# Regional representation of creative and knowledge workers in Riga

## A preparatory analysis for surveying the creative and knowledge economy

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**ACRE report [*4.9*]**

Accommodating Creative Knowledge – Competitiveness of European Metropolitan Regions within the Enlarged Union

Amsterdam 2007
AMIDSt, University of Amsterdam

# ACRE

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# 1. INTRODUCTION

## *1.1. Rationale*

The purpose of this paper is to provide an overview of the structure of the creative and knowledge intensive industries in the City of Riga that will be used for the empirical work in the forthcoming ACRE work packages. The sectors considered follow the ACRE definition (NACE codes in brackets). From the creative industries the following sectors are chosen:

- Computer games, software, electronic publishing, software consultancy and supply (722)
- Motion pictures and video activities, radio and TV activities (921 and 922)
- Advertising (744)

From the knowledge intensive industries the choice is as follows:

- Law, legal, accounting, book keeping, auditing etc (741)
- Finance (65)
- Research and development, and higher education (73, 803)

When it comes to the research and development as well as the higher education activities, the ones to be considered in the study will be linked to the other five sectors considered.

The empirical work in the forthcoming work packages will comprise interviews with a number of various stakeholders representing the sectors:

- Employees
- Migrant employees
- Managers
- University graduates
- Art and media school graduates

A total of 250 interviews will be undertaken and the paper will discuss the design and methodology of the empirical study. However, before the methodological issues are addressed the current state of the creative industries and knowledge intensive industries, respectively will be discussed. The focus will be on the six sectors discussed above.

## *1.2. The state of the creative knowledge and knowledge intensive industries in Riga*

In the following an overview of the state of the creative knowledge and knowledge intensive industries in Riga is provided using data from the Central Statistical Bureau of Latvia (this date set is used throughout this paper). Although it is the best data set available for the purpose of this paper, there are several caveats to be considered when using this data set:

- The quality of the data as such, in particular at the disaggregated levels – three and four digit NACE codes.
- The data set do not include self employed persons in the creative knowledge based sectors.
- The statistical classification schemes merge highly qualified and innovative activities with low-skilled and low-wage activities.
- Although many jobs belong to the creative knowledge sectors considered in the ACRE project, in practice many of them are low-skilled and low-wage jobs in labour intensive production processes.

The latter has a particular bearing on the analysis of the employment in the creative knowledge sectors in Riga. Since it has to be taken into account that both the Latvian GDP/capita as well as the Latvian wages are considerably lower than the European Union average. Although the Latvian salaries have increased considerably in real terms during the last 3-4 years, they are relatively low by European Union standards and hence many European manufacturers, for example from the Nordic countries, have outsourced relatively low skilled production in the creative industries and knowledge intensive industries sectors to Latvia. The impact of low wages etc. is also reflected in the statistics for the creative knowledge sectors in Riga. The total number of employees in the by ACRE defined creative knowledge sectors is approximately 110,000 or roughly one third of Riga's employees are working in the creative knowledge sectors. However, a majority of them are involved in low-skilled, low-wage work.

# 2. EMPLOYEES IN CREATIVE AND IN KNOWLEDGE INTENSIVE INDUSTRIES

## 2.1 The dataset

The creative and the knowledge intensive sectors in Riga employ in total somewhat more than 110,000 persons. Put differently, roughly one third of Riga's employees are active in the creative and knowledge intensive sectors. A closer look at the data provided in the Appendix reveals that approximately 11,000 are employed in what in this paper are the creative industries of particular interest, i.e. software etc., motion pictures, and advertising. As regards the knowledge intensive sectors to be studies in detail, i.e. legal and auditing, finance, and research and higher education, approximately 50,000 persons are employed in these sectors.

However, when looking at the number of employees in the creative and knowledge intensive sectors, it is important to keep in mind that the statistical reporting does not distinguish between highly qualified and innovative activities on the one hand and the low-skilled, low-wage activities on the other – as long as they are all considered to be in the same sector, they all count. In particular for a country like Latvia, this complicates the analysis as well as the comparison with other European metropolitan areas since the data overestimates the size of the creative and knowledge based sectors by including in the employment figures, what is believed to be a fairly large number of employees performing low-skilled activities outsourced to Latvia exploiting the relatively low wages by European standards. Hence, the situation is to a large extent opposite to that of many Western European metropolitan areas where the size of the creative and knowledge based sectors has fallen due to outsourcing of low-skilled jobs to locations with lower labour costs, e.g. Riga.

On the other hand, the numbers presented in the Appendix do not include persons who are self-employed. Anecdotal evidence suggests that this form of employment is quite common among the workers in the creative and knowledge intensive sectors. Hence, unlike the previously discussed effect, this one contributes to an underestimation of the activity level in the sectors studied.

Finally, the data obtained from the Central Statistical Bureau of Latvia and which is used throughout this paper is at the 'Riga-level'. Although it is the best data set available for the purposes of this study, it is of fairly poor quality and there are plenty of inconsistencies. The follow example might serve as an illustration: NACE 7220 (Software Consultancy and supply: computer games) has around 200 companies reported, but no turnover. Furthermore there might not be observations for all years in the time period considered (2001-2005) and/or during the period there might have been in changes in the classification of activities, i.e. one activity could have 'belonged' to one NACE code in one year and to another one the next. Overall this means that any type of analysis will be subject to a quite large part of uncertainty – in particular the analysis of the dynamics might be difficult. The 'best' of the data sets is probably the one presented in table 3 in the Appendix – the number of employees in each

sector. Hence, the forthcoming analysis will mainly use the number of employees when characterizing the selected creative and knowledge intensive sectors.

## 2.2. Creative industries workers

The creative industries sectors to be considered in this study had the following number of employees in 2005:

- Computer games, software, electronic publishing, software consultancy and supply (NACE 722): 5,398 employees.
- Motion pictures and video activities, radio and TV activities (NACE 921 and 922): 2,177 employees.
- Advertising (NACE 744): 3,455 employees.

### *2.2.1. Computer games, software, electronic publishing, software consultancy and supply*

This sector has expanded rapidly in terms of employees during the last years and although there are not statistics available for Riga alone it is reasonable to assume that it has expanded it terms of number of companies as well. Unlike many of the other creative and knowledge intensive industries discussed in this paper, a vast majority of the employees in this sector are most likely high skilled creative employees.

The link between this sector and the next of the selected ones, motion picture and video activities etc., is interesting and the following could serve as an example[1]:

*In addition, with the advent and inevitability of digital content in audiovisual production, Latvia – being one of the major IT hubs in Eastern Europe – has great IT potential and capacity to support creative industries seeking professional solutions. For example, DD studio (www.dd.lv) is a digital design company creating visualizations of digital information using innovative ideas, various types of media and most recent technology. Their award-winning projects (the prestigious FIAMP2006 award for the best cd/dvd-rom) combine multimedia design and excellent functionality. In developing projects, Dd studio collaborates with Dd laboratory, a professional creative company that cultivates the cultural development and profession growth of the digital environment, creating high-quality examples of digital culture in Latvia and elsewhere.*

Hence, as the example above shows, there are quite strong linkages between the software sector and the other two creative industry sectors considered in this study, i.e. motion pictures as well as advertising.

[1] Quotation from *Audiovisual Production in Latvia, A Nordic Context*, National Film Centre of Latvia, the Nordic Council of Ministers, Riga, 2007.

### *2.2.2. Motion pictures and video activities, radio and TV activities*

The roots of the film industry go back to the early 1920s. During the close to 50 years of Soviet occupation more than 200 feature films were produced. The heydays in terms of film production were the 1970s and 1980s when there were on average 7-8 feature releases a year. They were mainly distributed in the Soviet Union. After the restored Latvian independence, the film industry was disrupted. However, it managed to survive by adapting to the new realities that came with market economy. During 2005 Latvian films were screened in 52 countries, took part in 245 world-wide events, and received over 30 awards.

Today the industry is on its way back to the previous production levels. The production consists of feature films, documentaries as well as animation. There are also links to the computer games industry.

Although the salaries in the Latvian film industry still are lower than in Western Europe, an increasing fraction of the services provided by the Latvian film industry is based on production know-how, i.e. not only on cheap labour and good locations. Northern Europe's largest film studios are located in Riga and just outside Riga is a recently built studio pavilion.

### *2.2.3 Advertising*

The advertising sector in Riga has grown considerably both in terms of employees and in terms of turnover. The turnover has doubled (in real terms) during the five-year period 2001-2005. To a large extent this reflects the rapid Latvian economic growth during the period, to a large extent fuelled by consumption, and the emergence of a middle class. Inspection of the tables in the Appendix reveals that the average company is fairly small, both in terms of turnover and number of employees. Finally, like in many other creative industries the activities in advertising ranges from highly qualified to very standardised activities, where the latter should be 'avoided' in the interviews.

In Riga, where ethnic Latvians just comprise close to half of the population, there is an ethnic dimension to activities in the field of media and advertising. There are companies serving the Latvian language market and other companies serving the Russian language market.

## 2.3. Knowledge intensive industries workers

The knowledge intensive industries sectors to be considered in this study had the following number of employees in 2005:

- Law, legal, accounting, book keeping, auditing etc (NACE 741): 8,229 employees.

- Finance (NACE 65): 13,139
- Research and development, and higher education (NACE 73 and 803): 20,505 employees.

The number of employees in this sector was roughly three times higher in 2005 compared to the situation in five years earlier. This development mimics to a large extent the growth of the Latvian economic, the increased number of businesses and hence the increased the demand for the sector's services. Although located in Riga, many of the companies in this sector serve the entire Latvia.

### *2.3.2. Finance*

The period 2001-2005 saw a fast expansion of the financial sector in Riga, which is the financial centre of Latvia. To a large extent this expansion reflects Latvia's recent rapid economic growth. In total there are 25 banks in Latvia. Approximately one third of them are owned by Nordic banks, and out of the three biggest ones, two are owned by Nordic banks. Out of the 25 banks, there are a number that more or less exclusively serve non-resident, mainly Russian, clients.

The Latvian financial market is still in many ways in its infancy. Very limited financial instruments are offered and regularly traded. Furthermore, the trading as well as the number of companies listed on the Riga Stock Exchange is low. The same applies to the retail financial services offered by the banking sector – they are to a large extent standard payment, savings and credit products. On the other hand, the Latvian banks have been very active and also highly successful in developing e-based products within the field of standard services. In many cases, they have been in forefront, well ahead of their Nordic 'mother banks'. However, despite the development in e-banking and related e-services, the Latvian banking system is still fairly labour intensive relying on low labour costs relative to those in the parent Nordic banks. Recently, Scandinavian banks have begun to relocate back office activities to Riga in order to benefit from the relatively low labour costs.

Recent years have seen a number of small investments banks being established. These offer highly specialized services and have highly qualified employees.

### *2.3.3 Research and development, and higher education*

The higher number of employees reflects the fact that Riga is the main educational and scientific centre in Latvia. Most of the country's scientific and academic institutions are located in Riga and the Riga region. Out of Latvia's 32 universities or institutions of higher education, 26 are located in the Riga region. Among them are Latvia's two leading universities: University of Latvia (26,000 enrolled students, out which 21,000 are enrolled as full time students) and Riga Technical University (16,000 enrolled students, out of which 10,000 are enrolled as full time students). In total there around 93,000 students enrolled at

Riga's universities and institutions of higher education. Out of these students 60,000 are enrolled at public universities and institutions of higher education, whereas 33,000 are enrolled at private ones. The public universities still employ a large number of low-skilled, low-wage employees.

In terms of academic research, there are several research institutes associated with the public academic institutions. However, so far there has been limited success in commercializing research and developing relationships with industry/business.

## 3. UNIVERSITY STUDENTS AND GRADUATES

The share of Riga's economically active population with tertiary education is 16 percent (the corresponding number for Latvia is 12 percent). Although the share of population with tertiary education in Latvia is low by European standards, the number of students enrolled in tertiary education is high. There are close to 60 students in higher education per 1,000 population – the highest number in Europe. The education in Latvia is to a large extent oriented towards the social sciences and humanities (in particular business administration, economics, finance and law).

In Riga a total of 93,000 are enrolled in tertiary education; 60,000 of them at public universities and institutions of higher education, where 33,000 are enrolled in private institutions of higher education. The number of foreign students enrolled is low, since most of the tuition is in Latvian language.

Among the public universities and institutions of higher education in Riga are (all numbers reflect the academic year 2006/2007):

- University of Latvia: 26,006 enrolled students
- Riga Technical University: 16,520 enrolled students
- Stradins University: 4,298 enrolled students
- Latvian Cultural Academy: 709 enrolled students
- Latvian Art Academy: 647 enrolled students
- Latvian Music Academy: 589 enrolled students
- Banking Institution of Higher Education: 2,456 enrolled students
- Stockholm School of Economics in Riga: 395 enrolled students

Among the private institutions of higher education in Riga are (all numbers reflect the academic year 2006/2007):

- Baltic International Academy: 7,980 enrolled students
- School of Business Administration Turiba: 6,595 enrolled students
- Riga International School of Economics and Business Administration: 4,143 enrolled students
- Information Management Systems Institute: 2,590 enrolled students
- Higher School of Economy and Culture: 1,282 enrolled students

Overall close to 60 percent of all enrolled students study full time. However, many full time students work in parallel with their studies.

# 4. MANAGERS

There is very little information about the managers in Riga and in which sectors they are active. However, there is some information on the number of managers in the private as well as private sector. The information is presented in table 4.1 below.

**Table 4.1: Percentage of Riga's working population by working status in 2005**

| **Working status** | **Percentage of Riga's working population** |
|---|---|
| Unskilled worker | 8.2 |
| Skilled worker | 24.2 |
| Specialist, professional | 15.6 |
| Office employee, civil servants, clerk, military, police | 13.8 |
| Mid/high level management in state sector | 13.8 |
| Employer / owner in private sector | 3.8 |
| Mid/high level management in private sector | 3.2 |
| Craftsman, self employed | 0.8 |

Mid/high level management in the state sector/private sector and employer/owner in private sector in the table above roughly correspond to the following International Standard Classification of Occupations (ISCO-88) categories:

- 121: Corporate managers: Directors and chief executives and
- 131: General managers: General managers,

where the latter refers to persons who manage enterprises on their own behalf, or on behalf of the proprietor.

## 5. FOREIGN EMPLOYEES AND ENTREPRENEURS

Out of Riga's population of approximately 730,000, roughly 65 percent are citizens (most of them being of Latvian ethnicity, the second biggest ethnic group among the citizens are Russians). Somewhat more than 30 percent of the population is non-citizens, i.e. persons who arrived in Riga in between 1940 and 1991 (i.e. during the Soviet occupation). A large majority of them are of Russian ethnicity. Other large ethnic groups among the non-citizens are: Belarusians, Ukrainians, and Lithuanians. In addition, the non-citizen group comprises ethnic groups from more or less all over the former Soviet Union.

There are around 4 percent foreign nationals in Riga (mainly Russians, other large groups are Ukrainians and Belarusians). However, the majority of them came to Riga during the Soviet occupation. When the Soviet Union collapsed, they decided to apply for citizenship in a country other than Latvia, while at the same time staying in Riga. Among the foreigners are also persons of Latvian ethnicity, but who are not Latvian citizens.

Hence, there are very few migrants in Riga that 'fulfill' the requirement that:

*An immigrant is a person who establishes his/her usual residence for a period that is, or is expected to be, of at least twelve months having previously been resident in another country.*

There is no information available about their occupation, labour market participation rate etc.

# 6. DESIGN OF THE STUDY

## 6.1. Interviewees

As part of ACRE work packages 5 and 7 a total number of 250 persons have to be surveyed. The following groups have been identified within the ACRE project:

- Workers in the creative industries, as defined in section 1: 50 respondents
- Workers in the knowledge intensive industries, as defined in section 1: 50 respondents
- University graduates and graduates from media and art schools: 50 respondents
- Managers in the creative industries and in the knowledge intensive industries: 50 respondents
- International migrants: 50 respondents

It should be noted that most likely there will be a certain overlap among the respondents. For example a manger could also be a university graduate and an international migrant.

## 6.2. Methodology

The best way to undertake the survey would probably be to use a sample of randomly selected adults with a sample size big enough to get a sufficient number of respondents belonging to each of the groups above. However, given the small size relative to the total population of some of the groups, e.g. the international migrants, such an approach would require a very large total sample. Hence, another approach has to be considered. There are (at least) two that might be feasible:

The first approach would be to contact companies in the relevant industries and organization in order to ask them either to assist in identifying respondents or have them distributing the questionnaires to the potential respondents. However, this gives very little room for controlling the process – something which is particular importance since the sample for each group is (very) small given the variation needed in terms of:

- Industries
- Ethnicity among the non-immigrants in Riga
- Company size
- Successful and not so successful individuals/businesses, etc.

Another drawback is that it is difficult to ensure that (even though an interviewee is in a sector to be studied) an employee/interviewee is in a position that is 'creative enough'. For example, even though an interviewee is in the advertising sector his/her task might be too standardised for him/her to be considered a worker in the creative part of the advertising sector.

The second, and for this study preferred methodology, is the snowballing technique. Snowball sampling is a non-probability sampling technique in which an initial group is selected (randomly). These respondents identify others (to be interviewed) and who belong to the target population of interest. Hence, the subsequent respondents are chosen based on referrals.

The advantage with the snowballing technique in comparison with the alternative approach outlined above, is that it is easier to control the process and reach the desired target population. This is of particular importance when the sample is small and the dimensions to be covered are many, which in fact is the case for this study. Furthermore, this approach makes it easier to reach out to self employed persons – a group that might be of particular importance in particular when studying the creative industries.

## 6.3. Stratification

The sampling frame in this study has to be partitioned into groups or strata. For example, the sample covering the group of workers in the creative industries has to cover workers in all three sectors discussed. Hence, stratified sampling allows for a division of the sample into subgroups before the sample is taken. The strata in this study will be the various activities within the chosen groups of industries to be analyzed.

## 6.4. Allocation of sample to the strata

Once the strata are decided upon, the allocation of the sample elements (in this study 50) has to be made, i.e. how should the 50 surveys be allocated among the different strata in e.g. the sample of the 50 workers in creative industries. Two alternative approaches will be considered: proportional allocation and equal allocation.

In proportional sampling the sample size reflects the stratum's relative size. Hence, if advertising represents 70 per cent of the creative industries sector, then the sample should be 70 percent of the total sample size, i.e. 35 (70 per cent of 50). However, it is not obvious how the fraction should be determined:

- The number of employees in the subsector, i.e. if 70 percent of the employees in the creative industries work in advertising, then the sample size should be 70 percent.
- The number of different activities within the strata. For example if advertising is very homogeneous, i.e. everyone doing more or less the same, whereas the activities in the

film making sector are very heterogeneous, then this might have to reflect the relative sample size.

It is by no means obvious which criteria that should be used when determining the sample size in this study – Should it be number of employees? But what if the majority of them are involved in standardised tasks? If so, should there be an adjustment? Or, should the degree of heterogeneity in the group be taken into account when deciding the sample size?

Furthermore, since there is a lot of information to be collected on each individual, but a very small sample size there might simply be too few observations for each strata (subgroup).

The alternative to proportional allocation is equal allocation. In the creative industries case, this means that each of the three activities will be allocated a third of the total sample size.

Since it by no means is obvious what should serve as the basis for the calculation of the proportion needed for proportional sampling, an equal allocation will be employed in the empirical study when it comes to allocating sample to strata. This means that for creative industries, each of the three subgroups will be allocated 1/3 of the total sample size of 50. If there are let's say two different activities within the advertising subgroup. If the allocated sample size for advertising is 14 (roughly one third of 50), then each of the subgroups within advertising will be allocated 7 interviews.

# APPENDIX

**Table A.1: Number of companies in Riga in selected NACE categories for the period 2001-2005.**

| NACE | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|
| 7440 Advertising | 389 | 405 | 494 | 664 | 670 |
| 7420 Architectural and Engineering activities | 356 | 395 | 435 | 531 | 624 |
| 1710 Preparation of textiles | 4 | 4 | 4 | 5 | 3 |
| 1720 Textile weaving | 2 | 3 | 4 | 3 | 5 |
| 1730 Finishing of textiles | 1 | 2 | 3 | 5 | 4 |
| 1740 Manufacture of textile articles, except of apparel | 32 | 28 | 33 | 39 | 42 |
| 1750 Manufacture of other textiles | 21 | 20 | 23 | 22 | 23 |
| 1760 Manufacture of knitted and crocheted fabrics | 1 | 1 | 1 | 1 | 1 |
| 1770 D:o articles | 27 | 29 | 35 | 32 | 30 |
| 1810 Manufacturing of leather clothes | 7 | 4 | 5 | 3 | 4 |
| 1820 Manufacturing of other wearing apparel | 202 | 213 | 226 | 242 | 243 |
| 1830 Dressing and dyeing of fur | 7 | 8 | 9 | 8 | 6 |
| 1910 Tanning and dressing of leather | 2 | 2 | 1 | 2 | 2 |
| 1920 Manufacture of luggage etc | 23 | 24 | 24 | 22 | 22 |
| 1930 Manufacture of footwear | 16 | 13 | 18 | 15 | 12 |
| 2230 Reproduction of recorded media | 10 | 11 | 12 | 14 | 14 |
| 9210 Motion pictures and video | 48 | 47 | 51 | 69 | 77 |
| 7480 Misc business activities | . | . | . | . | . |
| 9230 Other entertainment | 110 | 114 | 129 | 152 | 165 |
| 9270 Other recreational | 53 | . | . | . | 55 |
| 2210 Publishing | 230 | 242 | 235 | 268 | 260 |
| 9240 News agency | 7 | 4 | 4 | 5 | 7 |
| 7220 Software consultancy and supply: computer games | 198 | 223 | . | . | . |
| 9220 Radio and TV | 47 | 48 | 48 | 50 | 50 |
| 3000 Manufacture of office machinery and computers | 19 | 20 | 24 | 24 | 21 |
| 3130 Manufacture of insulated wire and cable | 1 | 1 | 2 | 3 | 6 |
| 3210 Manufacture of electronic valves and tubes etc | 9 | 9 | 9 | 11 | 6 |
| 3220 Manufacture of TV and radio transmitters etc | 20 | 16 | 15 | 15 | 14 |
| 3230 Manufacture of TV and radio receivers etc | 12 | 14 | 10 | 13 | 11 |
| 3320 Manufacture of instruments and appliances for measuring etc | 33 | 33 | 33 | 34 | 34 |
| 3330 Manufacture of industrial process equipment | 2 | 3 | 3 | 4 | 6 |
| 6420 Telecommunications | 79 | 76 | 80 | 137 | 184 |
| 7210 Hardware consultancy | 9 | 13 | 20 | 38 | 53 |

| | | | | | |
|---|---|---|---|---|---|
| 7230 Data processing | 22 | 19 | 46 | 56 | 66 |
| 7240 Database activities | 80 | 116 | 145 | 158 | 169 |
| 7250 Maintenance and repair of office machinery | 78 | 88 | 111 | 130 | 146 |
| 7260 Other computer related activities | 15 | 16 | 9 | 16 | 22 |
| 6500 Financial intermediation, except insurance and pension | . | . | . | . | . |
| 6600 Insurance and pension funding | 41 | 32 | 36 | 39 | 37 |
| 6700 Activities auxiliary to financial intermediation | . | . | . | . | . |
| 7410 Legal, accounting and book-keeping and auditing activities | 825 | 980 | 1225 | 1602 | 1848 |
| 7430 Technical testing and analysis | 66 | 83 | 96 | 105 | 104 |
| 7450 Labour recruitment and provision of personal | 64 | 76 | 91 | 113 | 129 |
| 7460 Investigation and security activities | 129 | 121 | 137 | 147 | 154 |
| 7310 Research and experimental development on natural sciences and engineering | 67 | 56 | 60 | 60 | 60 |
| 7320 Research and experimental development on social sciences and humanities | 19 | 15 | 13 | 14 | 14 |
| 8030 Higher education | 19 | 21 | 22 | 21 | 22 |

**Table A.2: Turnover in 1,000 LVL discounted with PPI 2000 for Riga companies in selected NACE categories.**

| NACE | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|
| 7440 Advertising | 53 611 | 79 812 | 89 074 | 85 852 | 106 709 |
| 7420 Architectural and Engineering activities | 38 281 | 49 349 | 55 167 | 74 662 | 102 000 |
| 1710 Preparation of textiles | 8 934 | 9 055 | 8 425 | 5 722 | . |
| 1720 Textile weaving | . | . | . | . | . |
| 1730 Finishing of textiles | 0 | 84 | . | . | 208 |
| 1740 Manufacture of textile articles, except of apparel | 13 874 | 15 499 | 18 291 | 18 438 | 14 794 |
| 1750 Manufacture of other textiles | 1 656 | 1 606 | 2 770 | 2 210 | 3 286 |
| 1760 Manufacture of knitted and crocheted fabrics | . | . | . | . | . |
| 1770 D:o articles | . | 5 551 | 7 456 | 9 074 | 5 876 |
| 1810 Manufacturing of leather clothes | . | . | . | . | . |
| 1820 Manufacturing of other wearing apparel | 31 083 | 36 021 | 36 916 | 40 754 | 41 640 |
| 1830 Dressing and dyeing of fur | . | . | . | . | . |
| 1910 Tanning and dressing of leather | . | . | . | . | . |
| 1920 Manufacture of luggage etc | . | . | . | . | . |
| 1930 Manufacture of footwear | 1 409 | 695 | 1 302 | 1 584 | 1 563 |
| 2230 Reproduction of recorded media | . | . | . | . | . |
| 9210 Motion pictures and video | 4 941 | 4 432 | 4 431 | 7 797 | 11 453 |
| 7480 Misc business activities | 3 268 | 6 651 | 23 451 | 35 372 | 39 841 |
| 9230 Other entertainment | 10 852 | 7 247 | 9 765 | 8 967 | 14 587 |
| 9270 Other recreational | 34 824 | . | . | . | 87 729 |
| 2210 Publishing | 49 219 | 52 716 | 57 968 | 59 323 | 65 275 |
| 9240 News agency | 1 770 | 1 707 | 1 923 | 1 725 | 2 161 |
| 7220 Software consultancy and supply: computer games | . | . | . | . | . |
| 9220 Radio and TV | 22 703 | 24 965 | 29 231 | 30 062 | 36 576 |
| 3000 Manufacture of office machinery and computers | . | . | . | . | . |
| 3130 Manufacture of insulated wire and cable | . | . | . | . | . |
| 3210 Manufacture of electronic valves and tubes etc | . | 3 074 | 1 456 | 1 959 | 2 750 |
| 3220 Manufacture of TV and radio transmitters etc | 4 680 | 5 417 | 8 540 | 16 701 | . |
| 3230 Manufacture of TV and radio receivers etc | . | . | 2 894 | 2 845 | 2 806 |
| 3320 Manufacture of instruments and appliances for measuring etc | 5 001 | 5 127 | 14 509 | 11 351 | 13 210 |
| 3330 Manufacture of | 0 | . | . | . | 624 |

| | | | | | |
|---|---|---|---|---|---|
| industrial process equipment | | | | | |
| 6420 Telecommunications | 321 009 | 372 655 | 413 612 | 458 976 | 535 811 |
| 7210 Hardware consultancy | . | . | . | . | . |
| 7230 Data processing | . | . | . | . | . |
| 7240 Database activities | . | . | . | . | . |
| 7250 Maintenance and repair of office machinery | . | . | . | . | . |
| 7260 Other computer related activities | . | . | . | . | . |
| 6500 Financial intermediation, except insurance and pension | . | . | . | . | . |
| 6600 Insurance and pension funding | 0 | 0 | 3 567 | 3 952 | 5 133 |
| 6700 Activities auxiliary to financial intermediation | 7 126 | . | . | . | 7 827 |
| 7410 Legal, accounting and book-keeping and auditing activities | 34 841 | . | . | . | 114 420 |
| 7430 Technical testing and analysis | . | . | . | . | . |
| 7450 Labour recruitment and provision of personal | 3 862 | 5 413 | 5 184 | 3 706 | 9 787 |
| 7460 Investigation and security activities | 19 537 | 22 066 | 22 218 | 25 359 | 32 370 |
| 7310 Research and experimental development on natural sciences and engineering | . | . | . | . | . |
| 7320 Research and experimental development on social sciences and humanities | . | . | . | . | . |
| 8030 Higher education | 8 511 | 9 883 | 10 827 | 12 076 | 12 796 |

**Table A.3: Employment according to NACE code in Latvia and in Riga (more aggregated than the ACRE definition).**

| NACE code | | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|
| **1711** | Latvia | 1100 | 959 | 943 | 651 | 490 |
| | Riga | 1100 | 959 | 943 | 651 | 490 |
| **1712** | Latvia | 18 | 24 | 27 | 29 | 24 |
| | Riga | - | 2 | 3 | 1 | - |
| **1713** | Latvia | 2493 | - | 1 | 2 | 228 |
| | Riga | - | - | - | - | - |
| **1714** | Latvia | 103 | 111 | 110 | 152 | 120 |
| | Riga | - | - | - | - | - |
| **1715** | Latvia | - | - | - | - | - |
| **1716** | Latvia | - | - | - | - | - |
| **1717** | Latvia | - | - | - | - | - |
| **1721** | Latvia | 178 | 403 | 423 | 393 | 520 |
| | Riga | 178 | 403 | 419 | 388 | 515 |
| **1722** | Latvia | - | 39 | 32 | - | - |
| | Riga | - | 3 | 3 | - | - |
| **1723** | Latvia | - | - | - | - | - |
| **1724** | Latvia | - | - | - | - | - |
| **1725** | Latvia | 1513 | 1467 | 1403 | 318 | 252 |
| | Riga | - | - | - | - | - |
| **1730** | Latvia | 5 | 170 | 29 | 28 | 14 |
| | Riga | - | 14 | 21 | 22 | 14 |
| **1740** | Latvia | 1476 | 1707 | 2014 | 1985 | 1742 |
| | Riga | 1220 | 1358 | 1635 | 1561 | 1272 |
| **1751** | Latvia | - | - | 1 | 3 | - |
| | Riga | - | - | - | - | - |
| **1752** | Latvia | 115 | 218 | 267 | 480 | 508 |
| | Riga | 12 | 33 | 28 | 20 | 35 |
| **1753** | Latvia | 21 | 33 | 18 | 23 | 17 |
| | Riga | 21 | 33 | 18 | 23 | 17 |
| **1754** | Latvia | 389 | 389 | 447 | 465 | 440 |
| | Riga | 389 | 363 | 410 | 392 | 397 |
| **1760** | Latvia | 1375 | 1394 | 1435 | 1499 | 1296 |
| | Riga | 25 | 38 | 53 | 60 | 25 |
| **1771** | Latvia | 496 | 662 | 733 | 793 | 770 |
| | Riga | 490 | 574 | 628 | 772 | 301 |
| **1772** | Latvia | 444 | 2774 | 2719 | 2258 | 1833 |
| | Riga | 62 | 273 | 365 | 296 | 265 |
| **1810** | Latvia | 36 | 44 | 39 | 42 | 46 |
| | Riga | 36 | 41 | 37 | 39 | 43 |
| **1821** | Latvia | 1935 | 2759 | 2397 | 2457 | 2273 |
| | Riga | 503 | 681 | 714 | 828 | 609 |
| **1822** | Latvia | 7330 | 8280 | 7960 | 7484 | 6604 |
| | Riga | 4010 | 4436 | 4051 | 3981 | 3729 |
| **1823** | Latvia | 2735 | 3029 | 3342 | 3834 | 3900 |
| | Riga | 1393 | 1629 | 1854 | 1810 | 1733 |
| **1824** | Latvia | 197 | 366 | 544 | 563 | 456 |
| | Riga | 71 | 57 | 50 | 93 | 63 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Riga | 14 | 57 | 17 | 34 | 27 |
| **1910** | Latvia | 78 | 84 | 83 | 80 | 72 |
| | Riga | 20 | 21 | 21 | 20 | 20 |
| **1920** | Latvia | 156 | 297 | 257 | 265 | 233 |
| | Riga | 115 | 257 | 223 | 224 | 187 |
| **1930** | Latvia | 470 | 262 | 342 | 417 | 325 |
| | Riga | 285 | 228 | 254 | 330 | 230 |
| **2211** | Latvia | 792 | 918 | 840 | 1012 | 1136 |
| | Riga | 764 | 869 | 803 | 985 | 1109 |
| **2212** | Latvia | 2037 | 2509 | 2823 | 2877 | 2264 |
| | Riga | 1806 | 2232 | 2497 | 2476 | 1905 |
| **2213** | Latvia | 1977 | 1874 | 2067 | 2603 | 2751 |
| | Riga | 1614 | 1460 | 1638 | 2110 | 1880 |
| **2214** | Latvia | 59 | 108 | 104 | 81 | 83 |
| | Riga | 59 | 94 | 93 | 64 | 79 |
| **2215** | Latvia | 77 | 62 | 140 | 118 | 134 |
| | Riga | 77 | 56 | 101 | 115 | 118 |
| **2231** | Latvia | 34 | 4 | 7 | 28 | 10 |
| | Riga | 34 | 4 | 6 | 28 | 10 |
| **2232** | Latvia | 6 | 18 | 13 | 19 | 18 |
| | Riga | - | 18 | 13 | 19 | 18 |
| **2233** | Latvia | - | 5 | 6 | 12 | 31 |
| | Riga | - | 5 | 6 | 11 | 31 |
| **3001** | Latvia | - | 21 | 31 | 33 | 33 |
| | Riga | - | 21 | 31 | 33 | 33 |
| **3002** | Latvia | 163 | 175 | 122 | 215 | 144 |
| | Riga | 163 | 165 | 112 | 213 | 144 |
| **3130** | Latvia | 16 | 153 | 305 | 435 | 512 |
| | Riga | 16 | 8 | 18 | 107 | 157 |
| **3210** | Latvia | 238 | 271 | 339 | 312 | 334 |
| | Riga | 236 | 270 | 298 | 276 | 316 |
| **3220** | Latvia | 505 | 554 | 631 | 626 | 384 |
| | Riga | 415 | 489 | 503 | 481 | 297 |
| **3230** | Latvia | 67 | 336 | 317 | 388 | 355 |
| | Riga | 61 | 273 | 292 | 330 | 282 |
| **3320** | Latvia | 514 | 620 | 890 | 852 | 825 |
| | Riga | 513 | 583 | 860 | 826 | 795 |
| **3330** | Latvia | 5 | 19 | 22 | 32 | 46 |
| | Riga | - | 5 | 12 | 14 | 24 |
| **642** | Latvia | 6564 | 6172 | 5777 | 5658 | 5707 |
| | Riga | 6412 | 5912 | 5517 | 5293 | 5261 |
| **651** | Latvia | 8963 | 9197 | 9935 | 10595 | 11386 |
| | Riga | 8811 | 9036 | 9770 | 9227 | 9947 |
| **652** | Latvia | 1579 | 1988 | 1689 | 2458 | 3387 |
| | Riga | 1377 | 1782 | 1497 | 2274 | 3192 |
| **6601** | Latvia | 107 | 120 | 154 | 261 | 302 |
| | Riga | 107 | 120 | 143 | 252 | 294 |
| **6602** | Latvia | 11 | 19 | 22 | 32 | 39 |
| | Riga | 11 | 19 | 22 | 32 | 38 |
| **6603** | Latvia | 3022 | 2796 | 2961 | 5405 | 4952 |
| | Riga | 3022 | 2796 | 295 | 5395 | 4925 |
| **67** | Latvia | 1379 | 1732 | 999 | 1237 | 1467 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Riga | 1270 | 1578 | 876 | 1105 | 1325 |
| **72** | Latvia | 1050 | 2090 | 4829 | 5508 | 6240 |
| | Riga | 801 | 1711 | 4225 | 5021 | 5398 |
| **73** | Latvia | 2795 | 3029 | 2894 | 2829 | 2758 |
| | Riga | 2126 | 2339 | 2183 | 2115 | 2054 |
| **7413** | Latvia | 523 | 804 | 1049 | 1075 | 1545 |
| | Riga | 521 | 758 | 718 | 953 | 1452 |
| **741 excl 7413** | Latvia | 2929 | 5471 | 6020 | 7864 | 9035 |
| | Riga | 2356 | 4218 | 4735 | 6203 | 6777 |
| **742 + 743** | Latvia | 3772 | 5256 | 5955 | 7223 | 7959 |
| | Riga | 3331 | 4328 | 4938 | 5858 | 6208 |
| **744** | Latvia | 2203 | 3000 | 3540 | 4721 | 4564 |
| | Riga | 2061 | 2676 | 3195 | 4148 | 3455 |
| **745** | Latvia | 354 | 840 | 975 | 886 | 1838 |
| | Riga | 318 | 743 | 911 | 813 | 1779 |
| **746** | Latvia | 4277 | 5360 | 6062 | 6839 | 7465 |
| | Riga | 3828 | 4636 | 5122 | 5805 | 6054 |
| **747** | Latvia | 1389 | 2253 | 2337 | 3075 | 3785 |
| | Riga | 1080 | 1690 | 1913 | 2518 | 3039 |
| **748** | Latvia | 402 | 1175 | 3117 | 4262 | 3621 |
| | Riga | 264 | 675 | 2229 | 3093 | 2597 |
| **801+ 802 + 803** | Latvia | 91149 | 91996 | 79781 | 79181 | 79027 |
| | Riga | 32805 | 33457 | 20423 | 20218 | 20505 |
| **9211+ 9212** | Latvia | 258 | 214 | 234 | 386 | 329 |
| | Riga | 246 | 195 | 229 | 371 | 306 |
| **9213** | Latvia | 299 | 198 | 281 | 241 | 199 |
| | Riga | 182 | 120 | 200 | 184 | 169 |
| **9220** | Latvia | 1859 | 1786 | 1819 | 1805 | 1932 |
| | Riga | 1605 | 1556 | 1559 | 1521 | 1702 |
| **9231** | Latvia | 2099 | 2210 | 2135 | 2604 | 2662 |
| | Riga | 1589 | 1700 | 1636 | 2086 | 2056 |
| **9233** | Latvia | 89 | 37 | 59 | 77 | 112 |
| | Riga | 74 | 22 | 36 | 50 | 86 |
| **9234** | Latvia | 2403 | 2620 | 2085 | 2166 | 2191 |
| | Riga | 1073 | 1053 | 600 | 534 | 605 |
| **9240** | Latvia | 187 | 183 | 182 | 173 | 210 |
| | Riga | 187 | 183 | 182 | 173 | 209 |
| **927** | Latvia | 2896 | 3650 | 6137 | 6862 | 6270 |
| | Riga | 2724 | 3446 | 5903 | 6628 | 6025 |