expressions of civil society's norms and values. However, it is possible that it is not differences in values and norms that influence regional development in Japan, but the diversity of leisure

[9] Results are available from the authors on request.

activities and opportunities for social interaction, which are aspects of "the Florida hypothesis" not being tested in this study – or it might be the strength and or/size of social networks (independently of the general trust people express) to mention an element of "the Putnam hypothesis" not being investigated here.

4 *The civil society might be of some importance for regional development expressed in growth of population and high-tech industry (and wage sums), but other factors are more important.* The assumption that a civil society with certain qualities has a positive impact on the regional economy and high-tech industries is built on some results of studies of Italy (Putnam 1993) and the U.S. (Florida 2002, 2003). However, as shown in this study, it is highly probable that high-tech industry's regional growth pattern in Japan is affected by a number of other factors, such as accessibility, existing industries, labor market's size, regional R&D capacity etc, to an extent that make the civil society insignificant.

5 *The civil society might affect other aspects of regional development than population growth and high-tech industry (and wage sums).* In this study we have tested two (three) measures of regional development, of which one (high-tech industry) is explicitly connected to the Florida hypothesis. However, it is possible that civil society might have an impact on other aspects of regional development, i.e. other economic and social factors. This remains to be investigated.

6 *Finally, the measures of trust, tolerance and diversity used in this study might deviate too much from the ideal measures to be able to exert any real influence on regional development.* Transforming theory to empirics is always a problem. The ideal measure of a factor is seldom possible to find or construct. This study is no exception. Although we think that our constructed indexes are fairly good empirical approximations of the theoretical concepts, based on the only existing compiled data in this field, it cannot be excluded that they diverge too much from the ideal to show any explanatory power.

This has been a first attempt to apply two, partly contradicting hypotheses on the impact of civil society on regional economic development, on Japanese data. It should be clearly underlined that what has been denominated as the "Putnam and Florida hypotheses" respectively, are limited to certain aspects of the theories of Putnam and Florida and that the empirical data available itself constitute further limitations. Thus, further research on the relevance of the impact of civil society on regional economic development is needed.

Appendix 1. The data

The dependent variables of our analysis are the rate of population growth and the level of employment in the high-tech industries of 46 Japanese prefectures. Based on the Milken Institute's definition of American high-tech industries, the following Japanese industries have been defined as high-tech industries and included in the analysis:

1731	Basic petrochemical including derivatives produced from an integrated process
1791	Explosives
1792	Agricultural chemicals
2691	Fire extinguishing equipment and its apparatus
2711	Generators, motors and other rotating electrical machinery
2713	Relay switches, switchboards and electrical control equipment
2719	Miscellaneous industrial electrical apparatus
2741	X-ray equipment
2742	Video recording and duplicating equipment
2751	Electrical measuring instruments, except otherwise classified
2752	Industrial process controlling instruments
2753	Medical measuring instruments
2799	Electrical machinery, equipment and supplies, n.e.c.
2811	Communication equipment wired
2821	Computer, except personal computer
2822	Personal computer
2823	Storage
2824	Printer
2829	Miscellaneous peripheral equipment
2911	Electron tubes
2912	Semiconductor devices
2913	Integrated circuits
2919	Miscellaneous electronic parts
3041	Aircraft
3042	Aircraft engines
3049	Miscellaneous aircraft parts and auxiliary equipment
3099	Transportation equipment, n.e.c.
3111	Universal measures
3112	Volumeters
3113	Balances and scales
3121	Surveying instruments

3131	Medical instruments and apparatus
3151	Microscopes and telescopes
3152	Cameras and their parts
4111	Motion picture and video production, except television program production
4112	Television program production,Teleproduction
4113	Motion picture, video and television program distribution
4159	Miscellaneous services incidental to video picture, sound information, character information production and distribution
8051	Architectural design services
8052	Surveying services
8059	Miscellaneous engineering and architectural services
8062	Mechanical design services
8111	Research institutes for physical sciences
8112	Research institutes for engineering
8113	Research institutes for agriculture
8114	Research institutes for medicine and pharmacy
8121	Research institutes for humanities and social sciences
8411	Cinemas
8711	General machine repair shops, except construction and mining machinery
8721	Electrical machinery, apparatus, appliances and supplies repair shop
9021	Commodity inspection services
9032	Environmental surveying certification
9039	Miscellaneous surveyor certification
9093	Non-destructive testing services

Note: No regional data were available for sectors 37–38 (telecommunications and broadcasting) which in accordance with the Milken Institute definition should have been included in the high-tech sector.

The Indexes

1 **Tolerance Index**, consisting of the regional unweighted averages of the individuals' replies (1=tolerant, 0=intolerant) based on the questions:

- **Divorce**: when a marriage is troubled and unhappy is it generally better if the couple gets divorce? (yes=1 no=0)
- Foreign: are you for or against an increase in the number of foreigners in your community? (yes=1 no=0)
- Contfor: have you had any contact with foreigners in Japan? (yes=1 no=0)

- Fjob1: if a husband has sufficient income, is it better for his wife not to have a job? (yes=0 no=1)
- Fjob2: can a working mother establish just as warm and secure a relationship with her children as a mother who does not work? (yes=1 no=0)
- Fjob3: a husband's job is to earn money; a wife's job is to look after the home and family. Do you agree? (yes=0 no=1)
- Fjob4: is having a job the best way for a woman to be an independent person? (yes=1 no=0)
- Kill: when a person has a fatal disease, do you think doctors should be allowed by law to end the patient's life by some painless means if the patient and his/her family request it? (yes=1 no=0)
- Homo: do you think that sexual relations between two adults of the same sex are wrong? (yes=0 no=1)

2 **Trust Index**, consisting of the regional averages unweighted of dummy variables (1=trust in people, 0= no trust) based on the questions:

- Trust1: generally speaking, would you say that most people can be trusted? (yes=1 no=0)
- Evil: do you think human nature is good or evil? (good=1 evil=0)

The Japanese General Social Surveys' International Comparative Survey on Values and Behavioral Patterns contains data at micro level. 3.663 yes-no answers to each of the questions above were transformed to dummy variables (0 and 1) and an average for each question and each prefecture was calculated and then aggregated to indexes.

3 **Homogeneity/Diversity Index.** The homogeneity index is based on the above 11 questions. The index is based on the assumption that a prefecture with a wholly homogeneous opinion in one question would either have the average reply 0 or 1. A prefecture with maximum heterogeneity (diversity) would have the same amount of 0 and 1 replies respectively and thus have the average reply 0.5. Hence we estimate the deviation of the real average for each question from 0.5 and summarize them for the 11 questions for each prefecture. In this way a *Homogeneity index* is obtained. Positive co-variations with the dependent variables might be interpreted as support for the Putnam hypothesis, while negative covariations might be interpreted as support for the Florida hypothesis.

Appendix 2. Indexes

	Trust Index		Tolerance Index		Homogeneity Index	
1	Kouchi	78%	Nigata	73%	Tokushima	15,23%
2	Nagasaki	70%	Nagasaki	67%	Kouchi	15,22%
3	Tottori	60%	Gunmma	64%	Yamanashi	15,15%
4	Oita	59%	Iwate	63%	Toyama	15,09%
5	Tokyo	59%	Okayama	63%	Akita	14,57%
6	Kagoshima	58%	Tokyo	62%	Fukuoka	14,28%
7	Shizuoka	57%	Nara	61%	Shiga	14,16%
8	Kanagawa	54%	Kanagawa	61%	Nagasaki	13,80%
9	Ishikawa	53%	Kyoto	61%	Mie	13,71%
10	Kyoto	53%	Fukuoka	60%	Ehime	13,48%
11	Okayama	53%	Osaka	60%	Oita	13,21%
12	Osaka	53%	Yamanashi	60%	Iwate	13,12%
13	Nigata	52%	Kagoshima	60%	Hiroshima	13,09%
14	Mie	52%	Shizuoka	59%	Miyagi	13,06%
15	Chiba	52%	Wakayama	59%	Chiba	13,05%
16	Iwate	51%	Oita	59%	Fukushima	12,88%
17	Shiga	51%	Kumamoto	58%	Wakayama	12,78%
18	Kumamoto	51%	Nagano	58%	Kagoshima	12,73%
19	Nara	50%	Aomori	57%	Tochigi	12,45%
20	Ehime	50%	Chiba	57%	Aichi	12,38%
21	Kagawa	49%	Saitama	56%	Kanagawa	12,36%
22	Saitama	49%	Hyogo	56%	Tokyo	12,28%
23	Hiroshima	48%	Hokkaido	56%	Miyazaki	12,08%
24	Nagano	48%	Ibaragi	55%	Nara	12,01%
25	Toyama	48%	Tochigi	54%	Kyoto	11,85%
26	Miyagi	48%	Shiga	54%	Kumamoto	11,73%
27	Yamanashi	47%	Saga	54%	Hokkaido	11,43%
28	Fukuoka	46%	Shimane	54%	Saitama	11,20%
29	Akita	46%	Miyazaki	51%	Gifu	11,15%
30	Aichi	46%	Hiroshima	51%	Nagano	11,10%
31	Tochigi	46%	Ishikawa	50%	Osaka	11,07%
32	Ibaragi	45%	Yamaguchi	49%	Ibaragi	11,07%
33	Gunmma	44%	Ehime	47%	Shizuoka	11,02%
34	Hyogo	43%	Fukui	46%	Okayama	10,96%
35	Aomori	43%	Miyagi	46%	Gunmma	10,91%

36	Fukushima	43%	Tokushima	45%	Aomori	10,91%
37	Miyazaki	43%	Kouchi	43%	Kagawa	10,42%
38	Fukui	42%	Fukushima	43%	Fukui	10,31%
39	Hokkaido	41%	Aichi	43%	Nigata	10,10%
40	Shimane	38%	Tottori	40%	Tottori	10,00%
41	Wakayama	38%	Kagawa	39%	Hyogo	9,93%
42	Saga	38%	Yamagata	38%	Yamaguchi	9,86%
43	Gifu	34%	Toyama	36%	Saga	9,66%
44	Yamagata	33%	Akita	36%	Ishikawa	9,39%
45	Tokushima	30%	Mie	34%	Yamagata	8,04%
46	Yamaguchi	30%	Gifu	34%	Shimane	7,14%

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