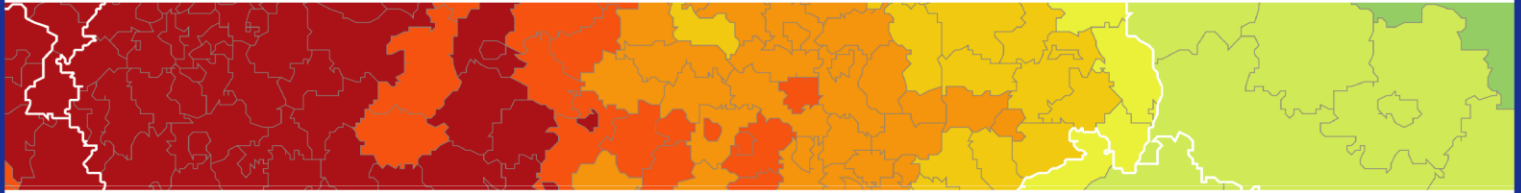


Inspire policy making by territorial evidence



The World in Europe, global FDI flows towards Europe

Collection of extra-European FDI flows

Applied Research

Scientific Report

March 2018

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The World in Europe, global FDI flows towards Europe

Collection of extra-European FDI flows

Scope and introduction to the study

This report is part of the study, *The World in Europe, global FDI flows towards Europe*. The study casts new light on three topics related to the integration of Europe in the world economy:

1. Extra-European FDI towards Europe
2. Intra-European FDI
3. FDI by European SMEs

Key conclusions and recommendations related to each of these questions can be found in three stand-alone reports. Each report is supported by a number of scientific reports that contain detailed methodological descriptions and results. The insights gained from the study are summarised in a synthesis report that cuts across the three topics.

This scientific report *Collection of extra-European FDI flows* includes background information and documentation for the conclusions and recommendations brought forward in the main report on extra-European FDI towards Europe.

Overview of the study

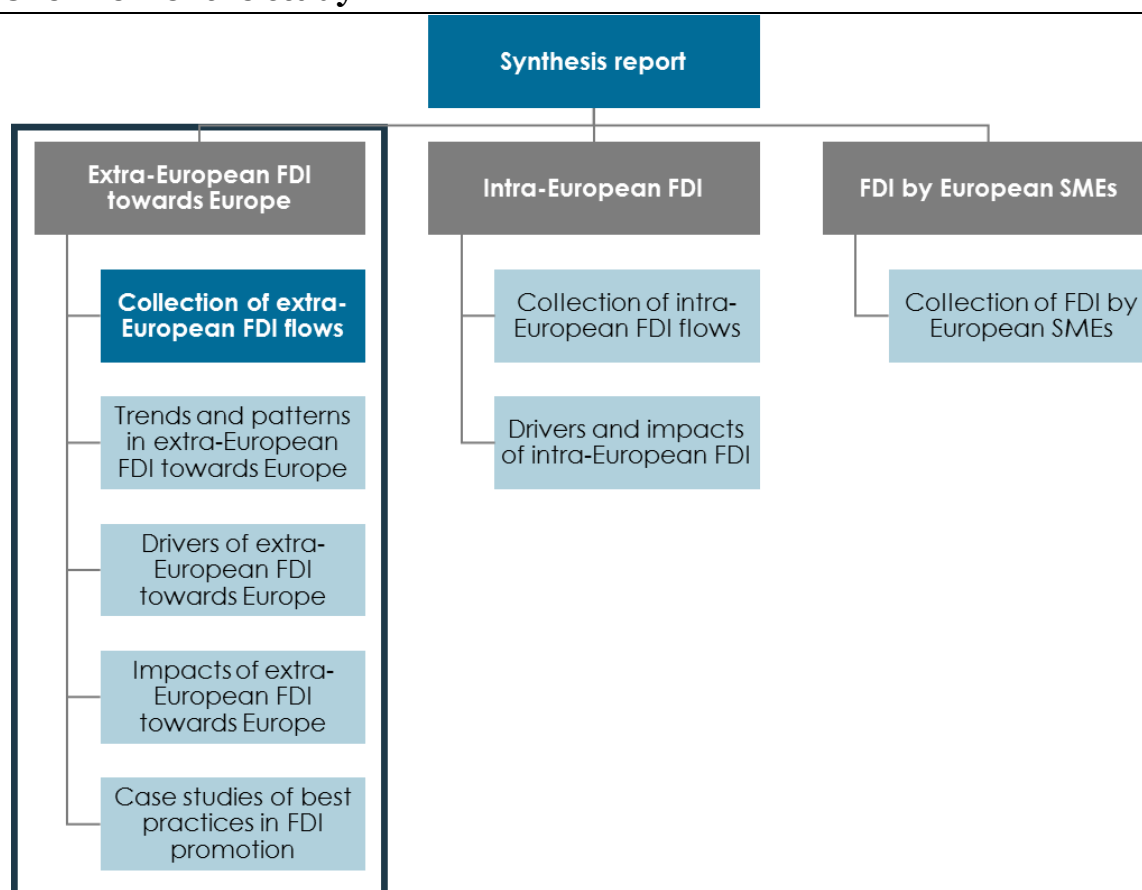


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Abbreviations

EC	European Commission
ESPON	European Territorial Observatory Network
EU	European Union
FDI	Foreign Direct Investment
FT database	fDi Markets database offered by the Financial Times
M&A	Mergers and acquisitions
NUTS	Nomenclature of Territorial Units for Statistics
UNCTAD	United Nations Conference on Trade and Development

1 Definition of FDI and the quality of national FDI data

In this chapter, we describe how we define FDI and the components that we record as FDI. Here, we distinguish between greenfield investments and M&As. We illustrate how we collect FDI data on the sub-regional level, and we describe some of the differences between the data collected in this study and the national FDI data that can be obtained from international statistics.

1.1 Definition of FDI

Throughout this study, we follow the UNCTAD definition of FDI as being cross-border investments by a foreign company with a minimum 10 per cent ownership share.¹ FDI can be measured in different ways:

- FDI inflows vs. inward FDI stock. FDI inflows within a given year measure all cross-border investments that have been made by foreign investors that year. The inward FDI stock within the same year measures all cross-border investments that have been made by foreign investors up until that year, i.e. the accumulated annual FDI inflows.
- Gross vs. net FDI inflows. Gross FDI inflows within a given year include all FDI made by foreign investors that year. Net FDI inflows subtract from gross FDI inflows the disinvestments made by foreign investors over the same period.

As explained in Box 1, FDI is generally difficult to compare across countries because national statistical offices use different definitions of FDI.

In this study, we are interested in comparing FDI inflows across regions. This data is not readily available and will need to be collected as a part of this study. We collect data on *gross FDI inflows* because data on FDI inflows on a regional basis are only available for the period 2003-2015, which makes it impossible to measure FDI stocks, and because no data on disinvestments are available. The sources of these data are described below.

¹ UNCTAD (2007) Annex A. In: *World Investment Report 2007*.

Box 1 Difficulties in comparing FDI across countries

Components of FDI

The components of FDI are equity capital, reinvested earnings and other capital (mainly intra-company loans). As countries do not always collect data for each of those components, reported data on FDI are not fully comparable across countries. In particular, data on reinvested earnings, the collection of which depends on company surveys, are often unreported by many countries.

The threshold equity ownership

Countries differ in the threshold value for foreign equity ownership, which they take as evidence of a direct investment relationship. This is the level of participation at or above which the direct investor is normally regarded as having an effective say in the management of the enterprise involved. The threshold value usually applied for FDI is 10 per cent, for data on the operations of TNCs, it involves chosen ranges of between 10 and 50 per cent. Some countries do not specify a threshold point, but rely entirely on other evidence, including companies' own assessments as to whether the investing company has an effective voice in the foreign firm in which it has an equity stake. The quantitative impact of differences in the threshold value used is relatively small, owing to the large proportion of FDI, which is directed to majority-owned foreign affiliates.

Defining a controlling interest and treatment of non-equity forms of investment

Other than having an equity stake in an enterprise, there are many other ways in which foreign investors may acquire an effective voice. Those include subcontracting, management contracts, turnkey arrangements, franchising, leasing, licensing and production-sharing. A franchise (a firm to which business is subcontracted) or a company which sells most of its production to a foreign firm through means other than an equity stake are not usually collected, some countries have begun to contemplate doing so. For example, the OECD treats financial leases between direct investors and their branches, subsidiaries or associates as if they were conventional loans; such relationships will therefore be included in its revised definition of FDI.

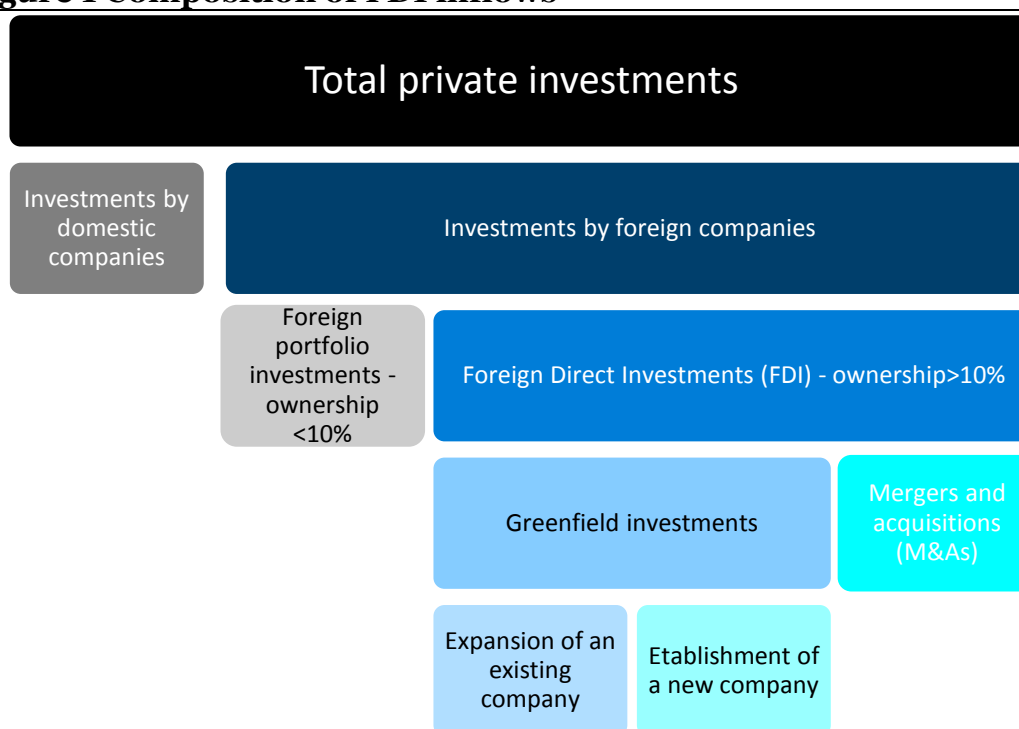
Source: ESPON FDI (2018) based on UNCTAD (2007)

1.2 Composition of FDI

FDI is composed of two main components:

- **Greenfield investments.** This type of FDI takes place when a new foreign company establishes itself in the country or when a foreign-owned company that is already located in the country expands its business. Expansions of a foreign-owned company can, for example, be financed through reinvested earnings or intra-company loans.
- **Mergers and acquisitions.** Mergers and acquisitions (M&As) take place when a foreign company acquires more than 10 per cent of the voting stock in an existing domestic company.

Figure 1 Composition of FDI inflows



Source: ESPON FDI (2018)

Data on greenfield investments are available in the fDi Market database offered by the Financial Times (FT database). This database includes regional greenfield investments for 38 out of the 39 European countries participating in the ESPON 2020 Cooperation Programme as no data are available for Kosovo. Annual inflows of greenfield investments by foreign companies are available for the period 2003-2015 and can be measured in terms of both the number of greenfield investment projects and the value of these investments. No data on disinvestments are available from this database.

Data on M&As are available in the Bureau Van Dijk Zephyr database (Zephyr database).² This database includes regional M&A data for 38 out of the 39 countries participating in the ESPON 2020 Cooperation Programme as no data are available for Kosovo. Annual M&As by foreign companies are available for the period 2003-2015 and can be measured in terms of both the number of M&As and the value of these investments. No data on disinvestments are available.

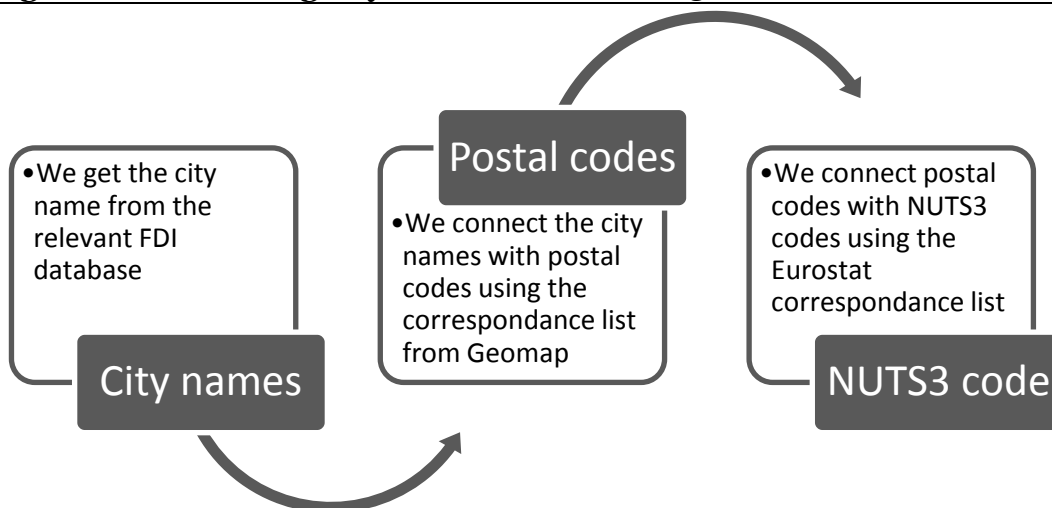
² Other M&A databased are also available, such as Thomsen and Reuters, SNL, Census, Compustat and Worldscope. We have selected the Bureau Van Dijk database because it gives us the opportunity to combined M&A data with firm-level data in the Amadeus database. This could become an advantage in future parts of the analysis.

1.3 Collection of sub-regional FDI data

Europe spans many regions, and the purpose of this study is to shed light on how different regional characteristics influence the attractiveness of the region for foreign investors. We use the so-called "NUTS" (Nomenclature of Territorial Units for Statistics) system to classify the European regions. This system facilitates comparisons between European countries' regions and municipalities, with territorial units ranging from the national level (NUTS0) to a detailed sub-regional level (NUTS3).

The FT and the Zephyr databases in most cases list investment projects by country and by city. We can use the city names to allocate the investments on a sub-regional level (NUTS3). As illustrated in Figure 2, we first connect the city names with postal codes using the correspondence list from GeoNames.³ The correspondence list was a necessary step in order to create a link between cities and the NUTS codes, due to the lack of postal codes in the FT database. We then connect the postal codes to NUTS3 codes using the correspondence list from Eurostat. Eurostat has established this correspondence between postal codes and NUTS3 in order to exploit information, which is originally coded by postal codes.⁴

Figure 2 Connecting city names with NUTS3



Source: ESPON FDI (2018)

We distinguish between three groups of investment projects. In the *first* group, we have investment projects where the city name corresponds directly to a NUTS3 code. In the *second* group, we have investment projects where the city name corresponds to a NUTS1 or NUTS2 code. These NUTS1 and NUTS2 codes have NUTS3 codes below, and we distribute the investments in this group proportionally on the NUTS3 codes that belong to the given NUTS1 or NUTS2 code using the value of the projects. This means that we implicitly assume that the

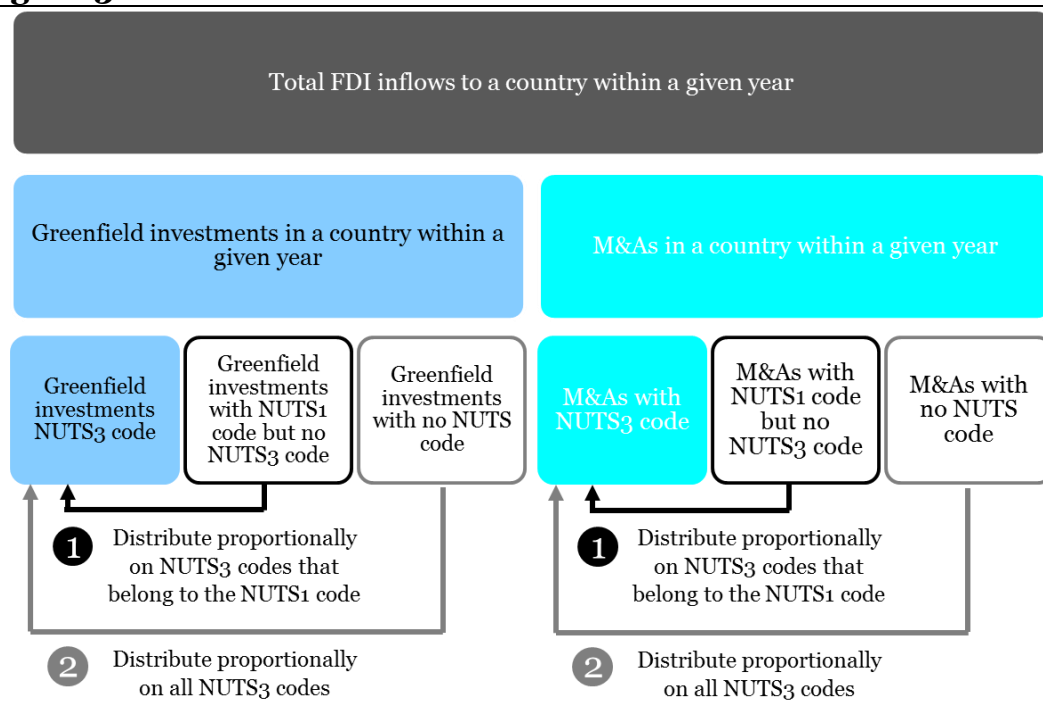
³ GeoNames (2017).

⁴ Eurostat (2017).

investments within the NUTS1 region that do not have a NUTS3 code are distributed the same way as the investments in the region that do have a NUTS3 code. As the missing NUTS3 codes are due to missing details in the reporting, we would expect this to be a reasonable assumption.

In the *third* group, we have information about the country but no information about the city. For these projects, we distribute the investments proportionally on all the NUTS3 codes that belong to this country. This means that we implicitly assume that the investments that do not have a city name listed in the databases are distributed the same way as the investments in the country that have a city name. This assumption is reasonable if all cities are equally likely to miss details in their reporting of city names. However, it may be the case that e.g. small cities or cities with only few investment projects are more likely to miss some details in their reporting. In this case, we will tend to distribute too little investments to these countries.

Figure 3 How we combine different data sources



Source: ESPON FDI (2018)

In the next chapters, we provide an overview of how many investment projects can be directly allocated at the sub-regional level and how many projects will need to be distributed according to the above methodology. We use this to assess the quality of the sub-regional FDI data.

1.4 Problems with moving from regional to national FDI

When we aggregate the data on regional FDI inflows collected in this study, we get a measure of gross national FDI inflows within a given year. This measure of national FDI inflows cannot be compared with FDI inflows recorded by national statistical offices and published by Eurostat, OECD, UNCTAD or other international institutions.

First, we measure gross FDI flows rather than the net FDI flows, which are available from international statistics. As we do not consider disinvestments, the level of national FDI inflows in this study will be higher than the level of national FDI that can be obtained from international FDI statistics. Also, the difference will tend to be higher in periods with increasing disinvestments and liabilities.

Second, we measure FDI inflows from non-European countries and this decomposition of FDI by source is not possible using data from international FDI statistics. The exclusion of intra-EU FDI means that investments carried out by a non-EU investor through a special purpose entity registered in an EU country will be misrecorded. This will, for example, be the case if a US investment in Germany takes place through the financial centre in Luxembourg. Such investments will be recorded as FDI flows into Luxembourg instead of Germany. This problem is generally acknowledged, and substantial improvements have been made over the last decade in the collection and handling of national FDI statistics.⁵ However, these improvements have only been implemented in the data very recently and only for a limited number of countries.⁶

Third, we track FDI based on actual investment projects rather than actual capital flows as is done by the national statistical offices. The value of greenfield investments is based on new establishments or expansions that are being publicly announced. The announced values of greenfield investments will not always match the actual capital flows. Furthermore, the size and timing of the investment may change between the announcement and the completion of the investment project. As a result, the data on greenfield investments from the FT database will tend to be more lumpy and tend to cluster in certain periods where the economy is doing well and where many investment projects are announced. Also, the value of the M&As in some cases reflect the full transaction value and not just the part of the transaction that are attributable to the direct investor.⁷

Due to these differences, it is not possible to compare FDI data from international statistics with the sum of the regional FDI data collected in this study.

⁵ In their most recent set of definitions and guidelines both the IMF (2009) and the OECD (2008) explicitly stress the need to factor out SPEs.

⁶ The OECD notes on their webpage for FDI statistics, <http://www.oecd.org/daf/inv/investment-policy/fdibenchmarkdefinition.htm> that 'While BMD4 was completed in 2008, only since September 2014 has the OECD been collecting FDI statistics from member countries according to the updated benchmark definition.'

⁷ This point is made in OECD (2015), Measuring international investment by multinational enterprises.

2 Greenfield investments across European regions

Greenfield investments in a country are a type of FDI, which take place when a new foreign company establishes itself in the country or when a foreign-owned company that is already located in the country expands its business. One important feature of greenfield investments is that they expand the capital stock in the country and are likely to support job creation and stimulate further activity in the country.

We have used the fDi Markets database offered by the Financial Times (FT database) to collect data on greenfield investments across European regions. This service tracks cross-border greenfield investments across sectors and countries worldwide, with real-time monitoring of investment projects, capital investment and job creation. This database is, to our knowledge, the only available source of data on greenfield investments given the scope of our analysis.

The FT database contains 23,852 greenfield investment projects undertaken in Europe by a non-European investor during the period 2003-2015. After cleaning and consolidating the data, 19,038 of these projects can be directly matched with a NUTS3 code equal to around 73 per cent of the total value of inward greenfield investments into the 38 European countries. In addition, 3,015 projects can be matched with a NUTS1 or NUTS2 code equal to 13 per cent of the total value of inward greenfield investment into the European countries included.

This means that 22,053 projects are matched with a NUTS code in total equalling to 86 per cent of total greenfield investments into Europe. For the remaining 1,799 projects where we have no information about the regional location of the investment, we distribute the value of the unallocated greenfield investments proportionally across the regions in the country.

These aggregate numbers reflect important differences across countries. In general, we find that the greenfield data have a very high quality for the old EU member states, of medium quality for the new EU member states and for the candidate countries, which some variation in quality between countries in each group. As Bosnia & Herzegovina and Serbia do not have any NUTS codes we have used similar regional codes, namely SNUTS codes, which has been developed and defined in a previous ESPON study.⁸ Kosovo is not covered by the FT database and is therefore excluded.

2.1 Matching of investment projects with NUTS codes

In this analysis, we are interested in analysing the distribution of greenfield investments on a sub-regional level, ideally on a NUTS3 level.

⁸ ESPON (2013): *ITAN - Integrated Territorial Analysis of the Neighbourhoods*.

In total, the FT database contains 56,281 greenfield investments in 38 of the 39 European countries to be included in this study (excluding Kosovo which is not covered by the database) over the period 2003-2016. We exclude intra-EU greenfield investments and narrow our analysis to the period 2003-2015 as figures for 2016 are incomplete.

The FT database contains data on 23,852 greenfield investment projects undertaken in the 38 European countries by a non-European investor during the period 2003-2015. Merging these data on greenfield investments with NUTS codes has required a thorough cleaning and consolidation process due to:

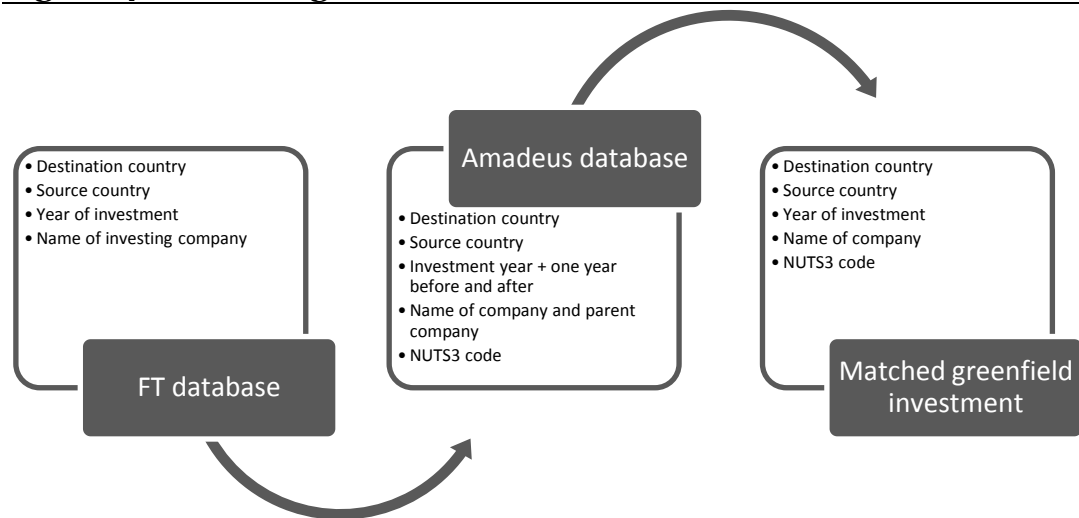
- **City and region names in different languages.** This problem arises because cities in the FT database are listed with a mix of national and international names sometimes using national letters, while all NUTS codes are listed with international names.
- **Misspellings and typing mistakes.** This problem arises because there are several misspellings of the city names in the FT database and because the city name, NUTS codes and country names are not always consistent.
- **Countries with no postcodes.** Ireland has no postcodes, which makes it difficult to place investments. The same is true for cities and regions where the name of the region/city is not sufficient information to allocate an investment to a particular NUTS3 region (this is for instance the case with Athens and London), but also for certain regions in e.g. France and Germany that themselves are larger than a NUTS3 region.

For projects where the information about the city or regions did not allow for an automatic matching with a NUTS code, we have performed a manual matching in two steps.

First, we have constructed a programme that has allowed us to combine data from the FT database with data from the Amadeus database offered by Bureau Van Dijk. This programme has enabled us to match information about the greenfield investments without a NUTS3 code with information about foreign companies in the same destination country and with the same source countries that were established the same year (+ one year before and after), and where the name of the investing company resembles the name of the company itself or the parent company. This methodology is illustrated in Figure 4.

Second, we have carried out a manual search to find the precise location of some of the largest projects. A combined search of the name of the investing company and the destination country has in some cases given us a city name that can then be matched with a NUTS3 code (possibly also combined with the year of investment if more investments have been made by the same investing company). In other cases, we are able to find the investment project but this gives us no precise information about the location, e.g. oil investments in Norway and pipeline investments in Turkey and Germany.

Figure 4 Combining the FT and Amadeus databases



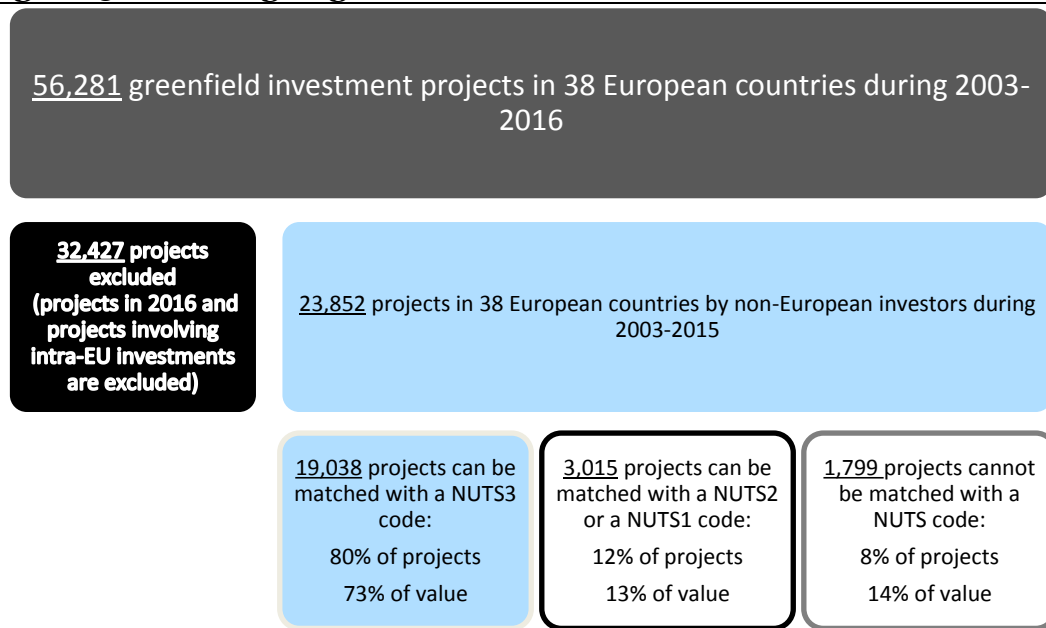
Source: ESPON FDI (2018)

After cleaning, consolidating and matching the data, we are able to match the city names with NUTS3 codes for 19,038 of these projects, cf. Figure 5. These 19,038 projects are equal to 80 per cent of all the greenfield investments projects included in this analysis and 73 per cent of the total value of inward greenfield investments into the 38 European countries.

For 3,015 of the remaining projects, the city or regional name listed in the database can be matched with a NUTS2 or NUTS1 code. London and Athens are the only two cases where the city name in the database corresponds to a NUTS2 code. Moreover, some countries are themselves a NUTS1 (e.g. Denmark and Norway), NUTS2 (e.g. Latvia and Malta) or even NUTS3 region (e.g. Cyprus and Luxembourg). These projects with NUTS1 or NUTS2 information account for 13 per cent of the total value of greenfield investments into the 38 European countries.

Out of the 1,799 projects that cannot be matched with a NUTS code, the FT database contains no information about neither the city nor the regional name in 1,792 cases. For the remaining 7 projects, the city or regional name contained in the database cannot be matched one to one with a city or a regional name on the NUTS lists. In the next section, we describe how we have allocate the value of these investments across regions.

Figure 5 Matching of greenfield investments with NUTS code



Source: ESPON FDI (2018) based on the FT database

2.2 Distributing unallocated greenfield investments

If all greenfield investment projects can be matched with a NUTS3 code, a comparison of investments over time and across regions can give interesting insights about the factors that drive this type of investments. But if the match is better for some countries or for some years than for others, such a comparison can be misleading. To get a measure of FDI inflows that can be compared across sub-regions, we distribute the investments that cannot be matched with a NUTS3 code.

For the 3,015 projects where we have NUTS1 or NUTS2 codes, we use this information to distribute the investments on NUTS3 codes.

London is a NUTS1 region that encompasses several NUTS2 as well as NUTS3 regions. In 1,806 cases, the location of the greenfield investment project is registered as London but the database contains no information about the exact location in London. In this case, we distribute the greenfield investments in London on all the NUTS3 regions in London according to the greenfield projects we have been able to place within London. For example, a NUTS3 region in London that accounts for 15 per cent of the total value of the projects within London that we have been able to match precisely at the NUTS3-level will be allocated 15 per cent of the greenfield investments in London that cannot be placed precisely.

Likewise, Athens is a NUTS2 region that encompasses several NUTS3 regions. In 57 cases, the location of the greenfield investment project is registered as Athens but the database contains no information about the exact location in Athens. These unallocated greenfield investments in Athens have been distributed across the NUTS3 regions in Athens according to the distribution of the number of investments we have been able to place in Athens.

For the remaining 1,799 investment projects with no NUTS code, we assume that these greenfield investments are distributed across regions in the same way as the greenfield investments that can be matched with a NUTS3 code. A NUTS3 region that receives 10 per cent of the greenfield investments into the country within a given year thus also receives 10 per cent of the greenfield investments that cannot be matched with a NUTS code that year.⁹

An overview of the *number of greenfield investments* that can be matched with NUTS codes for individual countries can be seen in Table 1. We find that the old EU member states have an overall larger share of NUTS3 allocated projects than new EU member states. As is evident, the number of projects that can only be matched with a NUTS1 or NUTS2 code are most concentrated in the United Kingdom, corresponding to two thirds of the projects, due to the many projects in London. Also, other large countries like Germany and France have a considerable number of projects where the information in the FT database only allows us to match the investment project on a NUTS1 or NUTS2 level.

An overview of the *value of greenfield investments* that can be matched with NUTS codes for individual countries can be seen in Table 2. We find that the share of the greenfield investments that can be matched with a NUTS3 code is generally higher when measured in number of projects than measured by value. The unmatched projects therefore have a slightly higher average value than the projects that can be matched with a NUTS3 code. For countries with a large share of unmatched projects, this finding suggests that the quality of the greenfield data is relatively low.

⁹ This methodology has not been applied to some of the smaller countries that receive only few greenfield investments. When we have no data on the distribution of greenfield investments across NUTS3 regions in a given year, we use the distribution of investments across NUTS3 code over the entire period 2003-2015. This is the case for Albania and Slovenia.

Table 1 Number of greenfield investments, 2003-2015

Country	Number of projects with NUTS3	Share of projects with NUTS3	Number of projects with NUTS1 or NUTS2	Share of projects with NUTS1 or NUTS2	Number of projects with no NUTS code	Share of projects with no NUTS code	Total
Albania	7	50%	7	50%	-	0%	14
Austria	207	83%	11	4%	31	12%	249
Belgium	692	90%	16	2%	62	8%	770
Bulgaria	194	76%	-	0%	62	24%	256
Switzerland	581	93%	43	7%	-	0%	624
Cyprus	35	100%	-	0%	-	0%	35
Czech Republic	489	87%	72	13%	-	0%	561
Germany	3,185	88%	233	6%	204	6%	3,622
Denmark	251	78%	70	22%	-	0%	321
Estonia	45	75%	15	25%	-	0%	60
Greece	26	22%	59	51%	31	27%	116
Spain	1,194	91%	2	0%	123	9%	1,319
Finland	222	92%	-	0%	19	8%	241
France	1,827	83%	221	10%	144	7%	2,192
Croatia	47	78%	13	22%	-	0%	60
Hungary	462	86%	-	0%	76	14%	538
Ireland	1,065	95%	51	5%	-	0%	1,116
Iceland	10	83%	2	17%	-	0%	12
Italy	542	85%	2	0%	95	15%	639
Liechtenstein	-	-	-	-	-	-	-
Lithuania	119	80%	29	20%	-	0%	148
Luxembourg	93	100%	-	0%	-	0%	93
Latvia	53	73%	20	27%	-	0%	73
Montenegro	18	100%	-	0%	-	0%	18
the former Yugoslavian Republic of Macedonia (FYROM)	27	64%	15	36%	-	0%	42
Malta	29	100%	-	0%	-	0%	29
Netherlands	1,001	86%	47	4%	110	9%	1,158
Norway	87	81%	20	19%	-	0%	107
Poland	841	84%	46	5%	113	11%	1,000
Portugal	110	79%	4	3%	26	19%	140
Romania	452	81%	-	0%	103	19%	555
Sweden	305	89%	-	0%	38	11%	343
Slovenia	24	65%	13	35%	-	0%	37
Slovakia	215	85%	37	15%	-	0%	252
Turkey	458	76%	-	0%	145	24%	603
United Kingdom	3,972	63%	1,953	31%	377	6%	6,302
Bosnia and Herzegovina	17	55%	14	45%	-	0%	31
Serbia	136	77%	-	0%	40	23%	176
Total	19,038	80%	3,015	13%	1,799	8%	23,852

Source: ESPON FDI (2018) based on the FT database

Table 2 Value of greenfield investments, 2003-2015

Country	Share of projects with NUTS3	Share of projects with NUTS1 or NUTS2	Share of projects with no NUTS code	Total (Million EUR)
Albania	21%	79%	0%	703
Austria	85%	2%	13%	7,160
Belgium	87%	4%	9%	22,010
Bulgaria	83%	0%	17%	16,409
Switzerland	94%	6%	0%	10,869
Cyprus	100%	0%	0%	1,038
Czech Republic	89%	11%	0%	16,767
Germany	73%	13%	13%	72,499
Denmark	80%	20%	0%	4,938
Estonia	84%	16%	0%	1,664
Greece	31%	26%	43%	3,287
Spain	89%	0%	11%	44,804
Finland	91%	0%	9%	5,949
France	76%	13%	11%	39,159
Croatia	89%	11%	0%	2,338
Hungary	87%	0%	13%	21,029
Ireland	91%	9%	0%	36,626
Iceland	86%	14%	0%	1,463
Italy	86%	0%	14%	24,614
Liechtenstein	-	0%	-	-
Lithuania	91%	9%	0%	8,304
Luxembourg	100%	0%	0%	1,910
Latvia	86%	14%	0%	2,845
Montenegro	100%	0%	0%	1,189
the former Yugoslavian Republic of Macedonia (FYROM)	70%	30%	0%	2,274
Malta	100%	0%	0%	772
Netherlands	79%	11%	10%	34,122
Norway	40%	60%	0%	6,234
Poland	73%	6%	21%	40,925
Portugal	56%	10%	34%	7,521
Romania	81%	0%	19%	22,880
Sweden	87%	0%	13%	9,361
Slovenia	53%	47%	0%	598
Slovakia	87%	13%	0%	13,687
Turkey	57%	0%	43%	62,498
United Kingdom	61%	26%	14%	210,236
Bosnia and Herzegovina	36%	64%	0%	4,615
Serbia	73%	0%	27%	12,677
Total	73%	12%	14%	775,979

Source: ESPON FDI (2018) based on the FT database

2.3 Assessment of the quality of the greenfield data

The FT database covers cross-border greenfield investments worldwide. The data contained in the database are collected from publically available sources and cover, among others, source country, destination country, city, sector, sub-sector, business activity, cluster and project type (i.e. expansion of an existing company or establishment of a new company).¹⁰ The FT database is the most comprehensive database on greenfield investments and provides a strong foundation for analysing trends in greenfield investments into European countries.

The quality of the data on a *regional* level varies across countries, cf. Figure 6. For 7 countries in Group 1, we find that the quality of the data is high. For an additional 23 countries in Group 2, we find that that the quality of the data is medium. For these two groups of countries, the conclusions related to the trends in inward greenfield investments across European regions are valid and can be used to draw policy recommendations. For the 7 countries in Group 3, the quality of the data is relatively low and conclusions should only be extended to these countries with caution. The countries in Group 4 are excluded from the analysis.

Figure 6 Overall quality of greenfield data by country

	Countries
Group 1: High quality data More than 90% of the number and value of investments in the country have a NUTS3 code	Switzerland, Cyprus, Finland, Ireland, Lithuania, Luxembourg and Montenegro
Group 2: Medium quality data More than 75% of the number and value of investments in the country have a NUTS3 code + countries with special characteristics	Austria, Belgium, Bulgaria, Czech Republic, Germany*, Denmark, Estonia, Spain, France, Croatia, Hungary, Iceland, Italy, Latvia, Netherlands, Norway*, Romania, Serbia, Sweden, Slovakia, Turkey* and United Kingdom*
Group 3: Low quality data Less than 75% of the number and value of investments in the country have a NUTS3 code	Albania, Bosnia & Herzegovina Greece, the former Yugoslavian Republic of Macedonia (FYROM), Poland, Portugal and Slovenia
Group 4: Missing data	Kosovo (not included in the FT database)

Note: Countries with an asterisk represent countries, which fall below the 75 percent threshold due to special characteristics. For Germany and Turkey, the majority of the unallocated investments are large investments in pipelines, which stretch over a large share of the country and thus cannot be allocated to a specific NUTS region. Norway has a large share of investments in the oil industry, which takes place in the ocean and therefore cannot be place in a NUTS region. For the United Kingdom, the lower share is due to the many projects in London, which can only be ascribed a NUTS1 and not a NUTS3 code. Liechtenstein received no greenfield investments from non-EU investors during the period and is therefore not included in this ranking.

Source: ESPON FDI (2018) based on the FT database

¹⁰ When data on capital expenditures are missing, the FT database contains an estimate of the investment value based on similar projects with registered investment values.

3 M&As across European regions

Mergers and acquisitions (M&As) are a type of FDI, which takes place when a foreign company acquires more than 10 per cent of the voting stock in a domestic company. M&As can help sustain existing economic activity in the region by bringing new capital, but this type of FDI does not expand the capital stock in the region contrary to greenfield investments.

The M&A data used in this report stem from the Zephyr database, which is assembled by Bureau van Dijk (Zephyr database). Bureau van Dijk also has available the Amadeus database, which contains firm-level data on a large number of companies in Europe. While there are also other M&A databases available in the market, we chose the Zephyr database because we will use the Amadeus database in other parts of this study. Also, the Amadeus database includes NUTS codes that can be directly transferred to the Zephyr database.

The Zephyr database contains 28,209 M&A deals undertaken in 38 European countries (excluding Kosovo) by a non-European investor during the period 2003-2015. After cleaning and consolidating the data, the city name in 25,273 of these projects can be directly matched with a NUTS3 code equal to 90 per cent of the total value of M&As into Europe. In 1,292 projects, the city name can be matched with a NUTS1 or NUTS2 code, and we distribute the value of these investments proportionally across the NUTS3 regions under the respective NUTS1 or NUTS2 code. For the remaining 1,644 projects where we have no information about the regional location of the investment, we distribute the value of the investments proportionally across the regions in the country.

These aggregate numbers reflect important differences across countries. In general, we find that the M&A data are generally of very high quality but with slightly lower quality for the candidate countries.

3.1 Matching of M&As with NUTS codes

In total, the Zephyr database includes information on 325,056 M&As for all the 39 European countries to be included in this study over the period 2003-2016. Of these M&A projects 31,482 are undertaken by non-European investors during the period 2003-2015. However, 3,273 of these projects are rumours, pending approval or in other ways unconfirmed. These projects are excluded, leaving us with 28,209 M&A deals undertaken by non-European investors during the period 2003-2015. Projects in 2016 were excluded since the data did not span the entire year.

We therefore end up with a dataset of 28,209 M&A projects, which we use to analyse trends in the number of M&As across regions. However, for 13,820 projects, the database contains no information about the deal value of the M&A leaving us with 14,389 projects with confirmed deal values. Nonetheless, when we analyse trends in the distribution of M&A projects, we use all 28,209 projects. As the database contains no information about deal values for Kosovo, we exclude Kosovo from the entire analysis.

Table 3 M&As with missing deal value, 2003-2015

Country	Total number of projects	Number of projects with no deal value	Share of total projects with a reported deal value
Albania	7	3	57%
Austria	215	123	43%
Belgium	566	269	52%
Bulgaria	510	401	21%
Switzerland	744	342	54%
Cyprus	322	142	56%
Czech Republic	221	134	39%
Germany	2,853	1,449	49%
Denmark	437	272	38%
Estonia	72	51	29%
Greece	101	35	65%
Spain	1,117	440	61%
Finland	426	255	40%
France	2,296	1,017	56%
Croatia	25	10	60%
Hungary	130	80	38%
Ireland	557	262	53%
Iceland	33	18	45%
Italy	1,655	839	49%
Liechtenstein	7	4	43%
Lithuania	54	30	44%
Luxembourg	244	68	72%
Latvia	69	40	42%
Montenegro	7	1	86%
the former Yugoslavian Republic of Macedonia (FYROM)	8	3	63%
Malta	37	14	62%
Netherlands	1,827	754	59%
Norway	563	182	68%
Poland	312	131	58%
Portugal	227	77	66%
Romania	184	86	53%
Sweden	809	450	44%
Slovenia	32	14	56%
Slovakia	41	27	34%
Turkey	349	169	52%
United Kingdom	11,071	5,598	49%
Bosnia and Herzegovina	24	5	79%
Serbia	57	25	56%
Total	28,209	13,820	51%

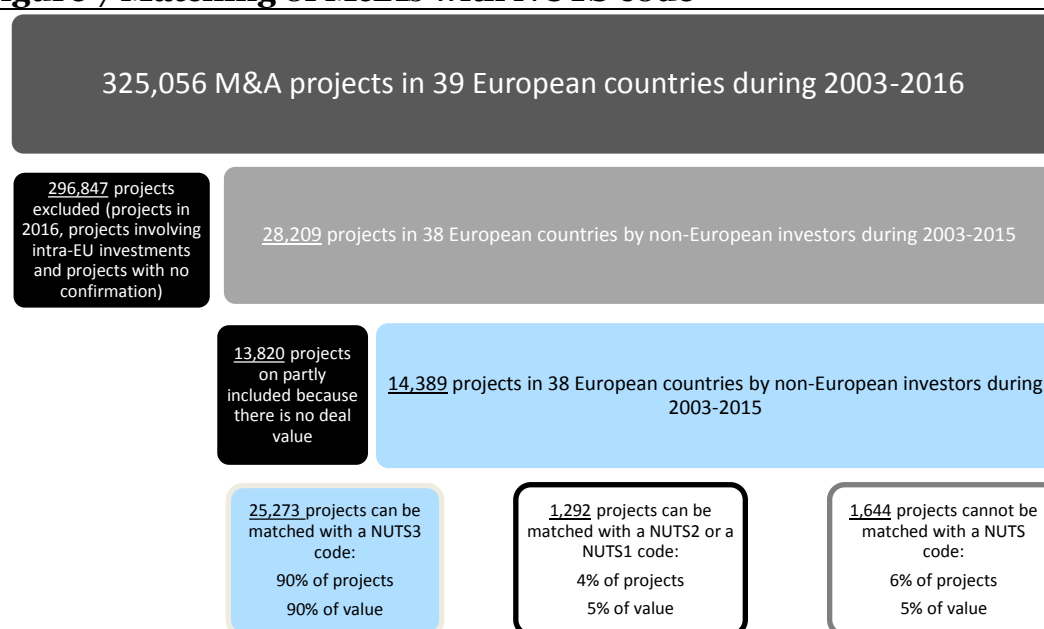
Source: ESPON FDI (2018) based on the Zephyr database

After having corrected for misspellings of the city names in the Zephyr database and inconsistencies between the city name, NUTS codes and country names, 25,273 of the projects can be directly matched with a NUTS3 code equal to 90 per cent of the total value of inward M&As into the 38 European countries.

In 1,292 projects, the city name cannot be matched with a NUTS2 or NUTS1 code. In most of these cases, we only know in which country the investment is located but we have no information about the city. These cases account for 5 per cent of the total M&A value into Europe.

2016 was excluded for two reasons. First, data were not available for the entire year. Second, restricting the analysis to the period 2003-2015 is comparable to the available data for greenfield projects.

Figure 7 Matching of M&As with NUTS code



Source: ESPON FDI (2018) based on the Zephyr database

3.2 Distributing unallocated M&As

To obtain the most comprehensive and comparable data on M&A deals on a sub-regional level, we distribute the deal values that have not been assigned a NUTS3 code using the methodology described in Chapter 1. An overview of the number of M&As that can be matched with NUTS codes for individual countries can be seen in Table 4. For most countries, we find that a large share of the projects can be matched with a NUTS3 code, which leaves a relative small share to be matched at a NUTS1 or NUTS2 level and unallocated. The share of unallocated M&As appears to be equally distributed across old and new EU member states. Likewise, an overview of the value of M&As that can be matched with NUTS codes for individual countries can be seen in Table 5. We find that the share of unallocated observations in terms of value resembles the share of unallocated observations in terms of number of projects.

Table 4 Number of M&As NUTS codes, 2003-2015

Country	Number of projects with NUTS3	Share of projects with NUTS3	Number of projects with NUTS1 or NUTS2	Share of projects with NUTS1 or NUTS2	Number of projects with no NUTS code	Share of projects with no NUTS code	Total
Albania	5	71%	2	29%	-	0%	7
Austria	183	85%	8	4%	24	11%	215
Belgium	518	92%	-	0%	48	8%	566
Bulgaria	485	95%	-	0%	25	5%	510
Switzerland	695	93%	49	7%	-	0%	744
Cyprus	322	100%	-	0%	-	0%	322
Czech Republic	202	91%	19	9%	-	0%	221
Germany	2,589	91%	1	0%	263	9%	2,853
Denmark	399	91%	38	9%	-	0%	437
Estonia	63	88%	9	13%	-	0%	72
Greece	80	79%	4	4%	17	17%	101
Spain	1,019	91%	-	0%	98	9%	1,117
Finland	398	93%	-	0%	28	7%	426
France	2,114	92%	2	0%	180	8%	2,296
Croatia	20	80%	5	20%	-	0%	25
Hungary	108	83%	-	0%	22	17%	130
Ireland	487	87%	70	13%	-	0%	557
Iceland	30	91%	3	9%	-	0%	33
Italy	1,512	91%	1	0%	142	9%	1,655
Liechtenstein	7	-	-	-	-	-	7
Lithuania	49	91%	5	9%	-	0%	54
Luxembourg	244	100%	-	0%	-	0%	244
Latvia	64	93%	5	7%	-	0%	69
Montenegro	7	100%	-	0%	-	0%	7
The former Yugoslavian Republic of Macedonia (FYROM)	4	50%	4	50%	-	0%	8
Malta	30	81%	7	19%	-	0%	37
Netherlands	1,812	99%	-	0%	15	1%	1,827
Norway	523	93%	40	7%	-	0%	563
Poland	272	87%	-	0%	40	13%	312
Portugal	206	91%	-	0%	21	9%	227
Romania	162	88%	-	0%	22	12%	184
Sweden	750	93%	-	0%	59	7%	809
Slovenia	30	94%	2	6%	-	0%	32
Slovakia	31	76%	10	24%	-	0%	41
Turkey	264	76%	-	0%	85	24%	349
United Kingdom	9,531	86%	1,002	9%	538	5%	11,071
Bosnia and Herzegovina	18	75%	6	25%	-	0%	24
Serbia	40	70%	-	0%	17	30%	57
Total	25,273	90%	1,292	5%	1,644	6%	28,209

Source: ESPON FDI (2018) based on the Zephyr database

Table 5 Value of M&As with NUTS codes, 2003-2015

Country	Share of projects with NUTS3	Share of projects with NUTS1 or NUTS2	Share of projects with no NUTS code	Total (Million EUR)
Albania	100%	0%	0%	24
Austria	94%	0%	6%	11,853
Belgium	96%	0%	4%	42,773
Bulgaria	94%	0%	6%	4,514
Switzerland	94%	6%	0%	140,955
Cyprus	100%	0%	0%	14,139
Czech Republic	97%	3%	0%	7,329
Germany	92%	2%	6%	207,356
Denmark	96%	4%	0%	26,076
Estonia	98%	2%	0%	415
Greece	87%	8%	5%	8,852
Spain	96%	0%	4%	84,591
Finland	97%	0%	3%	14,440
France	95%	0%	5%	161,037
Croatia	93%	7%	0%	2,519
Hungary	89%	0%	11%	5,299
Ireland	95%	5%	0%	32,842
Iceland	100%	0%	0%	5,835
Italy	92%	0%	8%	116,315
Liechtenstein	100%	0%	0%	19
Lithuania	99%	1%	0%	576
Luxembourg	100%	0%	0%	49,736
Latvia	95%	5%	0%	395
Montenegro	100%	0%	0%	95
The former Yugoslavian Republic of Macedonia (FYROM)	88%	12%	0%	62
Malta	100%	0%	0%	2,396
Netherlands	100%	0%	0%	229,988
Norway	94%	6%	0%	27,870
Poland	96%	0%	4%	8,420
Portugal	98%	0%	2%	18,532
Romania	90%	0%	10%	2,778
Sweden	99%	0%	1%	48,267
Slovenia	100%	0%	0%	1,303
Slovakia	100%	0%	0%	188
Turkey	94%	0%	6%	31,659
United Kingdom	79%	10%	11%	587,344
Bosnia and Herzegovina	92%	8%	0%	203
Serbia	100%	0%	0%	674
Total	90%	4%	5%	1,897,667

Note: Due to rounding off some values are reported as 0% and deleted from this table even though a relative small deal value is reported in the dataset.

Source: ESPON FDI (2018) based on the Zephyr database

3.3 Assessment of the quality of the M&A data

Zephyr is the most comprehensive database on M&A deals. The data contained in the database are collected from publically available sources and cover, among others, source country, destination country, city, sector and investor type. The Zephyr database is the most comprehensive database on M&As and provides a strong foundation for analysing trends in M&As into European countries.

The quality of the M&As data on a regional level is generally higher than the quality of the greenfield data, cf. Figure 8. For 35 countries in Group 1, we find that the quality of the data is high. For an additional 3 countries in Group 2, we find that that the quality of the data is medium. For these two groups of countries, the conclusions related to the trends in EU M&As drawn are valid and can be used to draw policy recommendations. There are no countries in Group 3. The countries in Group 4 are excluded from the analysis.

Figure 8 Overall quality of M&A data by country

	Countries
Group 1: High quality data More than 90% of the number and value of investments in the country have a NUTS3 code	Albania, Austria, Belgium, Bulgaria, Switzerland, Cyprus, Czech Republic, Germany, Denmark, Estonia, Spain, Finland, France, Croatia, Hungary, Ireland, Iceland, Italy, Liechtenstein, Lithuania, Luxembourg, Latvia, Montenegro, Malta, Netherlands, Norway, Poland, Portugal, Romania, Sweden, Slovenia, Slovakia, Turkey, Bosnia & Herzegovina and Serbia
Group 2: Medium quality data More than 75% of the number and value of investments in the country have a NUTS3 code + countries with special characteristics	Greece, the former Yugoslavian Republic of Macedonia (FYROM), United Kingdom*
Group 3: Low quality data Less than 75% of the number and value of investments in the country have a NUTS3 code	
Group 4: Missing data	Kosovo (no information about deal value)

Note: Countries with an asterisk represent countries, which fall below the 75 percent threshold due to special characteristics. For the UK, the lower share is due to the many projects in London, which can only be ascribed a NUTS1 and not a NUTS3 code.

Source: ESPON FDI (2018) based on the Zephyr database

4 Concluding remarks

The overall purpose of this study is to analyse trends in FDI inflows towards Europe over a ten year period on a regional level (preferably on a NUTS3 level). This data is not available from any official database, and we have therefore collected and combined data from different databases to obtain an estimate of the number and value of FDI inflows on the regional level. This scientific report contains a description of the sources of FDI used in this study and the method used to collect and consolidate the data to give the best possible estimates.

We have collected data on greenfield investments from the FT database and on M&As from the Zephyr database. Together, these two components add up to total FDI inflows. These data are available for 38 European countries (excluding Kosovo) on an annual basis over the period 2003-2015.

In around 80 per cent of the greenfield investments listed in the FT database, the database contains a city name that can be matched with a NUTS3 code. This is equal to 74 per cent of the total value of greenfield investments in the 38 European countries. For the remaining greenfield investments, we distribute the value of the unallocated projects proportionately on the sub-regional level to get an estimate of greenfield investment inflows that can be compared across countries. In general, we find that the quality of the greenfield investment data is relatively high for the old EU member states but medium or low for the new EU member states and for the candidate countries, although some new member states have very good quality data and some old member states (Greece and Portugal) have data of a low quality.

In around 90 per cent of the M&A projects listed in the Zephyr database, the database contains a city name that can be matched with a NUTS3 code (equal to 91 per cent of the total value of M&As). For the remaining projects, we distribute the M&As proportionately on the sub regional level. With the exception of Greece, The former Yugoslav Republic of Macedonia and the United Kingdom, we find that the quality of the M&A data is very high.

The total inflow of greenfield investments to the 38 European countries during 2003-2015 amounted to 687 bn. EUR, whereas M&A inflows amounted to 1,741 bn. EUR. Since M&As account for a much larger share of total FDI inflows into Europe, the high quality of the M&A data supports the use of this data for further analysis.

The quality of the combined FDI data adding greenfield investments and M&As is assessed in Figure 9. For most countries, the value of M&A is much higher than the value of greenfield investments. The quality of the FDI data is therefore very much dependent on the quality of the M&A data.

The quality of the overall FDI data on a regional level is therefore quite high. For 29 countries in Group 1, we find that the quality of the data is high. For an additional 7 countries in Group 2, we find that that the quality of the data is medium. For these two groups of countries, the conclusions related to the trends in EU FDI drawn are valid and can be used to draw policy recommendations. Overall, we have no countries in Group 3, where the quality of the data is relatively low and conclusions should be drawn with caution. We are therefore able to make solid conclusions for all the countries included in the analysis. The countries in Group 4 are excluded from the analysis.

Figure 9 Overall quality of FDI data by country

	Countries
Group 1: High quality data High quality data on M&As and high/medium quality data on greenfield investments	Austria, Belgium, Bulgaria, Switzerland, Cyprus, Czech Republic, Germany, Denmark, Estonia, Spain, Finland, France, Croatia, Hungary, Ireland, Iceland, Italy, Liechtenstein, Lithuania, Luxembourg, Latvia, Montenegro, Malta, Netherlands, Norway, Romania, Sweden, Slovakia, Turkey, Bosnia & Herzegovina and Serbia
Group 2: Medium quality data Medium quality data M&As and medium/low on greenfield investments	Albania, Greece, the former Yugoslavian Republic of Macedonia (fYROM), Poland, Portugal, Slovenia and United Kingdom
Group 3: Low quality data Low quality data on both greenfield investments and M&As	
Group 4: Missing data	Kosovo (no information about deal value)

Source: ESPON FDI (2018) based on the FT database and the Zephyr database

We collect this combined FDI inflows on an annual basis for a 10-year period and use the data to analyse trends in FDI flows towards European regions (Task 2).

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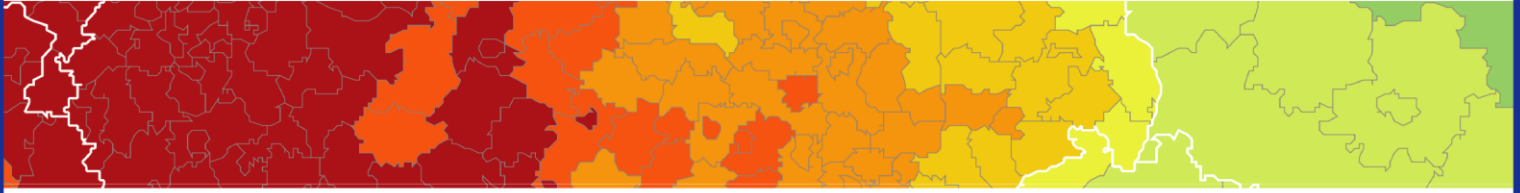
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