Support to large enterprises

Final Report

Work Package 4

Ex post evaluation of Cohesion Policy programmes 2007-2013, focusing on the European Regional Development Fund (ERDF) and the Cohesion Fund (CF)

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Evaluation Final Report

Ex post evaluation of support to large enterprises

This report is part of a study carried out by a Team selected by the Evaluation Unit, DG Regional and Urban Policy, European Commission, through a call for tenders by open procedure No 2013CE16BAT033.

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The authors are responsible for any remaining errors or omissions.

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EXECUTIVE SUMMARY

This is the Final Report of **Work Package 4** (Support to large enterprises) of the ex post evaluation of Cohesion Policy programmes 2007–2013, financed by the European Regional Development Fund (ERDF) and the Cohesion Fund (CF). Eight EU Member States were studied, representing 75% of total spending on enterprise support under Cohesion Policy. Seven of these accounted for the greatest absolute spending on large enterprise support of all EU Member States (**Poland**, **Germany**, **Portugal**, **Spain**, **Hungary**, **Italy** and the **Czech Republic**), while **Austria** had the highest proportional spending in this support area.

Cohesion Policy invested an estimated EUR 6 billion in support of large enterprises over the 2007-2013 period.

Between 2007 and 2013, the total budget of Cohesion Policy programmes (ERDF/ESF/CF) reached EUR 347 billion, of which EUR 52 billion was allocated to enterprises.[1] EUR 31 billion of this was spent on direct enterprise support. Direct financial support to large enterprises is estimated at **EUR 6 billion** at the EU-28 level based on the verified total of EUR 4.6 billion in spending by the eight countries included in this evaluation. Poland, Portugal and Germany account for half of all large enterprise support within the EU-28.

The estimated amount of EUR 6 billion represents **20% of all ERDF spending on direct enterprise support** in the EU-28 and 2% of the entire Cohesion Policy budget. For the most part, large firms were supported through non-refundable grants, but in four Member States (Italy, Spain, Portugal, Austria), refundable support was also provided in the form of loans (often in addition to non-refundable grants).

Table 1: Amount of direct large enterprise support under Cohesion Policy 2007-2013[2]

	Direct enterprise support (EUR million)	Large enterprise support (EUR million)	Share of large enterprise support	Number of projects	Number of firms supported
Poland	6,591	**1,153**	17%	539	408
Portugal	4,145	**1,134**	27%	407	319
Germany	3,200	**704**	22%	763	632
Czech Republic	1,491	**467**	31%	520	339
Hungary	2,581	**453**	18%	409	273
Spain	2,543	**311**	12%	1,269	398
Italy	2,034	**243**	12%	416	270
Austria	283	**133**	47%	194	148
Total (8 countries)	22,868	**4,598**	20%	4,517	2,787
Total (EU-28)	31,233	***6,100** (est.)*	*20% (est.)*	*6,000 (est.)*	*3,700 (est.)*

Source: KPMG/Prognos (2016), based on data provided by Managing Authorities & own estimates.

The EUR 6.1 billion in large enterprise support was allocated to approximately 6,000 projects, with an average project size of EUR 1 million. In total, roughly **3,700 individual large firms** were supported, each of which implemented 1.6 projects on average (some firms even received funding for 4 to 5 projects). Over 70% of these large enterprises operated in manufacturing industries (NACE C).

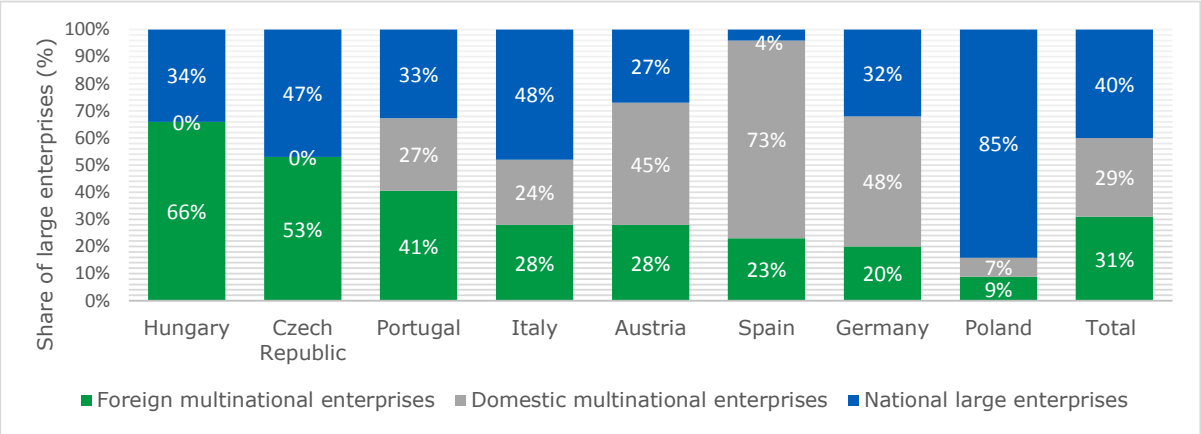
[1] Enterprise spending encompasses the following ten expenditure codes as defined in Council Regulation (EC) NO 1083/2006: 03–09, 14–15 and 68.

[2] Direct enterprise support: committed support (Cohesion Policy only) on 05, 07 and 08 codes reported by the countries' Managing Authorities; large enterprise support: committed support (Cohesion Policy only) on 05, 07 and 08 codes to projects implemented by large enterprises (data collection at Managing Authorities; primary data sources are the countries' monitoring and information systems).

Forty-three per cent of the supported legal entities had fewer than 250 employees at the project site. These firms would be defined as SMEs in terms of their employment levels if evaluated solely on the basis of local activities. The majority of these enterprises were subsidiaries of larger corporations and thus were classified as large firms from a funding perspective.[3] Forty-two per cent of the supported legal entities employed 250-999 people at the project site; thirteen per cent of them employed more than 1,000.[4]

With regard to country of origin, the funds were roughly equally distributed among national large enterprises (i.e. indigenous firms), domestic multinational enterprises (i.e. headquartered in the supporting country) and foreign multinational enterprises (i.e. headquartered in a foreign country), however, there were large differences across Member States in this respect (see the figure below). 81% of the supported foreign multinational companies were of European origin.

Figure 1: Distribution of large enterprises based on scope of operation and origin



Source: KPMG/Prognos (2016), based on the monitoring systems and public company databases.

Foreign direct investments were identified in all countries except Italy and Spain. They constituted around 5% of the total number of supported large enterprise projects (~ 300 projects).[5]

Existing studies question the effectiveness of large enterprise support but have not explored the full scope of potential benefits.

Some of the most visible regional development success stories in the EU in the period 2007–2013 have been attributed to attracting large enterprises. Despite these achievements, findings from counterfactual impact evaluations have called into question the impact of public financial support to large enterprises.[6] Since large enterprises are often spatially mobile, previous evaluations have particularly noted that the beneficial outcomes of support to such firms may not remain in the region over the long term.

Against this background, the **objective of this ex post evaluation** was to assess the rationale for, implementation of and evidence of effectiveness of Cohesion Policy support to large enterprises in the 2007–2013 period.[7] In doing so, this evaluation addresses

[3] The Austrian case, for instance, revealed that according to consolidated figures, three quarters of the supported firms in Austria had more than 1,000 employees and only 4.1% fell into the category of 0-249 employees.
[4] Employment data was not available for 2% of the supported large firms.
[5] The share of FDI was estimated on project level, the distribution based on scope of operation (Figure 1) on an enterprise level.
[6] Mouqué, Daniel (2012): What are counterfactual impact evaluations teaching us about enterprise and innovation support? Regional Focus, 02/2012.
[7] Tender Specifications, p. 11.

questions about the circumstances and conditions under which EU Cohesion Policy support to large enterprises is desirable and justified.

A novel evaluation design was chosen to unlock the 'black box' of potential effects resulting from large enterprise support and to determine the contribution of Cohesion Policy.

At the time the ex post evaluation began, little was known about the full scope of large enterprise support under Cohesion Policy between 2007 and 2013, as there were no aggregated EU level statistics. Therefore, as a first step, we performed **comprehensive data collection** on large enterprise support in the eight selected EU Member States ('taking stock of support'). In the second step, we identified the policy strategies underlying large enterprise support in the eight Member States. The Operational Programmes mostly were not explicit regarding the rationale for large enterprise support (especially as regards the planned direct and indirect benefits). In such cases the intervention logic (or 'Theory of Change') had to be reconstructed based on complementary strategy documents and key informant interviews.

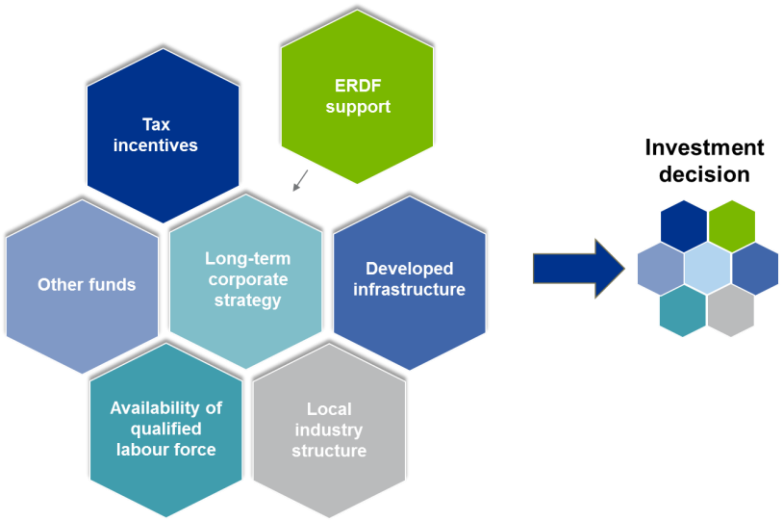
In the third step, we used a **theory-based evaluation** approach to analyse the efficiency and effectiveness of the financial support provided. We applied **Contribution Analysis** in order to deconstruct the complex cause-effect questions surrounding large firm support into micro steps, combine assumptions and external factors into a single framework (Theory of Change) and test four Theories of Change against various information sources. Evidence was collected systematically for each element and cause-effect relationship within the Theory of Change, including inputs, the project, direct effects, indirect and wider benefits, key assumptions, influencing factors and plausible alternative explanations for the observed outcomes. We then made a judgment on whether the desired effects of the projects were realised and whether EU support was part of the 'causal package' that resulted in the projects undertaken by the large firms. Using this approach, we estimated the contribution of support to the planned outcomes, examining whether EU funding had any effect.

The Contribution Analysis was implemented through a **comparative case study design**. This involved eight case studies on the level of individual Operational Programmes in the selected Member States. At the heart of this structure were 45 company case studies that followed a multi-respondent design, with over 130 interviews. The company case studies utilised a systematic framework to assess the contribution of large enterprise support to project implementation and observed outcomes. This combined analytical approach enabled us to form our conclusions on a solid foundation of evidence.

An array of factors determined the investment decisions of large enterprises in the context of Cohesion Policy support.

Analysis of the causal package and the roles of other influencing factors revealed that in the case of large enterprises, ERDF support **typically acted as a pre-condition** for these investments, i.e. as a necessary but not sufficient condition for project implementation. As shown in Figure 2, EU support was often only one of many influencing factors of investment decisions, the most important of which were long-term corporate strategy, the availability of transport infrastructure and the local industry structure.

Figure 2: Array of factors that determined investment decisions of large enterprises



Source: KPMG/Prognos (2016). Based on empirical evidence from the 45 company case studies.

In 20% of cases, the desired behavioural change took place and the ERDF support was among the main causes of project implementation.

The induced behavioural change in these cases constituted considerable changes in the scope and timing of the implementation of strategic projects that would not have been implemented otherwise. This pattern was observed most frequently among large enterprises facing financial problems in the aftermath of the financial crisis.

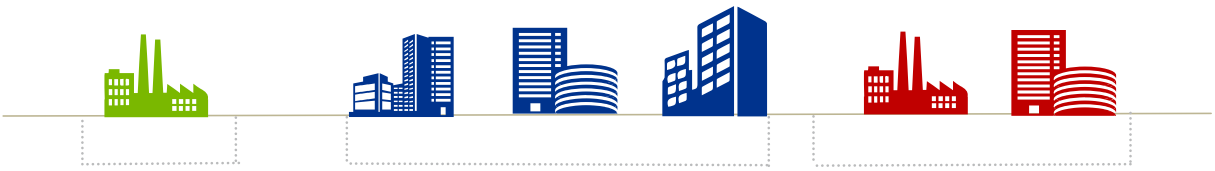
In 50% of cases, ERDF support was successful in inducing changes in corporate behaviour, particularly influencing the timing and the scope of the implemented projects.

In 50% of cases, ERDF support was a necessary condition of project implementation and at least some degree of behavioural additionality was induced. Typically, as illustrated in Figure 3 the support often acted as a catalyst to project implementation, leading large firms to invest earlier than planned. Support also affected project scope, notably by influencing firms to add new project activities (e.g. co-operation with other economic actors) or undertakings (e.g. hiring more people, using environmentally friendly technologies).

In 30% of cases, ERDF support had little influence on the behaviour of large enterprises.

The evaluation found that in the remaining 30% of cases, EU funding played only a supporting role in project implementation and was not a necessary part of the causal package that led to the investment. In such cases, the influence of ERDF support on large firms' behaviour was little, often because projects were grounded in longer-term corporate plans. Particularly low behavioural additionality was achieved for projects focusing on basic technological upgrades, while behavioural additionality was much higher for large-scale business investments, innovation support and R&D support.

Figure 3: Influence of ERDF support on large enterprise behaviour.



~20% of cases were **significantly influenced** by the support.

In **~50%** of cases ERDF support led to **some behavioural additionality** by

…acting as a **catalyst** to the projects

…**amplifying** the investment scope

…granting **access** to finance for „mid-caps" with growth potentials

In **~30%** of cases ERDF support had only **little influence**

Source: KPMG/Prognos (2016), based on empirical evidence from the 45 company case studies.

Ninety per cent of supported projects had positive direct effects, but – as described above – not all observed outcomes were fully explained by EU support.

For the majority of projects, both the production capacity and the productivity of the large enterprises have risen, often due to the utilisation of cutting-edge technologies that went beyond simple replacement investments. The creation of jobs was widely achieved at the project level; the projects are reported to have created at least 60,000 new jobs by large enterprises in the eight case study regions. For most firms, there were strong causal linkages between the project and the observed outcomes. Nevertheless, due to the only moderate ability of ERDF support to influence large firms' behaviour (see Figure 2) the influence of the support was less straightforward.

Where planned, indirect and wider benefits have emerged in 75% of cases; however, in many cases, the lack of planning for indirect and wider benefits and a focus on inputs and direct results prevented the occurrence of such impacts.

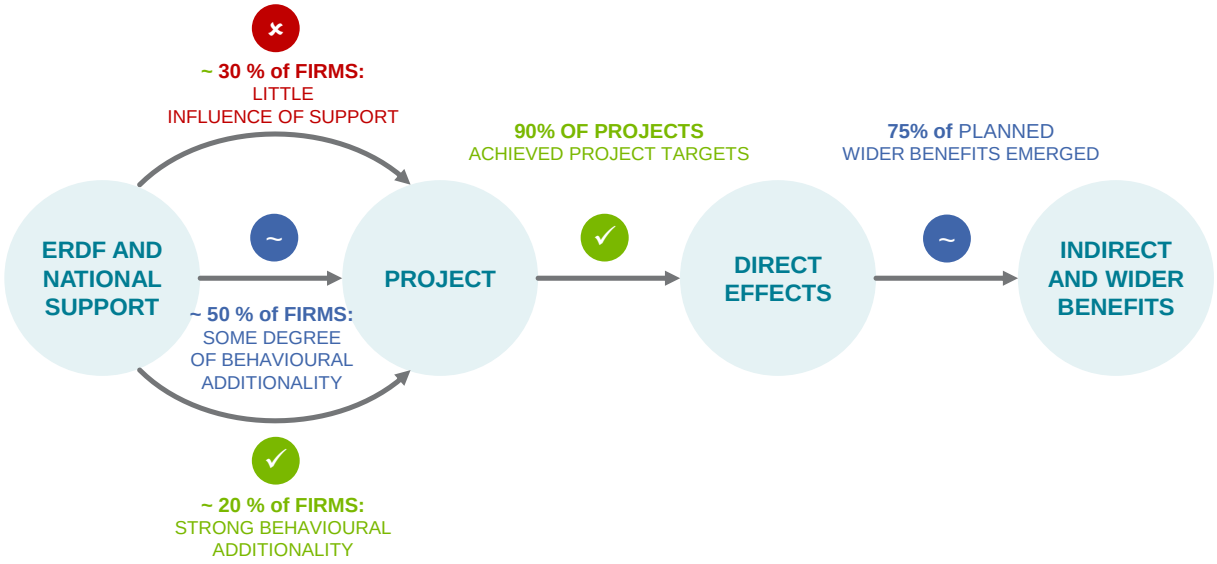
While the achievement of direct results (e.g. an increased demand for jobs) were foreseen in each of the 45 supported projects, indirect and wider benefits were planned less systematically in the case study countries.

Wherever such effects were foreseen, 75% of desired indirect and wider benefits were at least partly induced. Where spillovers to SMEs were expected to take place, the majority of the projects managed to achieve positive effects. There were similar results for improvements in workforce mobility, working culture, business and social infrastructure and attraction of other firms to the region. For these wider benefits to emerge, additional conditions, such as sufficient absorption capacity for new knowledge among the benefiting organisations (e.g. SMEs) and pre-existing collaborative ties, had to be in place. The majority of projects made direct contributions to the export performance of the supported enterprises and thereby contributed to the regional export base. The projects frequently contributed to innovation capacity in the programme area, most

directly through the establishment of R&D infrastructure and through involving local partners from universities or SMEs into (global) R&D&I operations.

The conclusions above are illustrated by the following figure.

Figure 4: Simplified causal chain and effectiveness of support.



Source: KPMG/Prognos (2016), based on empirical evidence from the 45 company case studies.

Long-term sustainability of the large enterprise projects is uncertain, but a good match with local industry structure and longer investment lifecycles can help.

Projects can be regarded as sustainable if they deliver benefits to the recipients and the region for an extended period after the Commission's financial assistance has been terminated. In this sense, the analysed projects were largely sustainable within the mandatory five-year grace period. The main explanation for these high sustainability levels lies in stable enterprise structures and direct connections between the supported projects and longer-term strategic plans, leading to low project cancellation rates.

Longer-term sustainability is less clear, due to manifold external factors. In particular, the nature of the investment and the operating history of the large enterprise in the region strongly affected the level of sustainability. In addition, long-term sustainability was found to vary by sectoral features due to differing lengths of investment lifecycles and capital needs (e.g. longer lifecycles in the aviation industry and shorter ones for service centres). Investments in industries with closer ties to the existing industrial structure are expected to achieve higher sustainability. The availability of future public financial support (e.g. grants) was mentioned only as a complementary factor by company representatives. Nevertheless, multiple granting was a common feature of the 2007–2013 period, with the average number of projects reaching 1.6 projects per large enterprise and a range from 1 to 6 projects.

Cohesion Policy support to large enterprises should be more selective, focusing on attracting investment from third countries, inducing benefits for SMEs and local economies and helping mid-caps obtain financing and growth.

In the 2007-2013 period, large enterprise support was particularly effective in the following cases:

- **The supported projects managed to induce financial and non-financial benefits for SMEs and the regional innovation system.** Support schemes generated the most added value where, beyond the achieved direct results, wider

benefits could be stimulated. The occurrence of these effects was the highest where supported enterprises matched regional industry structure, operated in research intensive industries or established regional ties with local SMEs, research labs and universities through joint projects.

- **The support provided access to financing for mid-caps, allowing them to invest in future growth.** Mid-caps[8], particularly large firms just above the 250 employee threshold, often suffered from limited access to finance, especially at times of crisis, which would have prevented the implementation of some strategically important projects. ERDF support could achieve high behavioural additionality in such cases, as it was one of the main causes of the investments.
- **The large enterprise invested in the EU instead of a third country.** Added value was achieved at European level when a multinational firm invested in the EU instead of a third country as a result of the ERDF support. Benefits from such FDI could be maximised when the supported enterprises were a good match for the local industry structure and the investment projects could provide opportunities for the establishment of local linkages between the foreign enterprise and regional stakeholders (SMEs, universities, cluster initiatives etc.), which eventually fostered the embeddedness of multinational companies in the regional economy.

Sustainability of support could be successfully promoted by regional incentives, supplier development programmes and multiple funding, however only under strict conditions and as part of a long-term strategic approach that supported knowledge-driven development. The case of Styria illustrates how such strategy can support long-term economic development, moving from FDI support and to large-scale business investments and finally to supporting the upgrading of R&D&I capacities and embedding subsidiaries of large enterprises in the regional innovation system. The case also highlighted how important the strategic capacity of Managing Authorities and the various types of intermediaries (e.g. regional development agencies, investment promotion agencies, state investment banks etc.) was in policy development and implementation, including the selection of beneficiaries based on project selection criteria linked to the long-term strategic objectives of the region.

[8] Mid-caps are defined to have between 250 and 3,000 employees. See: European Commission (2015): 'Fact Sheet: The Investment Plan for Europe', Brussels.

1. INTRODUCTION

This is the Final Report of the **Work Package 4** (Support to large enterprises) of the ex-post evaluation of Cohesion Policy programmes 2007-2013, financed by the European Regional Development Fund (ERDF) and Cohesion Fund (CF).

Purpose of the evaluation

The purpose of the ex post evaluation, as set out in the Tender Specifications, was to assess the rationale, implementation and evidence of effectiveness of Cohesion Policy support to large enterprises. The report aims to provide findings and conclusions that are relevant for national and regional policy-makers, the general public, the European Parliament and other interested stakeholders.

The ex post evaluation appraised the extent to which resources were used, the effectiveness and the socio-economic impacts of large enterprise support and the factors contributing to the success or failure of the interventions.

Furthermore, the ex post evaluation set out to outline policy implications by answering the following questions:

1. What direct effects and indirect/wider benefits can the support achieve and on what time scale?
2. In view of these benefits, what kind of large enterprises or projects should be supported, and how can they be influenced?
3. What kind of large enterprises or projects should not be supported?
4. What can be done to keep large enterprises in the region in which they were supported?

Scope of evaluation

The evaluation covers support to large enterprises over the period 2007-2013. The evaluation considered large enterprise support under the expenditure codes 05, 07 and 08[9] from ERDF support, namely:

- Advanced support services for firms or groups of firms (Code 05)
- Investment in firms directly linked to research and innovation (Code 07)
- Other investment in firms (Code 08)

The evaluation concerned eight selected Member States. Seven of these accounted for the greatest absolute spending (**Poland**, **Germany**, **Portugal**, **Spain**, **Hungary**, **Italy** and the **Czech Republic**), while **Austria** had the highest proportion of spending in these codes. These countries account for just under EUR 23 billion of spending under the above codes, i.e. 75% of this spending for the EU as a whole.

[9] Expenditure codes are defined in COUNCIL REGULATION (EC) No 1083/2006.

The main sources of evidence for the evaluation were the eight programme case studies. Based on the criteria proposed for the selection of Operational Programmes in the Tender Specifications, the evaluators selected one programme for each of the eight involved countries, as shown in the table below.

Table 2: Operational Programmes selected for the case study analysis

Country	Operational Programme
Austria	Operational Programme Styria 2007-2013
Czech Republic	Operational Programme Enterprise and Innovation
Germany	Operational Programme Thuringia 2007-2013
Hungary	Economic Development Operational Programme
Italy	National Operational Programme for Research and Competitiveness
Poland	Operational Programme Innovative Economy
Portugal	Operational Programme Thematic Factors of Competitiveness
Spain	Comunidad Valenciana Operational Programme

Source: KPMG/Prognos (2016).

Structure of the report

Chapter 2 of the report introduces the methodological approach of this study, which revolved around theory-based evaluation. Chapter 3 reports the headline figures of large enterprise support in the eight countries, and presents the Theories of Change and overall rationale for large firm support. Chapter 4 presents the outcomes of large enterprise support in the eight case study countries, analysing the aspects of causality, direct effects such as private investments, production and productivity, employment, as well as indirect and wider benefits, sustainability of the projects, efficiency and the overall contribution of the projects to the general economic health and development of SMEs. Chapter 3 and 4 also contain four short narratives on issues related to the characters of the support and the large firm. Chapter 5 presents the key conclusions of the ex post evaluation and discusses the policy implications of the questions introduced above. It is followed by a graphical representation of the four generalised Theories of Change motivating large enterprise support. In addition, in a separate annex to the Final Report, the eight country and programme case studies are summarised. A longer, more in-depth presentation of the programme case studies can be found in the 2nd Interim Report of Work Package 4.

Reference to the Tender Specifications

The following table summarises how the report addresses the requirements set out in the Tender Specifications.

Table 3: Reference to the Tender Specifications

Section	Document reference
Final Report	
Draft a final report with (1) a main body critically comparing the main sources of evidence (in particular the cross-case study analysis, but also the literature survey, results of seminar, etc.) and	**Chapter 3-5**
(2) eight country annexes summarising the results of tasks 1 and 3.	**Annexes**
Draw conclusions on all the questions above (tasks 1 and 3), but with focus in particular on assessing:	**Chapter 3-5**
(1) What is the extent and nature of large enterprise support under Cohesion Policy? How does it fit into regional or national enterprise strategies more generally, and what contribution does it make?	**Chapter 3.1- 3.5**
(2) Which of the narratives drawn up in task 2 (and rationales from task 1) are actually borne out by the case studies in task 3? Evidence for and against each narrative should be examined.	**Chapter 4.1-4.7**
(3) When, where and how does support to large enterprises work – and when doesn't it? This should be compared to other evidence, notably counterfactuals – where a case study coincides with a counterfactual evaluation, what light does the case study shed on the context and effectiveness of the scheme?	**Chapter 4.1-4.7**
(4) What is a good strategy for developing large enterprises already present in the programme area, and what is a good strategy for attracting foreign direct investment (FDI)? How does this fit into an overall enterprise strategy for the region, including developing local SMEs? How can a region move from an export-led, FDI-based strategy to a strong indigenous enterprise base? Should FDI-based funding strategies be time-bound, and if so, over what period?	**Chapter 5**

Source: KPMG/Prognos (2016).

2. METHODOLOGICAL DESIGN OF THE EVALUATION

2.1. Methodology and research process

This ex post evaluation follows the concept of theory-based evaluation, emphasising the construction and testing of identified Theories of Change. More specifically, it applies a **Contribution Analysis**[10], the design of which is particularly useful for evaluating complex causal questions. Contribution Analysis is implemented through a **comparative case study design**.

Prior to this evaluation, relevant counterfactual impact evaluations on large firm support had often found support to have no impact or insignificant impact. These results had important implications for the effectiveness of the support; however, they could not open the 'black box' explaining large firms' behavioural change.

The need emerged, therefore, to apply a new, innovative approach in order to unravel and examine the causal relationship between the support and observed outcomes, while taking due account of key assumptions, external factors and possible alternative explanations of the change.

Among the many variants of theory-based evaluation, **Contribution Analysis** was chosen to evaluate large firm support because of its ability to de-compose complex causal chains into micro-steps, internalise assumptions and external factors in a single framework ('Theory of Change') and test them against various sources of information in a rigorous way. In technical terms, Contribution Analysis is able to:

- clarify which 'causal packages' the programmes were a part of,
- identify the interactions between the components of causal packages,
- establish how necessary and/or sufficient the programmes were and
- judge the likely contribution of the programmes.

Reflecting on the last point, this approach measures the **contribution** of the programme to certain planned outcomes, evaluating whether EU funding made any difference. The hypothesis is that the financial support results in a change in the large firms' behaviour. This is referred to as **behavioural additionality** in this report, as defined by Georghiou (2004, p. 7): '*the difference in firm behaviour resulting from the intervention*'. [11]

Should such behavioural change occur as desired, contribution (and effectiveness of support) can be claimed. It is important that Contribution Analysis is not primarily concerned with addressing **attribution** (i.e. identifying the parts of outcomes that were caused by the programme). Effectiveness of the funds is instead captured through determining the degree of influence the programme has had on the large firms' behaviour, and the concept of behavioural additionality.

[10] Mayne, J. (2011): 'Contribution analysis: addressing cause and effect'. In: Schwartz R, Forss K and Marra M. (Eds) Evaluating the Complex. New Brunswick, NJ: Transaction Publishers, 53–96.
[11] Georghiou, L. (2004): 'Evaluation of Behavioural Additionality'. Concept Paper, IWT-Studies, 48: 7–22.

2.1.1. Conceptual background of Contribution Analysis

Contribution Analysis, as a specific variant of theory-based evaluation, focuses on 'drawing causal links and explanatory conclusions between observed changes and specific interventions' (DG REGIO, 2013, p. 55).[12] Its philosophy is to provide evidence and reduce uncertainty rather than to promise to define links between interventions and effects. This approach relies on assumptions that should be made visible as both requirements and limitations to our evaluation. As Leeuw (2012, p. 348)[13] writes, 'a reasonable contribution claim can be made if:

- There is a reasoned Theory of Change for the intervention: the key assumptions behind why the intervention is expected to work make sense, are plausible, may be supported by evidence and are agreed by at least some of the key players.
- The activities of the intervention were implemented as set out in the Theory of Change.
- The Theory of Change – or key elements thereof – is supported and confirmed by evidence on observed results and underlying assumptions, both of experts and of facts: the chain of expected results has occurred and the Theory of Change has not been disproven.'
- Other influencing factors have been assessed and either shown not to have made a significant contribution, or their relative role in contributing to the desired result has been recognised (Mayne, 2011, p. 7–8).[14]

In order to use Contribution Analysis in our case study-based approach, some further methodological remarks of Stern et al. (2012)[15] are helpful. With a focus on 'causal inference', i.e. 'the ability of designs and methods to demonstrate that an intervention as cause leads to an effect' (p. 33), the following connections can be made to our approach:

- In general, Contribution Analysis applies a **'causal process design'**, i.e. as a basis of causal inference, it focuses on the identification, confirmation and affirmation of causal processes or 'chains'.
- Methodologically, this was combined with a **case study approach** (programme cases and mini cases), which, as a source of evidence for causal inference, allowed us to make comparisons across and within cases among combinations of causal factors.

Most interventions work as part of '**causal packages**' in combination with other helping factors such as stakeholder behaviour, related programmes and policies, institutional capacities, cultural factors or socio-economic trends. One challenge in this evaluation was to unravel these causal packages and to answer the question: 'Has the intervention made

[12] DG REGIO (2013): 'EVALSED Sourcebook: Method and Techniques', Regional and Urban policies, Brussels.
[13] Leeuw, F. L. (2012): 'Linking theory-based evaluation and contribution analysis: Three problems and a few solutions'. Evaluation, 18(3), 348-363.
[14] Mayne, J. (2011): 'Contribution analysis: addressing cause and effect'. In: Schwartz R. (Eds.) Evaluating the Complex. New Brunswick, NJ: Transaction Publishers, 53–96.
[15] Stern, Elliot et al. (2012): 'Broadening the range of designs and methods for impact evaluations', Department for International Development, Working Paper 38.

a difference?' As shown below (in Stern et al., 2012)[16], there are important methodological requirements for underlying assumptions.

Table 4: Methodological requirements (questions and assumptions)

Key question	Related questions	Underlying assumption	Requirements	Suitable designs
Has the intervention made a difference?	What causes are necessary or sufficient for the effect? Was the intervention needed to produce the effect? Would these impacts have happened anyhow?	There are several relevant causes that need to be disentangled. Interventions are just one part of the causal package.	Comparable cases where a common set of causes are present and evidence exists as to their potency	Experiments; Theory-Based Evaluation, e.g. **Contribution Analysis;** Case-based designs, e.g. qualitative comparative analysis

Source: KPMG/Prognos (2016), based on Stern et al., 2012.

To implement the 'Theory of Change' approach as outlined by Weiss, some clarification on how to analyse '**contribution**' may be helpful. Weiss (1997, p. 43)[17] suggested that 'If the evaluation can show the series of micro-steps that lead from inputs to outcomes, then causal attribution for all practical purposes seems to be within reach'. In addition, Leeuw (2012, p. 354)[18] pointed out that 'Instead of looking into micro-steps of the particular intervention [only], Theory-Based Evaluation here can help by working with comparisons'.

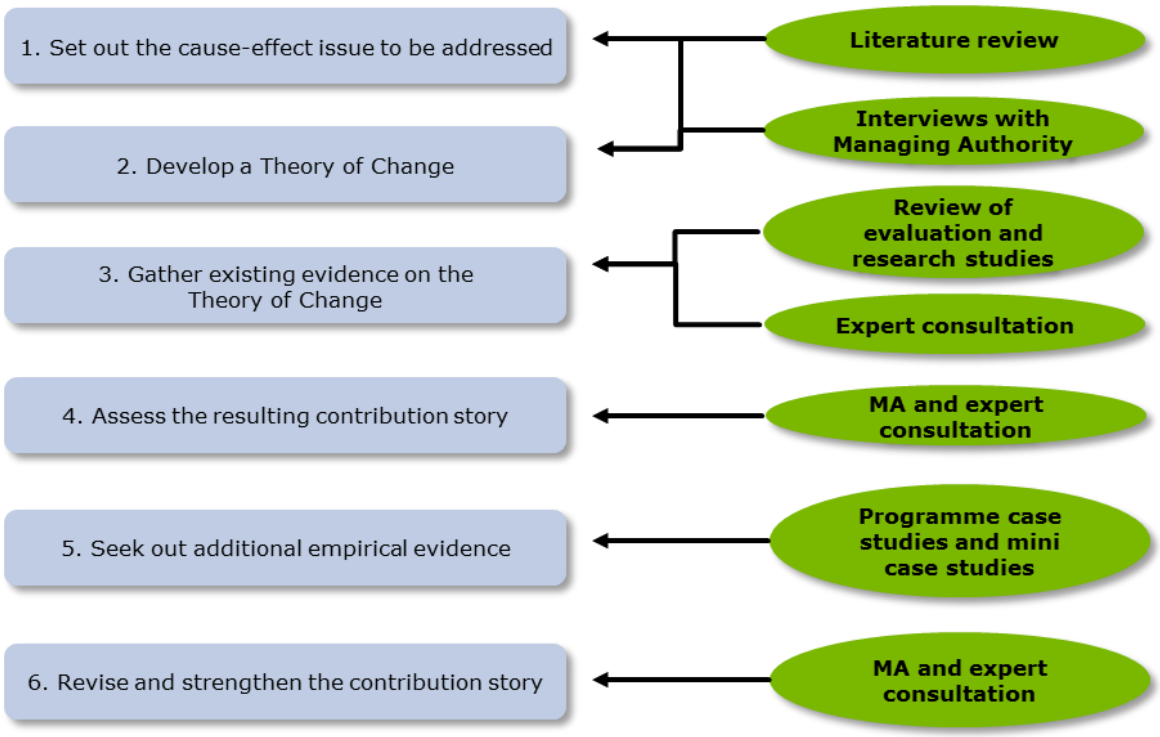
These comparisons in our evaluation will be made possible both through a comparison with existing evidence on large enterprise support from the literature analysis and, more importantly, through our case study approach.

2.1.2. Analytical steps of Contribution Analysis

Methodological steps, as suggested by Mayne (2011), do not necessarily follow a strict logic, but rather describe a highly iterative process with multiple rounds of revisions of previous exercises. These steps have been the basis for reconstructing and testing the Theories of Change. The six general steps, which were followed by the current evaluation, are as follows.

[16] ibid.
[17] Weiss, C. (1997): 'Theory-based evaluation: Past, present and future.' New Directions for Evaluation, 76: 41–55.
[18] Leeuw, F. L. (2012): 'Linking theory-based evaluation and contribution analysis: Three problems and a few solutions'. Evaluation, 18(3), 348-363.

Figure 5: Overview of key steps in Contribution Analysis



Source: KPMG/Prognos (2016), based on Mayne (2011).[19]

The first step determined the relevant cause-effect question about large firm support, i.e. the intended change to which the support was expected to contribute. The second step produced the reconstructed Theories of Change describing large firm support. That was followed by the collection of existing evidence on the Theories of Change in order to assess their plausibility in practice. These steps relied on the relevant literature, the programme documents, and interviews with the Managing Authorities that designed the programmes.

The fifth step brought additional empirical evidence to the table through carrying out eight programme-level case studies in Austria, the Czech Republic, Germany, Hungary, Italy, Poland, Portugal and Spain. At the heart of the case studies were 45 company case studies with a multi-respondent design, which involved a complex, formalised procedure to test whether the Theories of Change materialised at the project level. Case studies identified 'confirming', 'neutral' and 'disconfirming' evidence concerning the Theories of Change, which helped decrease the uncertainty as to whether the theories worked in reality or not. In the last step, we revised the contribution stories and drew conclusions about their effectiveness.

Since rigorous quantifiable evidence on the effectiveness of large enterprise support was not available in the majority of the cases, the identified Theories of Change were tested on multiple qualitative dimensions, and by confronting these information sources.

[19] Mayne, J. (2011): 'Contribution analysis: addressing cause and effect'. In: Schwartz R. (Eds.) Evaluating the Complex. New Brunswick, NJ: Transaction Publishers, 53–96.

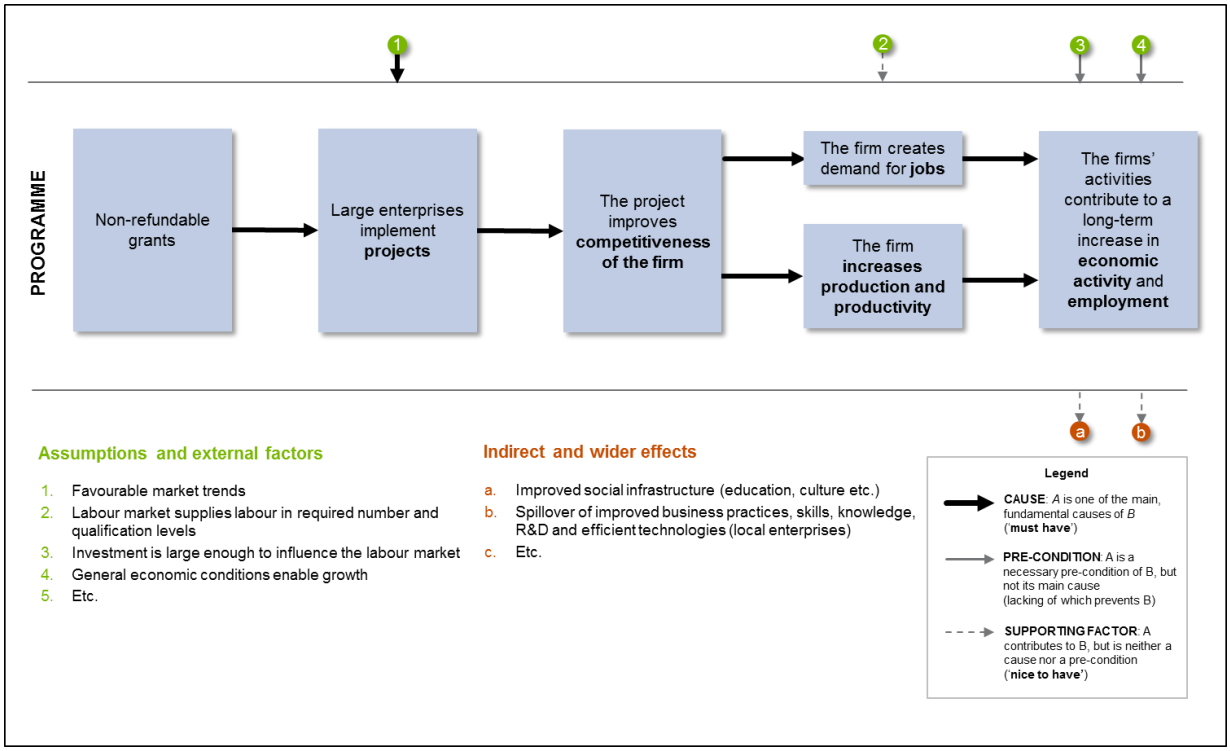
2.1.3. Theory of Change: a central component of Contribution Analysis

Leeuw's paper on 'Theory-Based Evaluation' (2013, prepared for EVALSED[20]) borrows Carol Weiss' definition of Theory of Change, described as:

'A way to describe the set of assumptions that explain both the mini-steps that lead to the long-term goal and the connections between policy or programme activities and outcomes that occur at each step of the way'.

A good programme theory must fulfil certain criteria: it must be plausible, achievable and testable. The following chart presents a simplified version of a Theory of Change, describing the general logic of large enterprise support. The figure describes the different steps and the causal relationships that are meant to lead to the intended change.

Figure 6: Simplified Theory of Change on large enterprise support



Source: KPMG/Prognos (2016).

The following seven elements are fundamental to all Theories of Change in this ex post evaluation, and are therefore defined here:

- **Inputs**: Financial or non-financial support received from the programmes.
- **Projects (outputs)**: The different types of projects implemented by large enterprises.
- **Direct effects**: Effects directly generated by project implementation, such as creation of demand for jobs, increased production levels and productivity or additional private investment induced by the support.
- **Indirect and wider benefits**: Effects indirectly generated by the projects, but directly intended by economic development strategies. They relate to additional

[20] DG REGIO (2013): 'EVALSED Sourcebook: Method and Techniques', Regional and Urban policies, Brussels.

economic and social benefits, such as indirect job creation, improved local transport infrastructure or local spending of wages by employees. Furthermore, wider benefits comprise benefits indirectly generated by the projects, which are often not directly intended by economic development strategies. They relate to further effects of large enterprise support on the regional economy. These may affect domestic firms and SMEs (e.g. productivity improvements, presence of sophisticated customers, efficiency gains through demonstration of new management approaches, introduction of new process technologies, etc.) or the wider society (e.g. support for investments in educational infrastructure, cultural infrastructure, etc.).

- **Intended changes**: The policy objective that the programmes pursue. In this evaluation context, this is a long-term increase in employment and regional economic growth.
- **External factors**: Factors and circumstances that are not part of the causal chain of EU support in a strict sense, yet have a significant influence on achieving the intended changes. These can be:
    - **Influencing factors**: Factors that are components of the 'causal package' of project implementation, in addition to the EU funds (e.g. tax incentives by the central government).
    - **Key assumptions**: Factors taken for granted by policy-makers, which enable the theory to materialise (such the availability of the required labour force in a region).
    - **Other trends or events**, such as general market trends.
- **Alternative explanations**[21]: These encompass alternative theories to those articulated in the Theory of Change, which can also be plausible explanations of the observed changes.

2.1.4. Identified Theories of Change: 27 country-specific, and 4 generalised theories

The 27 programme-level Theories of Change have been reconstructed based on programme documents, interviews with Managing Authorities and the available literature. These information sources added different layers to the reconstructed theories. Roles of the key information sources were typically as follows:

- Programme documents (Operational Programmes, calls for applications) contained information on general, high-level objectives, although they were often lacking specific information on large enterprises (rationale, causal chain, assumptions, etc.). They were key sources for identifying inputs, activities and first-level outcomes of the activities.

- Programme planners and other Managing Authority representatives were found to be key to understanding the question: 'Why did the programmes support large enterprises from ERDF?' Generally they were the ones who could recall crucial, often implicit information on the 'intended change' (at the end of the causal chain) that was driving the planning and modification process of programmes.

- Literature reviews were helpful in reassessing those intended changes. Their most important role, however, was to make key assumptions, influencing factors,

[21] The alternative explanations are not depicted in the chart to reduce complexity. Please see the appendix for the full version of the four generalised Theories of Change.

indirect and wider benefits explicit, which could then be incorporated into the Theories of Change, where applicable.

These 27 country-level Theories of Change were then reviewed and classified to provide the basis for a comparative assessment of the programme case studies. The main criterion applied was the focus of the theory, i.e. the main direction of the intended change.

As a result of a multi-round classification process, **four generalised theories of large firm support** have been reconstructed in the eight countries concerned. These account for 24 out of the 27 country-level Theories of Change. The theories include the most frequent elements of the country-level theories, and also build on the outcomes of the literature review, especially those related to key assumptions, influencing factors, indirect effects and wider effects. Below, these four generalised Theories of Change are presented.

Table 5: Overview of the four generalised Theories of Change

Code and short reference of the Theory of Change	Description
'LE1: Large-scale business investment'	Financial support to investments of large enterprises (including foreign-based ones) with the primary aim of increasing employment in the programme area in the long term.
'LE2: Technological upgrading'	Financial support to large enterprises to assist them to implement upgrades in technology with the aim of strengthening their competitiveness and thereby the growth potential of the regional economy.
'LE3: Innovation support'	Financial support to large enterprises to assist them to implement innovative investment projects for new products or processes, with the aim of strengthening the potential for regional innovation and the long-term growth of GDP and employment (high-quality jobs).
'LE4: Investment in R&D capacity'	Financial support to large enterprises to help them set up, expand or improve R&D facilities and/or carry out R&D activities, with the aim of expanding the regional knowledge base and the long-term R&D and innovation capacity of the region (including the creation of research jobs).

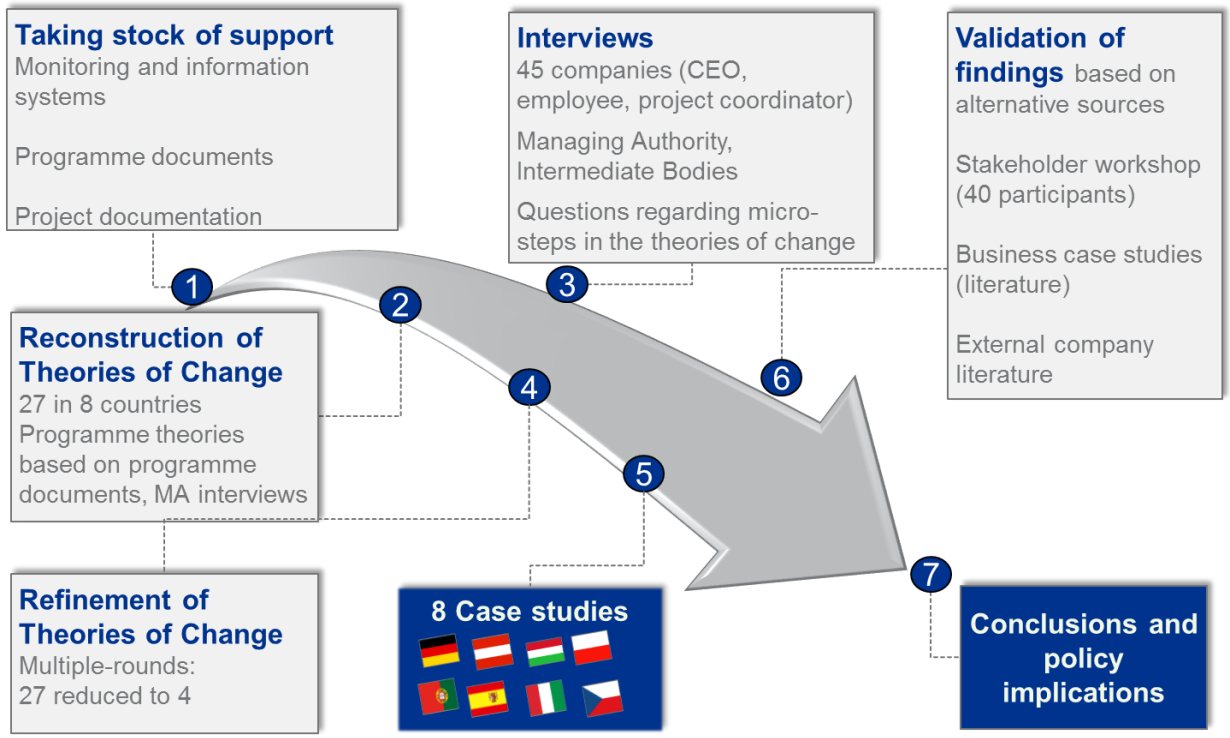
Source: KPMG/Prognos (2016).

Annex 1 includes an illustration of all Theories of Change in detail, accompanied by a matrix showing which generalised Theories of Change were relevant in the eight countries. The generalised Theories of Change were used to formulate the main conclusions of the report.

2.1.5. Evidence base of the evaluation

This ex post evaluation was carried out between July 2014 and October 2015. The summary of its evidence base is summarised in the figure below.

Figure 7: Evidence base of the evaluation



Source: KPMG/Prognos (2016).

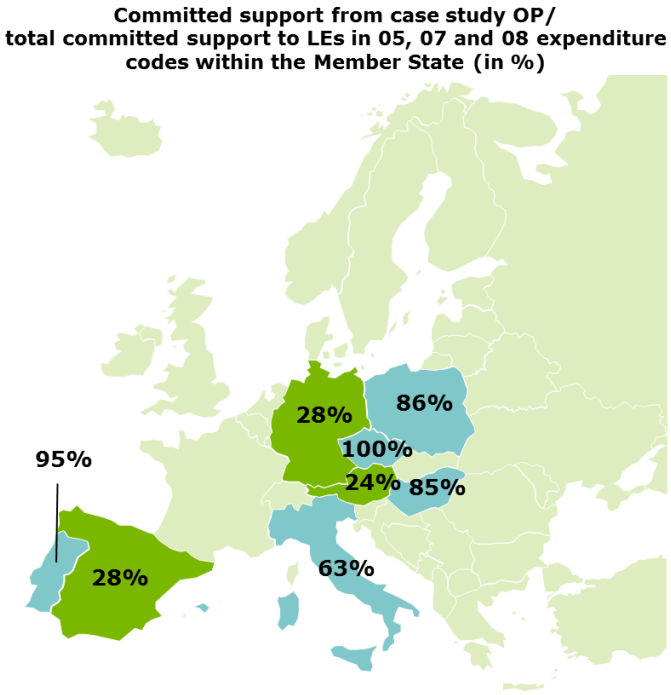
Following the requirements of the Tender Specifications, one Operational Programme from each of the eight countries had to be selected in scope based on the following criteria:

- The programme provided significant support to large enterprises ('significance of support');
- The forms/packages of support and rationale were broadly representative of large enterprise spending at the national level ('representativeness');
- The extent to which data was available for the tasks to be carried out in the case studies and the availability of counterfactual impact evaluations for comparison ('availability of counterfactual impact evaluations for comparison').

Based on these three criteria, **eight Operational Programmes** have been selected as programme case study regions, which are shown in the figure below (on the right, the figure represents the share of support to large enterprises financed from the selected operational programme out of all ERDF large enterprise support in the country).

Figure 8: Overview of selected case study Operational Programmes (ERDF) and their committed support to large enterprises

Country	Large enterprise support in the selected OPs (EUR mn)	
Austria	Styria	32
Czech Rep	Enterprise and innovation	467
Germany	Thuringia	200
Hungary	Economic development	386
Italy	Research and competitiveness	154
Poland	Innovative economy	1 352
Portugal	Thematic factors of competitiveness	1 072
Spain	Comunidad Valenciana	88
Total		3 751



Source: KPMG/Prognos (2016).

In total, these Operational Programmes in the 2007-2013 period account for EUR 3.8 billion ERDF support to large enterprises, out of an estimated total of EUR 6.1 billion across the EU-28 (of which EUR 4.6 billion was spent in the eight case study countries).

The programme case studies first focused on the region in which the programme operated. They described the context (policy and programme) and the delivery mechanism(s) of the programme, juxtaposed intended and realised changes and provided conclusions on the identified Theories of Change and on the coherence of the results with the enterprise policy and strategic context. The Theories of Change evolved over time in most cases, mostly due to the economic crisis, as reflected in the analysis.

At the heart of this evaluation, the eight programme case studies involved 45 company case studies that tested the relevant Theories of Change in a systematic manner. The company case studies used a multi-respondent approach, resulting in approximately 130 semi-structured interviews with corporate officials and regional stakeholders. The testing was carried out in a standardised framework with main sections on the (A) Background of the enterprise (context), (B) Inputs and activities, (C) Direct effects (and their sustainability), (D) Indirect effects and wider benefits (and their sustainability) and (E) Summary and conclusions (including alternative explanations). Evidence was collected for each significant micro-step, outcome, key assumption and influencing factor in the Theory of Change, followed by a judgment as to whether these steps (e.g. effects) were realised, whether they were in causal relationship with the previous step in the chain and whether the evidence was reliable. This framework was completed for all of the 45 company case studies, using triangulated evidence where possible. An excerpt from Section C (Direct effects) of this framework is shown below as an example.

Figure 9: Excerpt from the testing framework used for company case studies

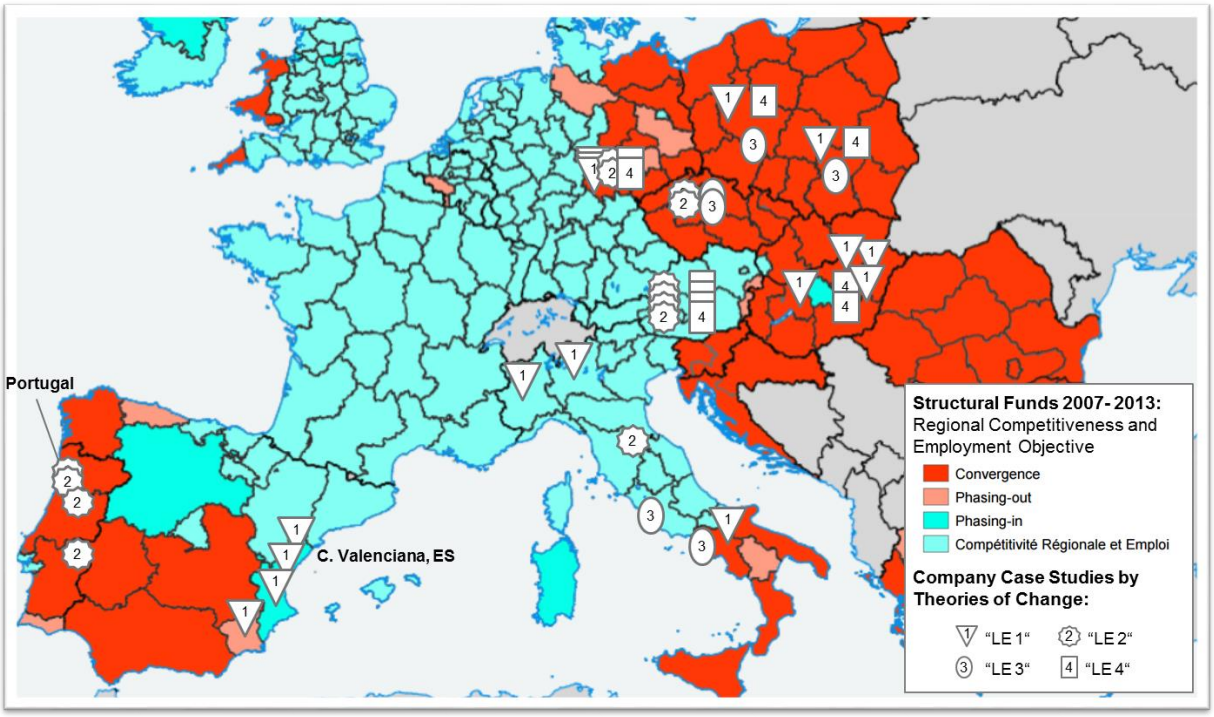
SECTION C: Direct effects										
C.1 Has the project resulted in the following direct outcomes?										
	Observed		Was the implemented project…			Comments (If yes, to what extent? If not, why not?)	Evidence			
	Yes	No	… cause?	…pre-condition?	supporting factor?		Strong - facts	Medium - strong belief	Weak - speculation	Source, comments
increased private investments?	X		X			…	X			
increased production level and capacities?	X		X			…	X			
…	X		X			…	X			

Source: KPMG/Prognos (2016).

Moreover, the analysis of monitoring data and the outcomes of a comprehensive literature review were incorporated into the analysis, covering more than 100 scientific articles and evaluations on enterprise support. This empirical basis was used in different stages of the triangulation. While first interviews with Managing Authorities and Intermediate Bodies helped uncover funding rationales and strategies for large enterprise support, interviews with corporate officials enabled the evaluation to explore the cause-effect relationships and resulting changes in the large firms' behaviour, and the extent of the contribution they made to the socio-economic development of the region. To reflect on these findings, additional interviews were performed with academic experts to counterbalance potential bias in the data sets.

The geographical distribution of the company case studies is depicted on the figure below (for the definition of the codes 'LE1', 'LE2', 'LE3' and 'LE4' see the previous section).

Figure 10: Location of the case study companies in the eight countries



Source: KPMG/Prognos (2016), background map: European Commission (http://ec.europa.eu/regional_policy/sources/images/map/eligible2007/sf200713.pdf).

The **sectoral distribution** of the selected company case studies was as follows.

Table 6: Overview of the 45 company case studies by sector and countries[22]

Sector	ERDF funds	Number of firms	Countries
Automotive	EUR 127 million	7	AT, DE, ES, HU, IT, PT
Aerospace	EUR 60 million	4	CZ, IT, PL, PT
Packaging, pulp & paper industry	EUR 59 million	5	AT, DE, HU, PT
Consumer goods	EUR 49 million	6	AT, ES, IT, PL, PT
ICT/electronics	EUR 27 million	8	AT, CZ, DE, HU, IT
Material	EUR 21 million	8	AT, ES, HU, IT, PL
Life Science	EUR 20 million	5	AT, CZ, DE, HU
Other	EUR 6 million	2	IT, PL
Sum	**EUR 369 million**	**45**	

Source: KPMG/Prognos (2016).

Finally, a stakeholder seminar was conducted in July 2015 with over 40 participants from all eight case study countries, including representatives from large multinational enterprises, Managing Authorities and Intermediate Bodes, representatives of the European Commission and selected academic experts. This seminar provided an important opportunity to discuss findings from the programme case studies in a reflective manner and derive first policy implications.

In addition, four steering group meetings were conducted, some with the other Work Packages of enterprise support (WP2, WP3), which helped refine methodological concepts and discuss earlier findings of the evaluation with experts from DG REGIO (including the relevant Desk Officers of the eight case study countries) and other Commission DGs.

2.2. Limitations of findings

Despite the profound and holistic evidence base that this ex post evaluation had to build upon, a few methodological limitations should be noted:

- **Limitations of monitoring data:** Monitoring systems tended to be developed only after the Operational Programmes were adopted. Data needs, methods of data gathering and electronic systems for data collection were considered at this later stage. This was particularly problematic for large enterprise support, as not all monitoring systems were able to differentiate indicators by enterprise size. Against the background of limited binding regulation and clear recommendations, an array of individual monitoring systems has evolved across Europe, which made it impossible for this evaluation to draw on a homogenous data base for making comparisons. In fact, the information recorded by the monitoring systems developed different structures and formats across regions and Member States.

- **Challenges in implementing the multiple-respondent design for firm-level interviews:** It was not possible to perform the multiple-respondent approach as planned in all company case studies. A number of supported large enterprises identified only one interviewee with appropriate knowledge on the project or were only willing to perform one interview at all. This was compensated by including other external respondents (e.g. experts, mayors of local municipalities) or other

[22] This is not a representative sample but only reflects the composition of the supported large enterprises that were assessed in the company case studies.

sources of evidence (e.g. other company case studies in the literature), and by performing a higher number of company case studies in some of the countries.

- **Time-lags regarding the occurrence of wider socio-economic benefits from large enterprise support**: A further challenge was identifying and measuring the time scale and time lag of the expected wider socio-economic benefits that were foreseen from supporting large enterprises. Given the complexity of Cohesion Policy interventions in general and the intricacy of support for large enterprises, it was not possible in all cases to determine whether the effects had not yet been realised or had failed. To counterbalance this complexity, in the company case studies particular attention was paid to the status of the projects (some of which were still not finalised) and whether short-term, medium-term or long-term effects were analysed in those cases.

- **Non-availability of counterfactual impact evaluations for every programme case study:** Counterfactual impact evaluations can complement theory-based evaluations. Incorporating evidence from counterfactual studies was planned in this evaluation to provide quantitative insights on the impacts of large enterprise support at the firm level. The evaluation noted that evidence from available impact evaluations regarding the effectiveness of the support for large companies was still very limited. In addition, the few studies that were used in this evaluation focused on other instruments than those used in this evaluation.

It needs to be noted that, unlike in econometric or counterfactual impact evaluations, the number of observations, interviews or respondents is not the most decisive factor in theory-based evaluations. Rather, a triangulation of sources, including beneficiary and institutional interviews, monitoring data, expert interviews and existing assessments is needed. In line with Flyvbjerg (2011)[23], we argue that, in fact, one can often generalise on the basis of a single case, and a case study approach to theory-based evaluation is central to evaluation progress via generalisation. At the same time, formal generalisation should not be overvalued as a source of evaluative judgement and the 'force of example' and transferability should receive more attention.

[23] Flyvbjerg, B. (2011) Case Study, in Norman K. et al. (eds.) The Sage Handbook of Qualitative Research 4th edition, Thousand Oaks, CA.

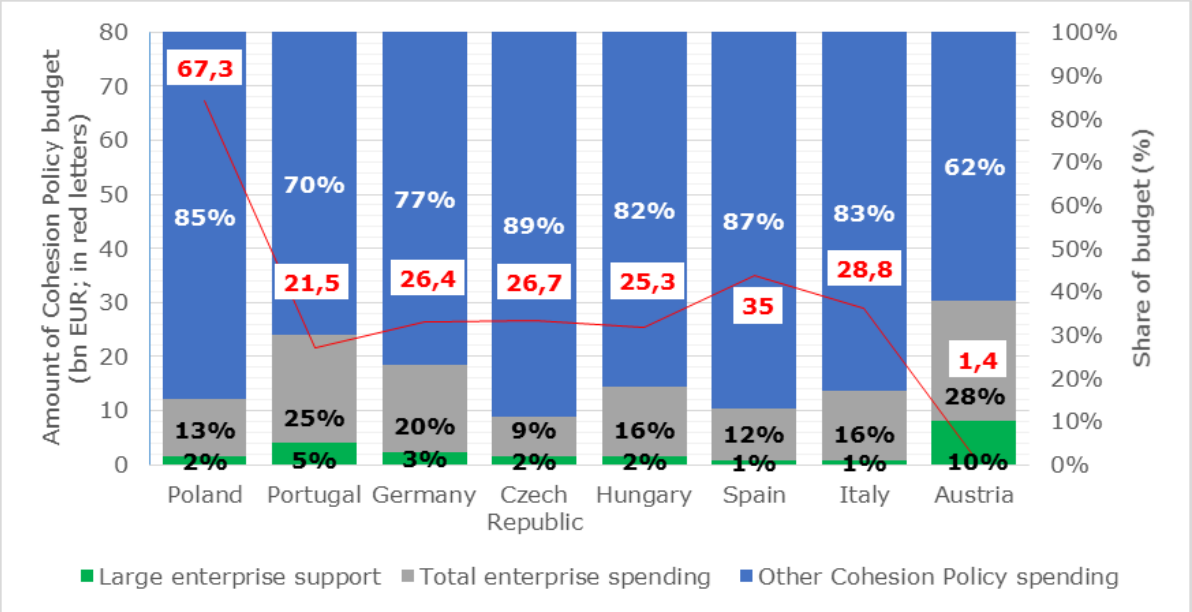
3. TAKING STOCK OF LARGE ENTERPRISE SUPPORT

3.1. Quantification of support

The total support (ERDF/CF/ESF/IPA) for the 28 current EU Member States was EUR 347 billion in the 2007–2013 programming period, of which total enterprise spending comprised 15% (EUR 52 billion). **The eight countries selected for this ex post evaluation represent 67% of the total budget and 67% of total enterprise spending.** This evaluation collected data on large enterprise support in eight EU Member States: Austria, the Czech Republic, Germany, Hungary, Italy, Poland, Portugal and Spain.

Over the financing period 2007–2013, total ERDF/CF/ESF support for the eight case study countries equalled EUR 232 billion, of which 15% (EUR 35 billion) was spent on enterprises.[24] **Direct large enterprise support amounted to EUR 4.6 billion in the eight countries, which is 13% of their total ERDF enterprise spending and 2% of their entire EU budget.** Austria, the Czech Republic, Germany, Hungary, Italy, Poland, Portugal and Spain represent 67% of the total EU-28 budget and of total enterprise spending in the 2007–2013 period. Seven of these eight countries (Austria being the exception) allocated the largest amounts to direct enterprise support of all EU Member States. Austria, despite its significantly lower budget, allocated the highest *share* of its total budget to direct enterprise support.

Figure 11: Key aggregate figures on overall large enterprise support as part of the total Cohesion Policy budget in the eight Member States



Source: KPMG/Prognos (2016), based on the monitoring and information systems of Member States, AIR2013 (DG REGIO); red connector line for illustration purposes on different spending levels only.

[24] Enterprise spending encompasses direct and indirect investment in both small- and medium-sized enterprises and in large enterprises. Technically, it comprises ten expenditure codes as defined in Council Regulation (EC) NO 1083/2006.

Large enterprise support ranged from 1% to 10% of the public spending of the eight countries. In Austria and Portugal, direct large enterprise support received a higher share of the total budget, while in the cases of Spain and Italy, its share was much lower than the average. Poland and Portugal spent the most in terms of absolute amount (EUR 1.1 billion), with Austria being at the other end of the spectrum (EUR 133 million).

Table 7: Key aggregate figures on the amount of large enterprise support by country[25]

	Countries									
	PL	PT	DE	CZ	HU	ES	IT	AT	Total EU-8	Total EU-28
Total budget (EUR billion)	67.3	21.5	26.4	26.7	25.3	35.0	28.8	1.4	232.4	347
Total enterprise spending (EUR million)	8,967	5,321	5,343	2,359	4,018	4,026	4,526	385	34,944	52,130
Share of budget to total enterprise spending (%)	13%	25%	20%	9%	16%	12%	16%	28%	15%	15%
Direct enterprise support on 05, 07, 08 expenditure codes (EUR million)	6,591	4,145	3,200	1,491	2,581	2,543	2,034	283	22,868	31,233
Share of budget to direct enterprise support on 05, 07, 08 expenditure codes (%)	10%	19%	12%	6%	10%	4%	7%	20%	10%	9%
Large enterprise support on 05, 07, 08 (EUR million)	**1,153**	**1,134**	**704**	**467**	**453**	**311**	**243**	**133**	**4,598**	**n/a**
Share of budget to large enterprise support (%)	2%	5%	3%	2%	2%	1%	1%	10%	2%	n/a

Source: KPMG/Prognos (2016), based on the monitoring and information systems of Member States, AIR2013 (DG REGIO).

The EUR 4.6 billion in large enterprise support was allocated to 4,500 projects, with an average project size of EUR 1 million. Individual project sizes ranged from EUR 1,000 to EUR 50 million. Spain funded the smallest projects, with a majority of its grants supporting the presence of Spanish export companies at international fairs, while the largest ones, primarily occurring in Portugal, targeted large infrastructure investments.

A total of 2,800 individual large enterprise sites were supported, each of which implemented 1.6 projects on average. This pattern of multiple granting suggests that

[25] EU-28 aggregated and EU-8-country total budget figures (ERDF/CF/ESF) for 2007–2013 are 'Available budget 2007–2013' figures from DG REGIO. EU-28 aggregated and EU-8-country total enterprise spending figures are the aggregates of 'Community Amounts' on expenditure codes 03–09, 14–15 and 68 (AIR raw data provided by DG REGIO). Direct enterprise support is defined as committed support (Cohesion Policy only) on 05, 07 and 08 codes reported by the countries' Managing Authorities. Large enterprise support is defined as committed support (Cohesion Policy only) on 05, 07 and 08 codes to projects implemented by large enterprises (data collection at Managing Authorities; primary data sources are the countries' monitoring and information systems).

some of the larger investment projects were divided into sub-projects that were nonetheless implemented within the same period.[26]

Table 8: Key aggregate figures on the number of projects and enterprises supported by country

	Countries								
	ES	DE	PL	CZ	IT	HU	PT	AT	Total
Number of projects supported	**1,269**	**763**	**539**	**520**	**416**	**409**	**407**	**194**	**4,517**
Number of large enterprises supported	398	632	408	339	270	273	319	148	2,787
Average number of supported projects per large enterprise	3.2	1.2	1.3	1.5	1.5	1.5	1.3	1.3	1.6
Average amount of large enterprise support per enterprise (EUR million)	0.8	1.1	2.8	1.4	0.9	1.7	3.5	0.9	1.6

Source: KPMG/Prognos (2016), based on the monitoring and information systems of Member States, AIR2013 (DG REGIO).

In the eight countries, the EUR 4.6 billion spent on large enterprise support has generated investments worth an estimated EUR 19 billion. Aid intensity for large enterprises varied across programmes from 14 to 40%. The majority of programmes provided 10–20% greater aid intensity for SMEs than for large enterprises.

Large enterprise support mainly took the form of non-refundable grants. Refundable support was only provided in Italy, Spain, Portugal and Austria. In the remaining countries, financial instruments (loans, guarantees, etc.) were only provided for SMEs. Where refundable support was given to large enterprises, loan amounts were typically marginal compared to the non-refundable support provided. In Portugal, as an exception, the largest projects were also supported with significant amounts in refundable grants. However, these grants could be transformed into non-refundable grants, conditioned on the fulfilment of certain performance indicators.

In some countries a complementary non-financial support package was available for large enterprises. Such packages aimed to help large enterprises overcome the administrative burden of the financial support. For example, large enterprises in Hungary were provided fast-track administration and 'VIP' client management as part of their support package.

3.2. Characteristics of supported large enterprises

According to the databases of the Managing Authorities, most of the supported entities employed fewer than 250 people at the project site;[27] however, most of these entities were subsidiaries of larger enterprise groups. As shown in the table

[26] The company case studies conducted also concluded that large firms implemented other investments using EU funds in more than 50% of cases (see section 'Alternative explanation of the observed change').
[27] If the Managing Authorities did not keep records of the status of enterprises as either SMEs or large enterprises, the *implicit* large enterprise definition of the Commission Recommendation 2003/361/EC was used; namely, large enterprises are firms that have more than 249 employees OR turnover equal to or above EUR 50 million AND a balance sheet total of EUR 43 million or above.

below, Austria, Germany and Portugal supported relatively small companies (with 0–249 employees) while firm size was typically much greater in Spain.

Table 9: Size distribution (based on number of employees at the project site) of supported large enterprises by country

	Countries								
Number of employees	AT	DE	PT	IT	CZ	HU	PL	ES	Total
0–249	**72%**	**59%**	**55%**	**44%**	**37%**	**37%**	**35%**	**15%**	**43%**
250–499	16%	21%	27%	18%	29%	23%	27%	41%	27%
500–999	11%	10%	11%	10%	21%	18%	11%	22%	15%
1,000+	2%	7%	8%	16%	13%	17%	8%	22%	13%
n/a	-	3%	-	11%	-	4%	-	-	2%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: KPMG/Prognos (2016), based on the monitoring systems of Member States, public company databases.

However, a closer investigation of the large enterprises supported in the state of Styria, Austria revealed an interesting pattern: while the size distribution was similar to that at the national level according to the Managing Authority's database, close examination showed that the vast majority of such firms were subsidiaries of larger corporations. When considering the number of employees of the corporation instead of at the supported company site, the picture was completely reversed. Three-quarters of the supported firms belonged to the category of over 1,000 employees and only 4.1% had 0–249 employees. Thus, a comparison between firm size of supported large enterprises at the project site and firm size at the corporate site shows a significant difference.

Excursus I - Short narrative on the character of the supported large firms and the relevance of size classifications:

Enterprise size is often considered to play a pivotal role in long-term firm competitiveness. Studies show that large enterprises (multinationals), in particular, have greater average productivity and higher export rates that make them less likely to go bankrupt than smaller firms. At the same time, these firms also tend to have access to cheaper financing, either from capital markets or from their internal cash hoard. SMEs, on the other hand, are often considered to form the backbone of the economy, be important employers[28] and drive growth through innovation and agile market behaviour. Yet, from a policy perspective, they are also considered to be in need of more public support due to specific market failures on capital markets or size-related disadvantages (e.g. management capacity).

A striking finding of this ex post evaluation was that, according to monitoring data, a high share of the supported 'large enterprises' actually employed fewer than 250 people. Only around 13% of the large enterprises had more than 1,000 employees, while 43% of large enterprises had fewer than 250 employees. Though the latter are the size of SMEs, their character is that of a large enterprise (based on the consolidated size of turnover and balance sheet, and taking into account the linked or partner status of the company). These 'small' large enterprises were particularly characteristic of Austria (72% of the supported large enterprises), Germany (61%) and Italy (50%). While this indicates that EU funds were not distributed widely to large-scale global corporations, it also raises questions about the quality and suitability of the collected data in the monitoring systems.

There are two main reasons for this observation:

On the one hand, in the case of Styria (programme case study for Austria), despite the fact that

[28] According to Eurostat's Structural business statistics overview, no less than two-thirds (67.1%) of the EU's non-financial business economy workforce was active in an SME in 2012 (data from January 2015).

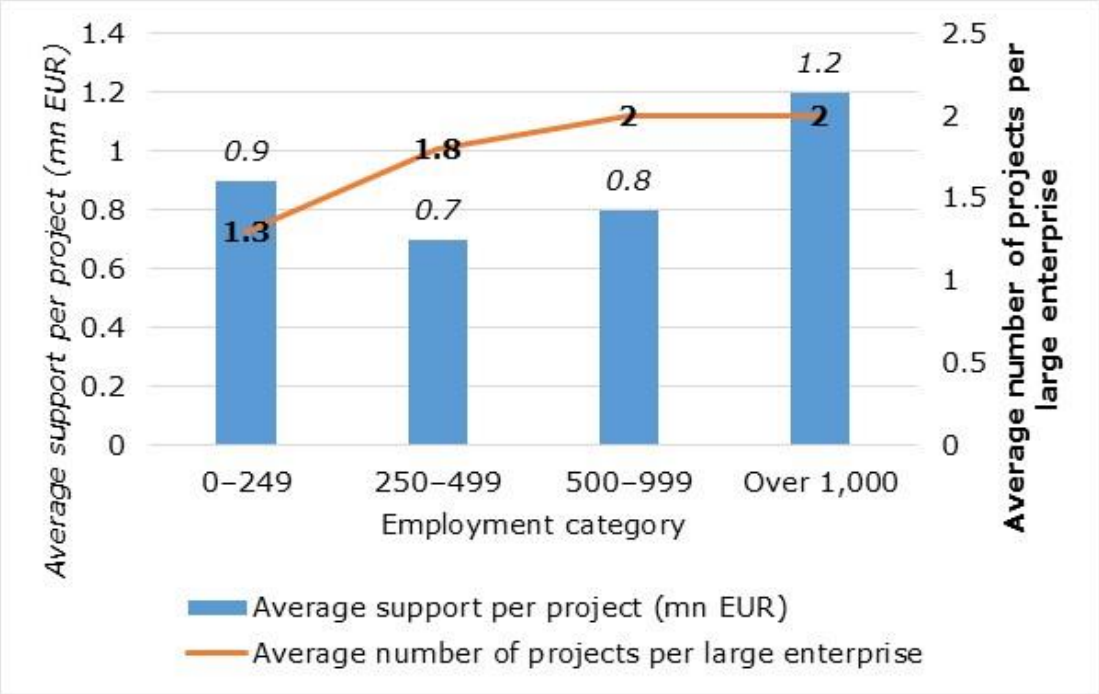
68% of large enterprise beneficiaries had fewer than 250 employees at the project site, **the vast majority were actually part of a corporation.** A close investigation of the supported large enterprises revealed that when examining the number of employees of the corporation instead of the number of employees at the supported company site, a completely reversed picture emerged. When looking at corporate figures, three-quarters of the supported firms belonged in the category of over 1,000 employees, and only 4.1% in the category of 0–249 employees. Thus, comparing the size of supported large firms at the project site and the corporate level revealed a key difference.

On the other hand, for many of the case study regions **a key rationale was supporting so-called 'mid-caps',** i.e. medium-sized firms typically between 250 and 3,000 employees.[29] For instance, in the case of Thuringia (programme case study for Germany), the following rationale for supporting large enterprises was presented: while Thuringia has a large share of SMEs that perform quite well in terms of R&D and enterprise growth, the typical mid-caps in Thuringia (i.e. enterprises with 250–500 employees) were found to be struggling to meet their growth potential. At the same time, for firms of this size, many of the market failures that are used to justify SME support remain valid (in particular regarding risk financing and funding R&D). A similar conclusion was reached in a recent evaluation of SME definition[30] that found that 'a more fundamental issue is that there is a mid-range of enterprises… that are significant for the European economy and especially for the encouragement of rapid growth, but which suffer from a lack of attention in comparison to both SMEs and the really large enterprises' (p. 111).
These findings point to the need for a more differentiated size categorisation (including a category for mid-caps) to allow for more differentiated funding strategies, alongside more concrete and binding definitions for data collection in the case of large enterprise projects supported.

Larger enterprises (in terms of employment category) implemented more and larger projects than their smaller peers. The average support amount per project did not differ significantly among enterprises with fewer than 1,000 employees. Above this threshold, average support exceeded EUR 1.2 million. Furthermore, larger firms tended to implement more projects on average, as shown below.

[29] Throughout the report, "mid-caps" are understood as "companies with between 250 and 3,000 employees" as defined in Investment Plan for Europe. See: European Commission (2015): 'Fact Sheet: The Investment Plan for Europe', Brussels. Available at: http://europa.eu/rapid/press-release_MEMO-15-5419_en.htm. It is worth noting, however, that alternative definitions for mid-caps exist, such as that of McKinsey, where a mid-cap is understood as a "company with a market capitalization between $2 and $10 billion". See: McKinsey (2007): 'The New metrics of corporate performance: profit per employee', McKinsey Quarterly-February 2007. Available at:
http://www.mckinsey.com/insights/strategy/the_new_metrics_of_corporate_performance_profit_per_employee
[30] CSES (2012): 'Evaluation of the SME Definition', study on behalf of DG Enterprise and Industry, Brussels.

Figure 12: Average support per project and number of projects per large enterprise by employment category



Source: KPMG/Prognos (2016), based on the monitoring and information systems of Member States, public company databases.

More than 70% of the supported large enterprises operate in the manufacturing industry. Thirty-four per cent of the large firms are active in high- and medium-high-technology manufacturing (see the table below). The share of large enterprises in the manufacturing sector was somewhat higher in Austria and the Czech Republic (over 80%), and lower in Spain, Germany and Poland (below 70%).

Table 10: Sectoral distribution of supported large enterprises by country

Sector classification[31]	Countries								
	AT	CZ	HU	PT	IT	ES	DE	PL	Total
High- and medium-high-technology manufacturing	33%	46%	38%	28%	34%	31%	33%	27%	34%
Medium-low-technology manufacturing	34%	28%	26%	25%	19%	15%	24%	25%	24%
Low-technology manufacturing	17%	8%	12%	23%	17%	21%	9%	14%	15%
Total manufacturing	**84%**	**82%**	**76%**	**76%**	**70%**	**67%**	**66%**	**66%**	**73%**
Advanced services	3%	14%	10%	5%	24%	15%	13%	16%	13%
Basic services	9%	2%	8%	13%	4%	11%	19%	13%	10%
Total services	**12%**	**16%**	**18%**	**18%**	**26%**	**26%**	**32%**	**29%**	**23%**
Others	**4%**	**1%**	**5%**	**7%**	**1%**	**7%**	**2%**	**4%**	**4%**

Source: KPMG/Prognos (2016), based on the monitoring and information systems of Member States, public company databases.

The average project size was exceptionally high in the advanced-services sector (EUR 3.3 million).[32] While most projects received around EUR 1 million in support, projects in the field of advanced services received EUR 3.3 million on average. This average was inflated by support levels in Portugal, where three major projects received around EUR 60 million each.

Most funds were distributed to national (indigenous) large firms. However, there were significant differences across countries. The share of national companies supported was 40% on average, while domestic multinational companies and foreign multinational companies each received a 30% share of the ERDF. In new Member States (those that joined the EU in 2004 or later), the share of strong domestic multinational firms in the economy is much lower than it is in Western European countries. As a result, in new Member States the support was instead distributed between national large firms and foreign multinationals. In Hungary and the Czech Republic there was a strong focus on foreign multinationals, while in Poland the majority of funds were spent on national companies.

[31] Manufacturing enterprises are classified according to Eurostat's aggregations of manufacturing based on NACE Rev. 2, where the original four categories are regrouped into three (by merging high technology and medium-high technology into high and medium-high technology and keeping medium-low technology and low technology as separate categories). Service provider enterprises are grouped into advanced (information and communications; financial and insurance activities; real estate activities; professional, scientific and technical activities; administrative and support service activities; public administration; education activities; human health and social work activities) and basic services (all others). Agriculture, mining and quarrying, public utilities and construction comprise the 'all others' category.

[32] The advanced services sector is defined based on Eurostat's aggregations, including the following specific NACE Rev. 2 codes: 50–51, 58–63, 64–66, 69–75, 78, 80, 84–93.

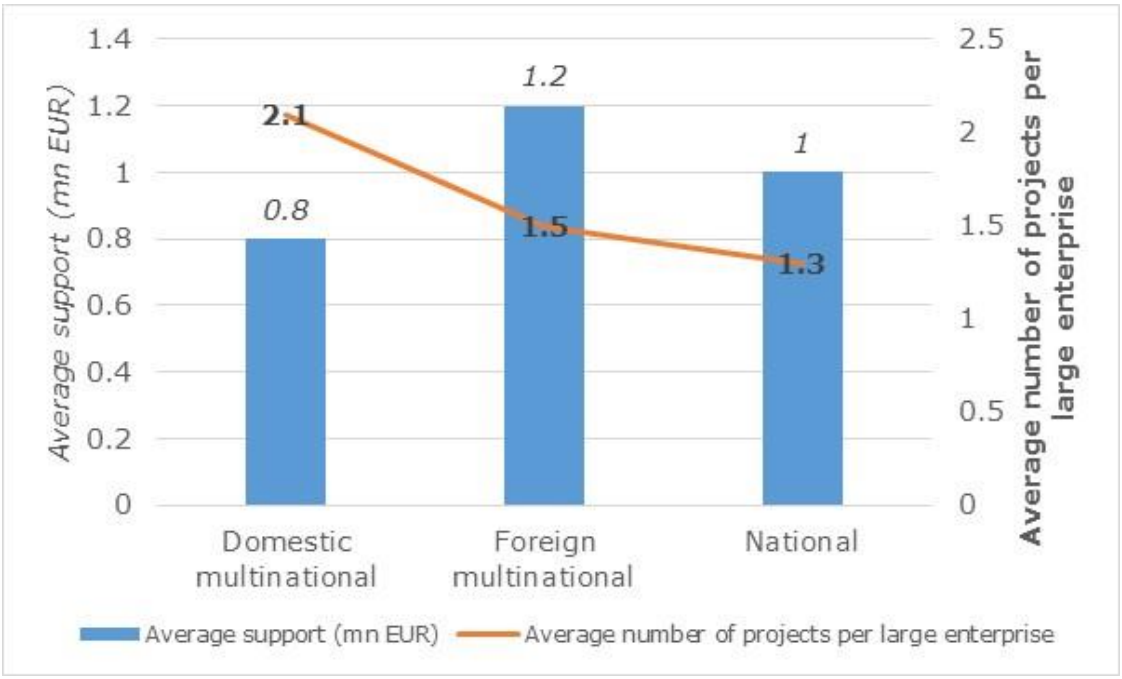
Table 11: Distribution of supported large enterprises by country based on scope of operation and origin of ownership

Scope of operation and origin of ownership	Countries								
	HU	CZ	PT	AT	IT	ES	DE	PL	Total
Foreign multinational companies	66%	53%	41%	28%	28%	23%	20%	9%	31%
Domestic multinational companies	0%	0%	27%	45%	24%	73%	48%	7%	29%
National companies	34%	47%	33%	27%	48%	4%	32%	85%	40%

Source: KPMG/Prognos (2016), based on the monitoring and information systems of Member States, public company databases.

Project size and average number of projects varied across foreign multinationals, domestic multinationals and national large firms. Domestic multinational companies invested in more than two projects on average (2.1 projects). The average support amount per project, however, was greatest in the case of foreign multinational firms (an average of EUR 1.2 million), as shown below.

Figure 13: Average support and average number of projects per large enterprise by scope of operation and origin of ownership



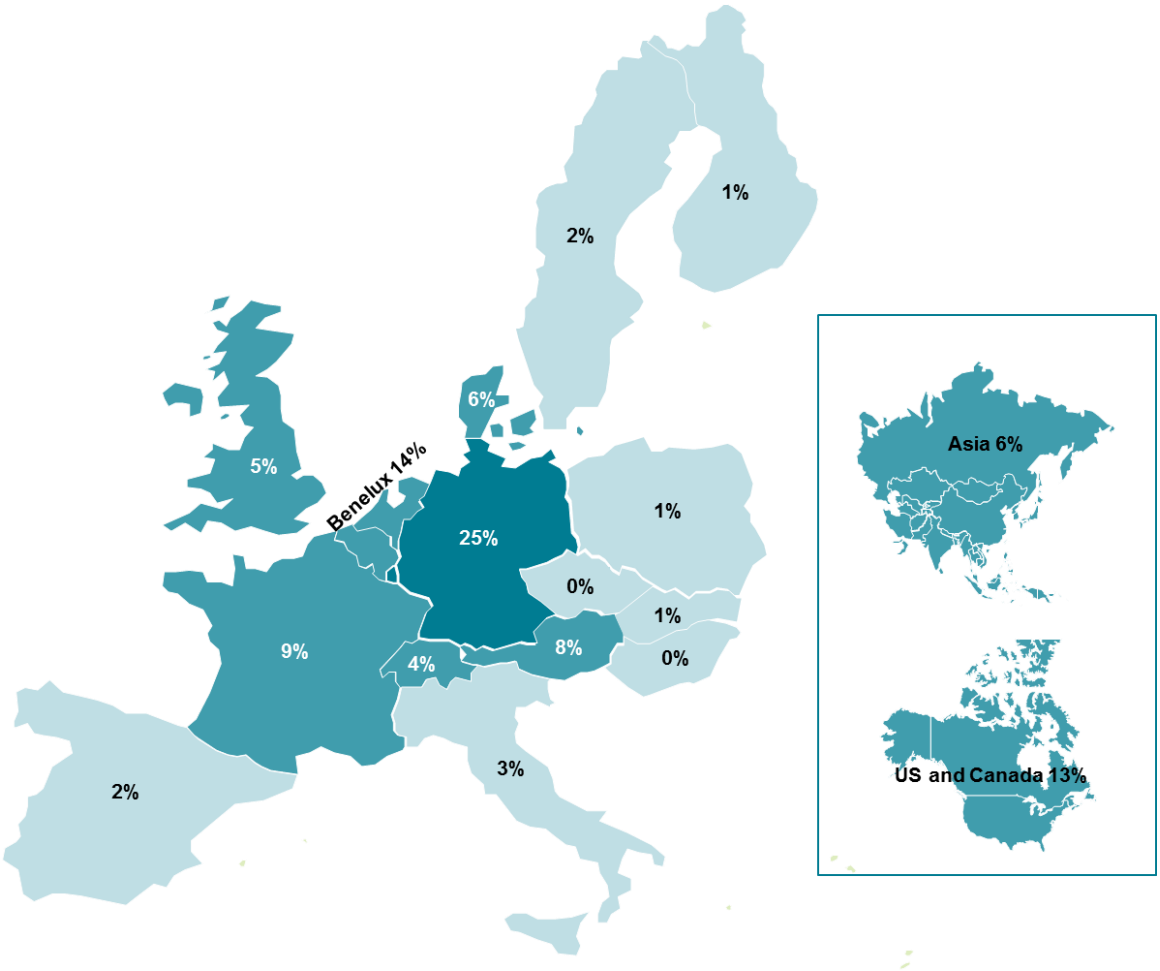
Source: KPMG/Prognos (2016), based on the monitoring and information systems of Member States, public company databases.

There are sectoral differences among the supported foreign multinationals, domestic multinationals and national large firms. Foreign multinational companies were more represented among supported high- and medium-high-technology manufacturers, while national companies were more represented among supported enterprises in the service sectors.

Supported foreign multinational companies were mostly of European origin (81%). Twenty-five per cent of foreign multinationals were headquartered in Germany.

The USA and Canada accounted for 13%, France for 9% and Austria for 8% of supported foreign multinational companies.

Figure 14: Distribution of supported foreign multinational companies by country of origin in the eight countries



Source: KPMG/Prognos (2016), based on the monitoring and information systems of Member States, public company databases.

3.3. Rationale for large enterprise support

While national and regional funding strategies emphasised the role of SME support in regional and national development, all countries had instruments for funding large enterprises and agencies that promoted FDI. In practice, a 'reverse' logic was used to justify large enterprise support; i.e. even though the direct support of large enterprises was not an explicit goal, it was not precluded, either. The number of programme strategies specifically mentioning large enterprises as a key target group was quite low.

Country examples:

The **German** Operational Programme in Thuringia highlights the crucial role of large enterprises in its regional economy and in the development of SMEs, specifically through various spillover channels ranging from productivity to knowledge spillovers.

The Economic Development Operational Programme in **Hungary** provides a concise narrative only for the rationale for large enterprise support, which outlines that support to large enterprises translates to support of SMEs and regional economies.

Strategies and Operational Programmes articulated clear goals for enterprise support in general; however, they provided limited information about the specific expected outcomes from large enterprise support (i.e. differentiation of goals based on enterprise size was lacking). In general, national or regional strategies and Operational Programmes provided limited explicit descriptions of the nature of support to and underlying reason for supporting large enterprises. This information was mainly obtained from programme planners and officials at Managing Authorities.

In general, the identified interventions for large enterprise support were aimed at increasing economic activity and GDP, regional employment rates, R&D and innovation activities and export growth. All of the identified enterprise support was aimed at increasing the employment rate and GDP and at contributing to economic activity in the regions where the projects were implemented. Some other goals, such as increasing research and development, were specific to certain interventions.

Country example:

In the **Polish** Innovative Economy Operational Programme, large enterprise support was justified as follows: *At the same time, as the situation analysis of the enterprise sector indicates, the biggest potential for absorbing innovative solutions is in the sector of large enterprises. A transfer of up-to-date technological solutions to the SMEs takes place through their agency. For this reason, within the Programme a portion of the instruments of support was also directed to enterprises from outside the SME sector.*[33]

Policy makers generally expected that large enterprise support would lead to positive indirect and wider benefits. The most commonly expected indirect and wider benefits were spillovers to local SMEs (such as the spread of improved practices from the supported large enterprises), improved social infrastructure and improved business infrastructure (for local transportation, ICT and R&D).

The above-mentioned goals and expected wider benefits are in line with national and regional strategies and with the Operational Programmes. The Operational Programmes were aligned with regional enterprise policies, reflecting their goals in the programme interventions.

[33] See Ministry of Development, Poland (2007): 'Innovative Economy Operational Programme', page 71.

3.4. Identified Theories of Change

Interventions in large enterprise support correspond to four general Theories of Change, namely large-scale business investment ('LE1'), technological upgrades ('LE2'), innovation support ('LE3') and investment in R&D capacity ('LE4').[34] The general Theories of Change are as follows:

- Large-scale business investment ('LE1'): Financial support to investments of large enterprises (including foreign-based ones) with the primary aim of increasing employment in the programme area in the long term.
- Technological upgrades ('LE2'): Financial support to large enterprises to assist them to implement upgrades in technology with the aim of strengthening their competitiveness and thereby the growth potential of the regional economy.
- Innovation support ('LE3'): Financial support to large enterprises to assist them to implement innovative investment projects for new products or processes, with the aim of strengthening the potential for regional innovation and the long-term growth of GDP and employment (high-quality jobs).
- Investment in R&D capacity ('LE4'): Financial support to large enterprises to help them set up, expand or improve R&D facilities and/or carry out R&D activities, with the aim of expanding the regional knowledge base and the long-term R&D and innovation capacity of the region (including the creation of research jobs).

Table 12: Four main Theories of Change and their correspondence with the broader enterprise strategies of the regions

Intended change identified in literature review	Country	Theory 'LE1'	Theory 'LE2'	Theory 'LE3'	Theory 'LE4'
Increase in the intensity of R&D activities	AT, ES, DE, HU, IT, PT			●●	●●●
Creation and safeguarding of jobs	AT, CZ, ES, HU, PL	●●●	●●	●●	●
Stimulation of enterprise investment	DE, HU, IT, PT	●●●	●●	●●	●
Development of existing enterprises and productive units in convergence regions	CZ, IT, PT	●●	●●●	●●●	●
Improved competitiveness of the regions	ES, DE	●●●	●●	●●●	●●
Improved innovation performance of the industry and service sectors to promote convergence	AT, CZ			●●●	●●●
Knowledge spillovers for the benefit of small and medium-sized enterprises and research partners through increased co-operation with large enterprises	DE, HU	●	●●	●●●	●●●
Increased production capacity and productivity	HU, IT	●●●	●●●	●●	●●
Attraction of new companies to convergence regions	IT	●●●	●●		
Attraction of strong, technology-based companies	AT	●●●	●●●		
Increase in exports	PT	●	●●●	●	
Sustainable development	IT			●●●	

[34] See the appendices of the report for further details on the Theories of Change.

Intended change identified in literature review	Country	Theory 'LE1'	Theory 'LE2'	Theory 'LE3'	Theory 'LE4'
Strengthened capital stocks	DE	●●	●●●		
Increase in income	HU	●●●			●
Increase in GDP and welfare	ES	●●●	●●	●●	●
Increase in GDP and welfare in disadvantaged regions	HU	●●●			●
Opening of new markets	AT		●●●	●	
Creation of attractive business location	AT		●●●		●●●

Source: KPMG/Prognos (2016).
Legend: ●●●: strong contribution; ●●: moderate contribution; ●: minor contribution.

3.5. Targeting of large enterprise support

The manufacturing industry was the main target of regional enterprise policies; however, this was often without any explicit focus on particular sub-sectors. As shown above, more than 70% of the large enterprises supported operate in the manufacturing industry; however, in most cases, the manufacturing industry comprised a significantly smaller share of the sectoral structure of the national and regional economies. National support policies often explicitly focused on the manufacturing sector, and particularly favoured high- and medium-high-technology manufacturing.

The Operational Programmes did not direct support according to firm characteristics (e.g. country of origin, size of company). The stakeholder interviews and the review of programme documents have not revealed that programmes concentrated support on FDI or on indigenous companies. Enterprises that met the established selection criteria of the Operational Programme were generally supported, irrespective of whether they were of national or foreign origin.[35]

National and regional policy makers, however, often aimed at supporting individual firms of perceived strategic importance, which resulted in high concentration of support. More than one-third of all large enterprise support was spent on the top ten beneficiaries in each of the eight countries (in terms of the amount of support received). Special focus on key companies with the highest strategic importance was usually explained by their higher potential to increase economic performance in the programme area.

Excursus II - Short narrative on support to foreign versus indigenous enterprises in the 2007-2013 period:

Among the analysed programmes there was no explicit differentiation between indigenous and foreign companies. However, a large diversity among countries can be observed in this regard. Most of the case companies were treated in the same manner, irrespective of their origin. As already stated above, none of the programmes directly targeted or focused on FDI. Nonetheless, there was significant diversity between Western European countries and Central and Eastern Europe. In the latter case, mainly either multinational companies with foreign origin or purely national companies received support but hardly any domestic MNCs. Poland is an exception where the number of national companies is the highest compared to both CEE and Western European countries but where also some Polish domestic

[35] Limited data on these firm characteristics prevented the systematic comparison of supported enterprises with all enterprises operating in the regions.

multinational companies received support. Unlike in Poland, there were no domestic multinational companies among the supported enterprises in the Czech Republic and Hungary. At the same time, the share of foreign multinational enterprises receiving support exceeded 53% in the Czech Republic and 66% in Hungary. In contrast, in Western European countries domestic multinational companies and national companies were the most frequently supported, accounting for 70% or more of funds allotted in Austria, Germany, Italy, Portugal and Spain.

Substantial shares of support were transferred to large enterprises with Western European roots. One-fourth of the supported foreign multinational companies originated from Germany. The other main countries of origin were the Benelux countries, the United States, Canada, Austria, France, Switzerland, Denmark, the United Kingdom and Asian countries. The top three countries of origin, i.e. Germany, USA and Canada, and France produced more than the half of the supported foreign multinational companies. Since Eastern European countries had few to no active foreign multinational large enterprises, they benefited on average less than Western European countries when taking into account the headquarters of the supported large firm.

Evidence gathered in company case studies was consistent among companies, no matter their origin. The only exception was the scale of the intervention, which was more conditioned by the support in the case of domestic multinational companies than in the case of foreign multinational enterprises. Both domestic and foreign multinational companies shared the same opinions regarding the importance of the support. Only for 3 out of 17 domestic multinational companies and, similarly, for 3 out of 22 foreign multinational firms was the support a direct, strong cause of project implementation. At the same time, representatives of only 2 out of 17 and 5 out of 22, respectively, stated that the project would have been implemented in the same manner without the support. About half of the companies in each group admitted that the project would have been implemented at a later date, but most likely at the same location. Interestingly, the only difference between domestic and foreign multinational companies was in the impact on the scale of the project. More than two-thirds of domestic companies (11 out 17) stated that they would have reduced the scale of the project in the absence of the support, while less than one-third of foreign multinational companies (7 out of 22) responded in this way.

4. OUTCOMES OF LARGE ENTERPRISE SUPPORT IN THE 2007–2013 PERIOD

The literature review, and in particular the review of counterfactual impact evaluations, has found a higher degree of deadweight for large firms than for SMEs. Deadweight effects, i.e. the degree to which the project would have been carried out without public support, are identified for all types of firms receiving direct enterprise support. If deadweight effects are large, subsequent changes (e.g. enterprise growth, increase in employment) are not seen as relevant, as the project or investment would have generated them without the subsidy as well. The literature shows that the likelihood of a zero-deadweight effect is significantly dependent on the characteristics of the subsidised firm, the characteristics of the investment project and the location of the firm. Specifically, the investment-bearing capacity of the supported enterprise, i.e. the ratio of enterprise turnover to project costs, seems to determine the deadweight effect, rather than the mere size of the firm. Nevertheless, the existing evaluation evidence indicates that a higher degree of deadweight can generally be expected for larger enterprises.

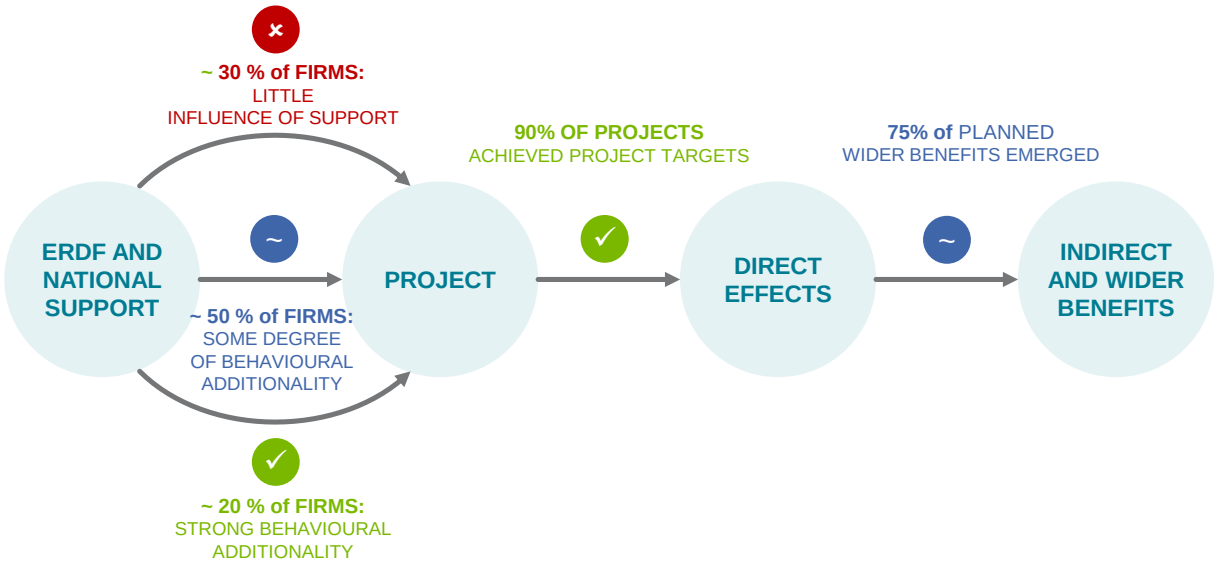
In response to the results of the literature review, the present theory-based evaluation examined the causality between the programme and its outcomes in detail. The evaluation aimed at addressing the cause-effect relationship between the specific interventions and different dimensions of the observed changes, i.e. to what extent the programmes caused these outcomes. The evaluation broke down this causal relationship into two main parts (which were examined further during the reconstruction and testing of the Theories of Change), namely:

A. The cause-effect relationship between the intervention (support) and the implemented projects;

B. The cause-effect relationship between the implemented projects and the observed changes (outcomes).

Figure 15 summarises the key findings from this assessment.

Figure 15: A simplified breakdown of causality between the support and outcomes



Source: KPMG/Prognos (2016), based on empirical evidence from the 45 company case studies.

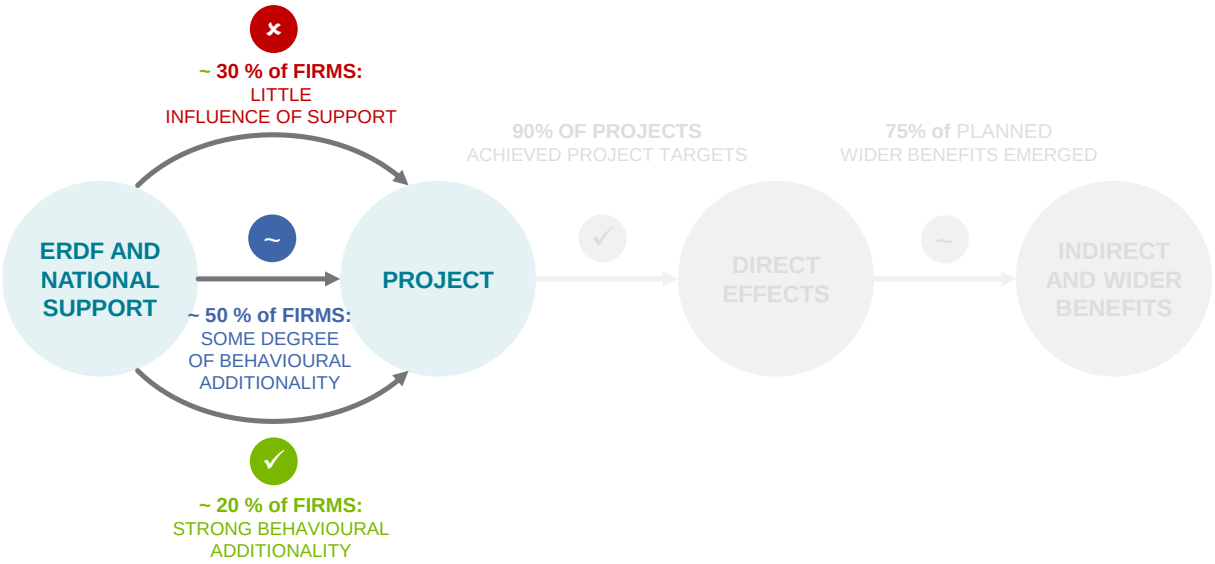
In this simplified framework, claiming causality between the support and the outcomes has three conditions, namely a causal relationship between the support and project implementation, a causal relationship between the project and its direct effects and a causal relationship between the project (through its direct effects) and the indirect and wider benefits observed. When the conditions for the relationship between the support and the project, and the project and the direct effects and/or indirect and wider benefits are fulfilled, the support can be considered effective.

Section 4.1 analyses the first part of the causal chain, i.e. the causal relationship between the support and the project. Causality regarding the link between projects and their direct effects is analysed in Section 4.2, while indirect and wider benefits are examined in Section 4.3.

4.1. Causality between the support and the implemented projects

As a first step in the Contribution Analysis, the following section will focus on clarifying whether EU funding has made a difference in the implementation of the investment projects. In technical terms, the analysis breaks down the 'causal packages' the programmes were part of, identifies interactions among the elements of the causal package and judges the extent to which programmes managed to influence the supported companies' behaviour.

Figure 16: Causality between the support and the implemented projects



Source: KPMG/Prognos (2016), based on empirical evidence from the 45 company case studies.

In the majority of company case studies, non-refundable EU support was not one of the main causes of implementation of the project. The evaluation found strong behavioural additionality and direct causal relationships between the support and the implemented projects in 20% of company cases. This implies that for the majority of the implemented projects, the causal package contained other significant factors that played more decisive roles in project implementation.

In 80% of cases, factors other than the support (e.g. corporate strategy, transport infrastructure) were dominant in producing the investments. Analysis of the causal package revealed that in 80% of cases EU funds were only one of many influencing factors that together produced the investment decisions. Academic literature, the company case studies (43 out of 45) and other firm-level case studies[36] confirmed that large firms operate on a strategic basis and that productive investment decisions are typically settled in medium-term strategic documents, in line with the company's investment lifecycle. The key influencing factors for the major investments were these long-term corporate strategies, but other factors often included tax incentives from governments, sufficiently developed basic infrastructure (transport and railways), local industry infrastructure and the availability of a qualified labour force.

The theory-based assessment revealed that in 30% of cases, the role of other influencing factors was so strong that the ERDF funding did not influence the company's behaviour. Since the support did not change behaviour in 30% of cases these outlays of support are considered ineffective from a Cohesion Policy perspective. It is important to note here that this statement only applies to causality between the

[36] The company case study literature included: two Harvard Business Case Studies relevant for the assessment of longer-term business strategies and decisions influencing investment locations, four Hungarian company case studies from the academic literature discussing the role of embeddedness and local context in the sustainability of FDI, one Portuguese case study discussing an investment decision of a multinational large enterprise and annual reports of various large multinational firms from Hungary, Germany and Italy. Please see list of references.

support and the project. Effective Cohesion Policy also requires positive outcomes that are directly related to the implemented project (this is assessed in later sections).

In 50% of cases, EU support did influence the behaviour of the supported firms to a certain extent. Even though the causal link was generally not strong, for 50% of companies EU support was a necessary part of the 'causal package' and led to a *behavioural additionality* by acting as a catalyst for the projects (23 of 45 cases); amplifying the investment scope (23 of 45 cases) or granting access to financing for 'mid-caps' with growth potential (6 of 45 cases). Hence, in 50% of cases, the funds were necessary in influencing the terms of the investments already set out in corporate investment strategies but were typically not sufficient to induce the investments. EU funds may alter these strategies to some extent, but strategic thinking and behaviour remain fundamental characteristics of large firms and the hallmarks of their investment decisions.

Geographical differences in the strength of causality were not caused by location-specific factors. The available evidence revealed no patterns relating causality to the geographical location of the investment either by country or by the relevant Cohesion Policy objective ('convergence' or 'regional competitiveness and employment') of the region.

The differences among countries were explained primarily by the set of implemented Theories of Change, as discussed below. The analysis of causality in relation to different Theories of Change is summarised in the following table.

Table 13: Causal relationship between the non-refundable support and the projects by Theory of Change (company case studies)

Role of non-refundable support	Large-scale business inv. (LE1)	Technological upgrading (LE2)	Innovation support (LE3)	Investment in R&D capacity (LE4)	Total
a. Cause	5	-	-	2	**7**
b. Pre-condition	7	5	4	5	**21**
c. Supporting factor	2	7	2	3	**14**
n/a	*2*	*1*	-	-	***3***
Total	**16**	**13**	**6**	**10**	**45**
Main cause (a)	36%	0%	0%	20%	17%
Not a main cause (b + c)	64%	100%	100%	80%	83%
At least pre-cond. (a + b)	**86%**	**42%**	**67%**	**70%**	**67%**

Source: KPMG/Prognos (2016), based on empirical evidence from the 45 company case studies.

A causal relationship between support and project implementation was more plausible under the LE1 theory (large-scale business investment) than for other theories. As companies themselves reported, grants were direct causes of project implementation in one-third of the 16 company case studies analysed. Also, they were part of the causal package (at least a pre-condition for investment) in the majority of cases in which this theory applied (12 out of 16), indicating low deadweight for projects under this theory. The narratives of the company case studies underscored that the

strength of causality was not related to the industry, the size of the firm or the amount of the support, but rather was a function of the individual, firm-specific characteristics of the investment.

In addition to corporate strategy, the causal package under this theory usually included the relevant business and industry heritage of the investment region (15 out of 16), the need for developed transport infrastructure (12 out of 16) and (usually in cases of FDI) favourable local tax incentives (6 out of 16).

Company case study examples:

A large **German** domestic multinational firm (LE1) in the automotive industry embarked on a EUR 150 million investment in Thuringia, using EUR 15 million of public support. The incentive offered by the programme was large enough to drive the investment location to this eastern region of Germany, which would not have happened otherwise. According to the Chief Financial Officer of the enterprise, discontinuing support for large enterprises will lead to the delocalisation of some projects to other countries with more favourable investment conditions.

In a **Hungarian** case from the mining sector (LE1), the absolute necessity of the investment, coupled with the weakened financial situation of the firm in the wake of the financial crisis, made the EU funds an essential cause of the implemented project. Without the support, the investment could have only been implemented five to six years later, which would have resulted in a considerable loss of international market share for the company.

EU support had the weakest influence on the investment projects under the LE2 theory (technological upgrading). In more than half of the analysed company cases under this theory (7 out of 13 company case studies, compare Table 13), the support played only a secondary role in realising these investments. As revealed during company case study interviews, these projects were internal ones, involving the replacement or upgrading of existing technologies. They followed the enterprises' regular investment lifecycle, and were typically not responsible for any strategic changes or breakthroughs in the company's business model and operations. The support was a useful input for these investments, yet in most cases the projects would have been carried out anyway in order for the companies to stay competitive in their markets (although some of them would have occurred at a later date).

Company case study examples:

In case of a **Czech** foreign multinational firm in the ICT industry (LE2), the funds were used to enhance the existing capacity of a service centre, co-financing the wages of the newly hired employees and a new facility. The funds were considered important, yet the project probably would have been carried out anyway, as part of the approved list of large investments at the international headquarters of the firm.

A **Portuguese** domestic multinational firm in the beverage industry used the funds to modernise its production line with a view to increasing production volume and labour-force productivity. Due to the company's strong need to increase its global competitiveness, the project would have taken place without the support, too.

Under Theory of Change LE3 (innovation support), the support had a moderate influence on the implemented innovation projects. Out of the six company cases in this category, four have been determined to have EU funding as part of their causal packages, and in two cases the support served only as a supporting factor. The case study interviews indicated that some projects were highly connected to the regular business activities of the large firms, resembling the technological-upgrade projects under the LE2 theory, while others involved significantly more novelty. The literature revealed positive examples for causality. For instance, in the cases of the Czech Republic and Germany (Czarnitzki et al., 2011[37], using a difference-in-difference estimator), firms receiving direct support to R&D and innovation activities from EU Cohesion Policy were able to increase their innovation activity, as measured by the proxy variables patenting activity and R&D intensity. Even though the literature showed a broad causal relationship between the support and the direct outcomes, the intermediate steps between receiving the funds, implementing the projects and observing the outcomes need to be further analysed.

Company case study examples:

A **Polish** foreign multinational firm (LE3) manufacturing and distributing machinery and vehicles purchased innovative new machines and production lines in response to increased international competition in order to change the production technology and technological culture within the company. The EU funds were in line with the company's strategy and thus served the purposes of company well. Had the support not been available, the project would have been implemented, but the time required for implementation would have been longer.

An **Italian** domestic multinational firm (LE3) operating in the manufacturing sector invested in producing its products using more advanced technology and high-technology materials. Even though this involved cutting-edge technology and a significant amount of private innovation, the project would have been carried out even without EU support.

For projects under Theory of Change LE4 (investment in R&D capacity) the support had considerable potential to influence the large firms' behaviour. In the majority of the analysed cases under this theory (7 out of 10), EU funds were part of the causal package for the investment, and in two of the cases the support was a strong cause of project implementation. Interviews with company officials suggested that project type and characteristics of the programme area played even more important roles than in case of innovation support under LE3 (10 out of 10 cases). The most successful cases, found among large firms employing around 5,000 employees globally, were those where the support was able to alter the project scope, the project location or where support helped to induce benefits of the project to other economic actors in the region (e.g. through the implementation of 'open labs' for collaborative R&D). As a general finding of the analysis, the causal packages of R&D projects typically included not only the company strategy and the EU funds, but also the need for sufficiently developed regional innovation systems and R&D infrastructure.

[37] Czarnitzki, D. et al. (2011): 'Counterfactual impact evaluation of cohesion policy. Work package 2: Examples from Support to Innovation and Research. Final Report', study on behalf of DG REGIO, Brussels.

Company case study examples:

A **Hungarian** domestic multinational firm in the pharmaceutical industry (LE4) invested EUR 18 million in a research centre, with EUR 9 million in support from EU funds. The funds successfully influenced the investment by inducing the company to make the centre more accessible to local firms and researchers, with the aim of boosting new research in the region.

A US-based foreign multinational firm invested in its **German** subsidiary (LE4) to develop different diagnostic tests that increase the company's R&D activities. Although the project itself led to favourable direct effects and indirect and wider benefits for both the enterprise and the region, the ERDF support was not consistently perceived as a cause or pre-condition of project implementation by the interviewed officials.

Among the 45 company case studies, stronger causality was found for higher support levels, which may well be a consequence of stricter conditions on granting for the largest subsidies. Based on the analysis of the limited number of qualitative case studies, there seems to be a trend that strength of causality grows with the size of grants. It is important to note that this does not refer to the size of the effect, only to the significance of EU funds to project implementation. For the largest projects (over EUR 10 million), almost half of the instances of support were assessed as strong causes or pre-conditions of the investments, compared to barely one-fifth among projects with a smaller grant size (see the table below). Despite the expected impact of the theories on this trend (for instance, the more successful LE1 productive investments tended to be larger in terms of grant size), the analysis identified no sectoral or theory-related patterns. The case studies, interviews with other stakeholders (e.g. Managing Authorities and investment promotion agencies) and external company case studies[38] in the literature indicate that a probable reason for this may be the stricter conditions imposed by local authorities for larger-sized grants; i.e. in such cases local authorities had greater control over whether large firms created something additional in return for receiving public funding.

Company case study examples:

An **Austrian** firm engaged in the production of packaging glass (LE2) implemented two ERDF-funded projects using EUR 0.5 million of ERDF support, both of which supported improvements to assets and technology in the form of machinery. The investment in the production site was of high importance to the firm. Even though the programme helped keep the unit costs low, according to the established investment plan of the firm, the projects would have been carried out anyway.

A US-based global car-manufacturing firm invested (LE1) in a plant in **Spain** using a large amount of ERDF support in order to manufacture smaller vehicle models. The company and the government of Spain held negotiations on the terms and location of the investment and agreed to them in advance. The interviewed stakeholders agreed that the incentivising effects of the support and the negotiations were considerable.

[38] Case study of a German multinational company establishing a facility in Hungary (see Vápár, J., 2013) and strategic partnership agreements signed by the Hungarian government and large multinational companies.

Table 14: Causal relationship between the non-refundable support and the projects by grant size (company case studies)[39]

Role of non-refundable support	Large grant size (above EUR 10 million)	Medium grant size (between EUR 2 and 10 million)	Small grant size (under EUR 2 million)	Total
a. Cause	4	3	-	7
b. Pre-condition	-	1	2	3
c. Supporting factor	5	7	9	21
n/a	3	1	10	14
Total	**12**	**12**	**21**	**45**
Main cause (a)	44%	27%	0%	23%
Not a main cause (b + c)	56%	73%	100%	77%
At least pre-cond. (a + b)	**44%**	**36%**	**18%**	**32%**

Source: KPMG/Prognos (2016), based on empirical evidence from the 45 company case studies.

The sector of the firm was not a determining factor of the strength of causality. Judging from the analysis of 45 company case studies, similar trends were observed for causality across all of the sectors involved.

In the case of FDI, i.e. of firms new to the programme area, the support was typically a pre-condition of investment, and was perceived as a relevant factor for international location choice. As shown in the previous chapters, the share of FDI within large firm support was moderate. For the four cases of FDI out of the 45 company case studies, the support was a pre-condition of project implementation. Company strategy, tax incentives and local infrastructure were commonly mentioned as alternative causes that drove investment. Most often, the amount of EU funds available tipped the balance when choosing the investment location of the firm. Within the EU, most countries strive to attract investment, and often offer EU funds in order to incentivise large firms. This phenomenon created competition among countries, such that a well-timed and sufficiently large financial package could make the difference in a firm's decision to invest in one country over another. Even though this use of funds is generally considered ineffectual at the EU level, its role in FDI made the funds an essential element of the causal package in such cases. The literature provided evidence that further supported this finding. For instance, Girma et al. (2008), using an econometric model for Ireland, show that subsidies played a role in attracting foreign multinational companies and influencing the scale and nature of operations within Ireland.[40] Breuss et al. (2010)[41] also found that EU Cohesion Policy was effective in attracting multinational companies, mostly due to its support of more favourable conditions for investment in peripheral regions (especially through funding training, infrastructure and R&D activities), thereby counteracting agglomeration forces that lead to a concentration of economic activity in

[39] Please note that the percentage values indicated in the table are only for demonstration purposes and exclusively summarise the results of the 45 company case studies. The values may not be representative of the whole population of the supported large enterprises.
[40] Girma, S., et al. (2008): 'Creating jobs through public subsidies: An empirical analysis'. Labour economics, 15(6), 1179-1199.
[41] Breuss, F. et al. (2010): 'Structural finds, EU enlargement, and the redistribution of FDI in Europe', Review of World Economics, 146(3): 469-494.

core regions.[42] Similarly, in another study on the location choices of multinational companies in Europe, Basile et al. (2008)[43] found that EU Cohesion Policy plays an important role in Eastern Europe.

Wherever they were used, refundable grants were typically supporting factors in producing investment rather than major factors influencing large firms' investments. Refundable grants were used in Austria, Italy, Portugal and Spain, in 15 out of the 45 company cases analysed, typically together with non-refundable grants. The analysis identified only three companies for which the refundable grants were part of the causal package (see the table below). In the rest of the cases, they played only a supporting role in the implementation of the projects. The explanation for this phenomenon, drawn from company interviews and the literature review, was that large firms have good access to financing in the market that brings with it fewer administrative requirements compared to EU funds. Favourable conditions for financial instruments may incentivise large firms, but typically do not lead to behavioural change.

Country example: In **Portugal**, refundable grants played a special role in the large firms' investments. Under the condition of fulfilling certain pre-defined requirements during project implementation, refundable grants could be converted into non-refundable grants over time. This option raised the relevance of refundable grants for large firms, and increased their role in project implementation.

Table 15: Causal relationship between refundable support and the projects by Theory of Change (company case studies)

Role of refundable support	Large-scale business inv. (LE1)	Technological upgrading (LE2)	Innovation support (LE3)	Investment in R&D capacity (LE4)	Total
a. Cause	1	-	1	-	**2**
b. Pre-condition	-	1	-	-	**1**
c. Supporting factor	3	5	-	4	**12**
n/a	12	7	5	6	**30**
Total	**16**	**13**	**6**	**10**	**45**

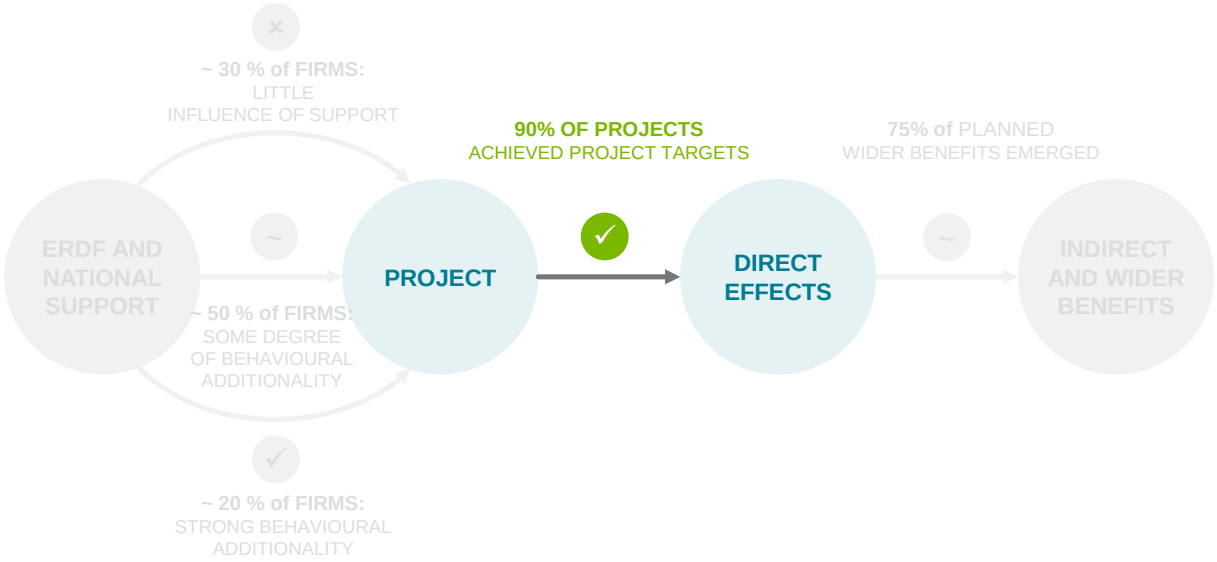
Source: KPMG/Prognos (2016), based on empirical evidence from the 45 company case studies.

[42] More specifically, Breuss et al. (2010) find that regions receiving a larger overall amount of Structural Funds and those belonging to countries eligible for the Cohesion Fund have been more attractive to foreign investors.
[43] Basile, R. et al. (2008): 'Location choices of multinational firms in Europe: The role of EU cohesion policy', Journal of International Economics, 74(2): 328-340.

4.2. Direct effects

From this section on, the report discusses the strength of the contributions the projects have made to the planned direct effects (see the chart below). In technical terms, the focus of the Contribution Analysis is on whether the foreseen effects have emerged, and if they have, what the causal relationship between the project and these direct effects was (indicated with a '✓' in the chart).

Figure 17: Contribution of investment projects to the observed direct effects



Source: KPMG/Prognos (2016), based on empirical evidence from the 45 company case studies.

As discussed in Section 4.1, causality between funds and project implementation was strong in 20% of cases, moderate in 50% of cases and little influence was observed in the remaining two cases due to the existence of several additional influencing factors. This finding needs to be remembered when assessing the effectiveness of the support, i.e. the causality between the support and the direct effects.

The next sections analyse the direct effects in terms of private investment, increased production and productivity and employment, respectively.

4.2.1. Private investment

Regarding outcomes for private investment, this analysis describes the extent to which ERDF support was able to induce private investment by the funded enterprises. This leverage effect can happen at two different stages in the case of large firms, namely:

- In the *implementation* stage, when *direct* private investments are generated that complement public support (own contribution of the beneficiary);
- In the *post-implementation* stage, when additional, subsequent (*indirect*) investments are induced as a result of project implementation, implemented either by the beneficiary or by another party (e.g. a supplier).

In the *implementation* stage, the supported large enterprise projects generated a EUR 1.5–6 private investment for each EUR 1 of public support. In most of the companies (40 out of 45), private investments in most projects exceeded the amount that the maximum aid intensity would require (by regulation).

Due to lower levels of aid intensity and larger project sizes, large enterprise support generated more private investment per EUR 1 of public money than did support to SMEs. Large enterprises' share of generated total private investment is considerably higher than their representation in terms of number of supported projects.

Programme case study example:

In **Thuringia**, from a total of EUR 2.2 billion in generated investments, roughly 44% (EUR 1 billion) came from large enterprises, which represented only 6% (208 firms) of the funded projects. On average, the induced investment amount in large enterprise projects was more than 12 times that of projects undertaken by SMEs.

In the *post-implementation* stage, one-quarter of the analysed companies also implemented subsequent investments after the EU funded projects were completed. While the majority of the subsequent investments were implemented internally, two examples showed that a considerable amount of additional investment was realised by other parties (suppliers). Interviews with public authorities corroborate the above finding, as they often described a 'pull effect' exerted by large enterprises influencing additional investments in other firms in the area.

Company case study examples:

In the **Czech Republic** one of the company case studies (LE4) indicated that the investment project (modernisation and enhancement of a product development centre) was closely linked to further investments. An upgrade in production capacity physically enabled the production of higher-quality products new to the firm, which required additional investments in machinery for the upgraded production processes.

In **Germany** (Thuringia) a company (LE1) explained that the investment was a supporting factor in supplier growth, because the company increased its demand for products from suppliers in the region, especially first-tier suppliers.

Causal links between the projects and the additional investments were strong; however, long-term corporate strategy was equally important in the 'causal package'. The project was at least a pre-condition for realising additional private investment in 32 out of the 45 company cases analysed. It is important to note that the *additional* parts of these investments were not always the sole consequences of the implemented projects. Rather they were often greatly influenced by other factors as well, particularly the company's strategy and investment plan, as discussed in Section 4.1 above.

Table 16: Causality between the project and the induced investments (company case studies)[44]

Role of the implemented project	Induced investment			
	Observed	Not observed	*n/a*	Total
a. Cause	17	-	-	17
b. Pre-condition	15	-	-	15
c. Supporting factor	7	-	-	7
n/a	*1*	*4*	*1*	*6*
Total	**40**	**4**	*1*	**45**
Main cause (a)	44%	n/a	*n/a*	44%
Not a main cause (b + c)	56%	n/a	*n/a*	56%
At least pre-cond. (a + b)	**86%**	n/a	*n/a*	**82%**

Source: KPMG/Prognos (2016), based on empirical evidence from the 45 company case studies.

Based on the company case studies, additional private investment was not determined by the Theory of Change, except in that more indirect additional investments were reported at other business partners in the case of LE1 (large-scale business investment). There are various examples from all Theories of Change of realising direct or indirect additional investment. Attracting suppliers or other investors to the region was, however, more characteristic of LE1 (large-scale business investment), both for suppliers and for other investors. This is likely to be a consequence of the typically larger and more complex projects characteristic of LE1 companies, which influenced the investment activity of their business partners as well.

The outcomes for private investment were not specific to other firm or project characteristics. Project size, firm size, sector and ownership (foreign or domestic) have not emerged as explanatory factors for the size of additional private investment or the strength of causality between the project and the private-investment outcomes.

The relevant literature justifies the induced additional business spending, especially in the case of supporting R&D investment. For the Czech Republic and Germany, Czarnitzki et al. (2011) showed that firms receiving direct support for R&D and innovation activities from EU Cohesion Policy were able to increase their innovation activity, as measured by the proxy variables of patenting activity and R&D intensity. Similarly, Atzeni and Carboni (2006) and Albareto et al. (2008) found that, for Italy, investment subsidies caused additional investments in assisted firms.[45]

[44] Please note that the percentage values indicated in the table are only for demonstration purposes and exclusively summarise the results of the 45 company case studies. The values may not be representative of the whole population of the supported large enterprises.

[45] Atzeni, G. E., and Carboni, O. A. (2006): 'ICT productivity and firm propensity to innovative investment: evidence from Italian microdata', Information Economics and Policy, 18(2), 139-156; Albareto, G., et al. (2008): 'L'organizzazione dell'attività creditizia e l'utilizzo di tecniche di scoring nel sistema bancario italiano: risultati di un'indagine campionaria', Questioni di Economia e Finanza, No.12, Bank of Italy.

Excursus III - Short narrative on the role of Foreign Direct Investment in the 2007-2013 period:

Foreign direct investments are of special importance in the modern economy, yet they were not explicitly targeted in any of the analysed programmes. It is often said that FDI can positively impact the economic growth of regions and countries. Inflow of capital and possible increases in revenues from taxes, job creation, innovation transfer etc. are all typically listed when discussing the advantages of FDI. However, in none of the evaluated programmes was there an explicit focus on supporting FDI, even when at least some of the interventions had this characteristic (for example Measure 4.5 of the Innovative Economy Operational Programme in Poland). This resulted in a lack of monitoring practice for FDI, which could have determined whether an intervention was FDI or not. Therefore this evaluation conducted classification of FDI in an 'ex post' manner. A project was considered FDI if at least one of following conditions was true: 1) a foreign company with no previous history in the country entered the market for the first time; or 2) a foreign company, which may or may not already have been present in the country, performed a Greenfield investment.

Overall, the share of FDI was marginal among all supported projects. Foreign direct investments were identified in all countries except Italy and Spain. They constituted around 5% of the total number of supported large enterprise projects. The largest absolute amounts in FDI investment were identified in the Czech Republic (55 investments), Poland (20 investments) and Hungary (14 investments). Similarly, a relatively small share of FDI was identified for the company case studies. Four FDI projects were studied in detail: two in Hungary, one in Poland and one in Portugal.

The ERDF subsidy often played a decisive role during the selection process of the final location of the FDI project, indicating that such support could be an important tool for countries that are attempting to attract global companies to invest in their regions. At the same time, the influence of ERDF funding often resulted in a risk of inefficiency at the EU level. Interviews with public officials and representatives of the companies shed light on the role of public support and ERDF money in the decision-making processes of multinational enterprises. Investors compare funding opportunities with many factors when choosing from a long list of locations. Representatives of the administration admitted that public support is only a part of the bigger package that a foreign company can receive, but is often an important one. As a German example illustrates, in the case of FDI projects, the first years of the investment were often crucial, due to the number of uncertainties involved (project implementation, market absorption etc.). Up-front support from the state, such as joint schemes for improvement of the regional economic structure and ERDF support, was important in reducing this uncertainty. Similar opinions were expressed by the companies' representatives. In three out of four analysed FDI case studies, ERDF funds (and their amounts) were decisive in choosing the final location of the investment. However, such incentives can easily lead to inefficiency, i.e. when investments would have been implemented elsewhere in Europe regardless of ERDF funding. Evidence from the study suggests that this may be the case for at least a few of the FDI projects supported. In these cases, investors decided to move to a country where they received a larger amount of ERDF money.

Taking the above findings into consideration, two conclusions emerge. First, there is an obvious need for better monitoring of FDI projects in future Cohesion Policy programmes. Second, at the level of EU policies, greater attention should be paid to the problem of FDI inefficiency in situations in which countries bid against each other to attract a potential investor. This is a complex problem. Countries compete across Europe and around the world for new investors. To be more competitive they offer more and more financial resources to companies, which leads to a 'subsidy race'. As some scholars have argued, 'Such a strategy has a negative impact on critical development variables such as public finances, competitiveness, social conditions, democracy, governance and entrepreneurial culture'.[46]

[46] Ottón, S. (2011): '*Subsidizing multinational corporations: Is that a development policy?',* Kellogg Institute, Working Paper #381.

4.2.2. Production and productivity

Since investment projects were mostly implemented on a strategic basis, increases in production and higher productivity were the most common planned outcomes for the supported companies. Since large-scale investment projects were mostly designed to increase production and productivity (e.g. through upgrading machinery or replacing old technology with more efficient cutting-edge technology), the levels of both have improved considerably as a result of these investments.[47]

Example of the general trend:

Under the LE1 theory (large-scale business investment), a large multinational company in the automotive industry explicitly emphasised that the main driving force of the investment was expanding production capacity and decreasing the unit costs of production. (Information extracted from the company's annual reports supported the outcome of the interview.)

Nevertheless, there were a few cases that did not follow this general trend (e.g. certain R&D projects and investments in high-quality products in niche markets). Four companies did not experience increased production, and nine could not improve productivity.

Examples of exceptions to the general trend:

Under the LE4 theory (investment in R&D capacity), some of the R&D projects were supported in the pre-commercialisation stage. In such cases, the investments could obviously only have a limited impact on productivity or production, but both parameters were to be improved in the longer term, once research and development activity resulted in the creation of new products and prototypes.

Another example is related to companies that wanted to increase production, where productivity was not the main strategy for achieving this. Their market strategy was based on competitiveness through improvements in the quality of their products rather than on productivity in its classical interpretation (reduction of production cost per unit). In these cases, the implemented project allowed for the production of a new innovative product, with some unique desirable properties.

Apart from these exceptions, the strategic role of the project in the company's operations resulted in achieving the goals of both higher production and higher productivity.

Increased productivity was essential, especially for FDI investments. Production in the new country or region led, in most cases, to substantial cost reduction.

[47] Interviewees were asked whether the implemented projects have resulted in increased value in production.

Company case study examples:

A global company headquartered in Asia, active in many sectors of the economy, decided to set up its first factory within Europe in **Poland** (LE1), with the primary aim of reducing both the time and the cost of product delivery for European consumers.

In another case, a global German firm in the electronics manufacturing industry planned to invest in Europe, with the objective of improving production capacity, while keeping unit costs down. Two locations were considered, one in Hungary and one in Poland. **Hungary** was eventually chosen (LE1) and the amount of available EU support turned out to be decisive in making the final choice. Cost reduction (i.e. lower unit costs and, indirectly, higher productivity) was one of the main factors that shaped the large company's strategy.

Where the increase in production levels and productivity was a strategic objective of the large firm, the supported projects contributed to positive change in production and productivity to a large extent. Overall, in 41 out of the 45 case study companies, project implementation resulted in an increased level of production and production capacity (see the table below). At the same time, 36 out of 45 companies admitted that the project was also followed by increased productivity (although productivity was not always the goal of the investment). Out of 40 companies analysed, 28 provided narratives that confirmed a strong causal relationship between project implementation and the above-mentioned outcomes. (Altogether, the project was at least a pre-condition in 37 cases.)

In 18 out of the 36 cases where improved productivity was achieved, the project also turned out to be a major cause of higher productivity.

Table 17: Causality between the project and production, productivity and technology (company case studies)[48]

Role of the implemented project	Increased production level and production capacity		Improved productivity		Involvement of cutting-edge technology	
	Observed	Not observed	Observed	Not observed	Observed	Not observed
a. Cause	28	-	18	-	22	-
b. Pre-condition	9	-	10	-	12	-
c. Supporting factor	3	-	8	-	4	-
n/a	1	4	-	9	-	7
Total	**41**	**4**	**36**	**9**	**38**	**7**
Main cause (a)	70%	n/a	50%	n/a	58%	n/a
Not a main cause (b + c)	30%	n/a	50%	n/a	42%	n/a
At least pre-cond. (a + b)	**93%**	n/a	**78%**	n/a	**89%**	n/a

Source: KPMG/Prognos (2016).

[48] Please note that the percentage values indicated in the table are only for demonstration purposes and exclusively summarise the results of the 45 company case studies. The values may not be representative of the whole population of the supported large enterprises.

As described in the previous section, although the investment projects were the cause of the achieved increases in production, the causal relationship between ERDF support and project implementation was often weak. For most of the companies these improvements were the main goals of the investment and most likely were core elements of their long-term corporate strategy. As the previous section on causality indicated, most of the projects would have been implemented even without public funding due to the strategic importance of achieving higher production and productivity. Criscuolo et al. (2012)[49] also investigated the causal impacts of one of the UK enterprise programmes ('Regional Selective Assistance'). With regard to total factor productivity they conclude that there appear to be no additional effects on productivity of supported large enterprises after controlling for investment effects (the cut-off point for selecting large companies was placed at 150 employees).

Most of the supported large firms managed to increase productivity and employment in parallel, without any trade-offs stemming from the use of less labour-intensive technologies. The assumption that innovation and technology growth are contrary to increasing employment was an important assumption of the LE2, LE3 and LE4 Theories of Change, since the use of cutting-edge, less-labour-intensive technologies might have impeded job creation. In 23 out of the 29 relevant company cases, increased employment, the creation of quality jobs and increased productivity were achieved at the same time. The analysis revealed that even though technology upgrades and innovation generally resulted in the introduction of newer, more technology-intensive products, they often required the hiring of highly qualified employees (due to the complexity of the technologies) and additional workforce (due to increased production levels).

The majority of the investments involved cutting-edge technologies. In 38 cases out of 45, the projects involved the most modern and up-to-date technology available in the market. This created the potential for technology and know-how related spillovers for local SMEs, discussed in later sections.

The few available counterfactual impact evaluations have found only small or insignificant effects of investment subsidies for large enterprises on production and productivity. Very few counterfactual evaluations provide evidence on the cause-effect relationship between public support to large enterprises and production and productivity. Bondonio and Martini (2012)[50] studied the effectiveness of grants given to industrial companies in Italy under the so-called 'Law 488/92' for the years 2000–2004. This programme scheme was similar to the LE3 theory (technology upgrading). The authors of the study indicated that the impact on sales was consistent and significant for micro-firms and medium-sized firms, but not for large ones. This observation makes more sense in light of the evidence gathered in this ex post evaluation.

[49] Compare Criscuolo, C. et al. (2012): 'The causal effects of an industrial policy', (No. w17842), National Bureau of Economic Research, p. 18. It is noteworthy, however, that Criscuolo et al. assume that less productive plants receive more subsidies and that this would furthermore imply that the programme lowers measured aggregate productivity because it increases the employment share of low productivity firms.

[50] Bondonio and Martini (2012): 'Counterfactual Impact Evaluation of Cohesion Policy: Impact and Cost-Effectiveness of Investment Subsidies in Italy'. Work Package 1 of the Counterfactual Impact Evaluation of Cohesion Policy by ASVAPP for DG Regio. Final Report June 2012.

4.2.3. Employment

Employment growth was one of the main driving forces for all evaluated programmes targeted at supporting large enterprises. All of the analysed Theories of Change assumed that supporting large companies would result in job creation, both at the micro- (company) level and also at the macro- (programme area, i.e. country or regional) level. The latter assumption also reflects the expectation that the support would lead to spillover effects by increasing demand for products and services from other economic actors (preferably SMEs), which would in turn lead to the indirect creation of demand for new jobs. The assumption about capacity for job creation was most central in the first Theory of Change (LE1, large-scale business investment), where a considerable number of new jobs were to be created as a direct result of the supported projects. In addition, in two out of the four analysed Theories of Change (LE3, innovation support, and LE4, investment in R&D capacity), it was assumed that support would result in the creation of so-called 'quality' jobs, which are understood hereafter to be 'research jobs' and, more generally, jobs that require special qualifications.

The objectives of ERDF support with respect to employment were met; however, due to the weak causal link between ERDF support and project implementation, this positive outcome can only be partially attributed to the programmes. In most of the countries, monitoring data confirmed that the target for the number of jobs created was achieved or exceeded or will soon be achieved or exceed the target values. Cases from Austria, Germany, Hungary, Poland and Portugal show that at least half of the new jobs were created by large companies.

Country examples for the share of large enterprises in job creation:

By the end of 2013 in Styria (**Austria**), large enterprises were responsible for nearly 60% of new jobs out of the 2,006 created in total (target: 1,700). In Thuringia (**Germany**), out of the 8,456 jobs created by 2013 (target: 7,500), about 50% were attributable to large enterprises. In **Poland**, by the end of 2013 about 74% of 12,852 jobs (target: 42,550) had been created by large companies.[51] In **Portugal**, out of the 14,349 jobs created by 2012, about half of the jobs were created within large firms. In **Hungary**, around 30,657 jobs were created by large companies.[52] In **Spain**, 6,443 jobs were created or safeguarded at the supported large companies.

At least 60,000[53] new jobs (in gross figures) were created or safeguarded at the supported large enterprises, but given the limited influence of ERDF support on large firms' behaviour, a significant share of them would have been created anyway. The estimated number of new jobs above only represents the gross performance of the evaluated programmes, not taking into account whether the jobs would have been created in the absence of ERDF support. Evidence gathered from the company case studies corroborated the above findings that the majority of large firms (40 out of 45) created demand for new jobs as a direct result of their investment projects

[51] This refers to priority axis no. IV, which is covered in the evaluation.
[52] This number refers only to projects related to the Theories of Change which are studied in this ex post evaluation.
[53] This estimate refers to six out of the eight selected case study countries and does not include Italy and the Czech Republic, due to a lack of relevant monitoring data. Data on possible spillover effects at the programme level is available only for Spain, for which the number of jobs created indirectly is estimated at between 28,900 and 29,800.

(see the table below). In most of the cases (28 out of 40), job creation was directly caused by the implementation of the project (and project support was at least a pre-condition in 35 cases). It was commonly found that large investments, such as the instalment of new technologies or production lines or the upgrading of existing ones, generated a significant demand for new employees. However, even though the causal relationship between the project and employment creation was strong, the weak causal connection between the support and the project indicates that it is not possible to attribute all of these new jobs to ERDF support.

Table 18: Causality between the project and increased demand for jobs by Theory of Change (company case studies)[54]

Role of the implemented project	Large-scale business inv. (LE1)	Technological upgrading (LE2)	Innovation support (LE3)	Investment in R&D capacity (LE4)	Total
Significant increase in demand for jobs **observed**					
a. Cause	11	7	3	7	**28**
b. Pre-condition	2	2	3	-	**7**
c. Supporting factor	1	1	-	-	**2**
n/a	1	1	-	1	**3**
Total	15	11	6	8	**40**
Significant increase in demand for jobs **not observed**					
n/a (=Total)	1	2	-	2	5
Grand total	**16**	**13**	**6**	**10**	**45**
Main cause (a)	79%	70%	50%	100%	76%
Not a main cause (b + c)	21%	30%	50%	0%	24%
At least pre-cond. (a + b)	**93%**	**90%**	**100%**	**100%**	**95%**

Source: KPMG/Prognos (2016), based on empirical evidence from the 45 company case studies.

[54] Please note that the percentage values indicated in the table are only for demonstration purposes and exclusively summarise the results of the 45 company case studies. The values may not be representative of the whole population of the supported large enterprises.

The causal relationship between the support and the outcomes was found even weaker in one of the Italian counterfactual evaluations of the effects of large enterprise support. The study of Bondonio and Martini (2012)[55] noted that impacts in terms of employment were positive and significant for micro-firms, small firms and medium-sized firms. For large firms, however, the influence of public support on increased employment was instead insignificant or negative.

While the number of jobs created varied across the Theories of Change, similar patterns were observed for causality. The Theories of Change had different effects on employment increases; however, the causal relationship between the project and the outcomes was strong for all of them.

When assessing the projects in terms of generating new jobs, those under the LE1 theory (large-scale business investment) proved the most successful in job creation. Employment growth was one of the main goals of the intervention under this Theory of Change. The vast majority of projects implemented by large enterprises led to a significant increase in employment. Country monitoring data shows that investments resulted in around 9,500 jobs created in Hungary, 6,700 jobs created in Poland[56] and 6,400 jobs created Spain. However, it must be noted here that these numbers represent the gross number of jobs created within the companies, which do not take into consideration whether employment was reduced at a different site or business unit. Projects implemented under this theory typically led to the creation of a large number of jobs at once. In 15 out of 16 company case studies under this theory, job creation was significant, and the funded project was a strong causal factor in the majority of these cases (11 out of 15), as shown in Table 18 above.

Company case study examples:

In **Germany**, the three case study enterprises falling under this theory (a domestic large firm in the packaging industry and two domestic multinational companies, one a medical devices producer and the other an automotive supplier) reported a total increase in employment of around 400 jobs. In addition, one company reported that it employed almost twice as many people as initially planned.

One of the global companies investing in **Poland** (LE1) employed 251 people within funded projects; however, after project implementation, employment grew even more. The company currently employs about 3,800 people at the location of the investment.

Employment growth was also common for the LE2 theory (technology upgrading), although on a smaller scale. Fewer jobs were created on average under this theory compared with the other Theories of Change. As the narratives of the company case studies and interviews with the Managing Authorities showed, job creation was usually not the main target of these projects; the role of ERDF support in these instances was rather to increase competitiveness and stimulate export growth. Nevertheless, job creation was significant in 11 out of the 13 instances, and the implemented project was a dominant cause in 7 of the successful cases.

[55] Bondonio and Martini (2012): 'Counterfactual Impact Evaluation of Cohesion Policy: Impact and Cost-Effectiveness of Investment Subsidies in Italy'. Work Package 1 of the Counterfactual Impact Evaluation of Cohesion Policy by ASVAPP for DG Regio. Final Report June 2012.
[56] By the end of April 2015.

Company case study examples:

An **Italian** large firm in the tourism sector (LE2) invested in modernising and upgrading the infrastructure of a hotel and acquiring new equipment. Since the project did not involve any significant expansion, the support made only a limited contribution to the newly created jobs.

A German multinational firm, a large supplier of high-grade steel to the automotive sector, invested in its **Austrian** subsidiary in Styria (LE2); this involved the purchase of new machinery and the enlargement of facilities. The synergy of the increase in sales and the new technology created only 14–16 jobs.

The LE3 theory (innovation support) covered projects in which employment growth was an important direct result. The scale of new jobs created at the beneficiary level was significant in all six company case studies in this category. The project was part of the causal package (at least a pre-condition of the change) in all cases, and was a decisive cause in half of them.

Company case study examples:

A **Czech** domestic large firm from the aerospace-manufacturing industry set up an innovative modern workplace (LE3) with the aim of producing new products and meeting increasing market demand. The success of the investment resulted in rapid employment growth and also had a positive influence on the SME suppliers of the firm.

An **Italian** mid-cap domestic large firm in the food-processing sector (LE3) enlarged its existing plant and carried out process and product innovations (e.g. new types of pasta) in order to be more competitive in the market. The project resulted in 55 new jobs, a much higher growth rate than that foreseen by the company's management.

Even though the LE4 theory (investment in R&D capacity) was not primarily concerned with increasing employment, moderate yet positive results were found for direct job creation, along with a strong causal role for the project. Eight out of the ten company case studies in this category managed to increase demand for jobs directly in their regions, results that were very closely linked to the implemented R&D projects (evaluated as strong causes in all of the analysed cases). According to case study narratives, the attribution of the newly created jobs to the project (in the short term) was somewhat easier in R&D projects than for other investments, as these were more detached from the day-to-day operations of the firms.

Company case study examples:

A global American firm producing hardware and software implemented an innovation- and R&D-related investment in its **Hungarian** subsidiary (LE4), involving the purchase of R&D infrastructure and real estate, the acquisition of high-tech assets and IT development. Despite these positive project results, the project did not result in newly created jobs at the subsidiary, primarily because of the nature of the investment (requiring no need for additional workforce).

An **Austrian** domestic multinational company, an important global player in the development and production of back sheets for photovoltaic modules, extended its R&D

division and invested in its R&D infrastructure (LE4) in response to certain Asian companies becoming ever-bigger competitors. Even though the firm lost market share in China, 50 new jobs were created at the project site, and a third of the employees were attracted from nearby universities.

New jobs were also created as an indirect result of the implemented projects. Possible spillover effects with respect to employment growth were most likely in the case of large investments, which required more use of local suppliers. Evidence gathered during the evaluation suggests that a substantial number of jobs were created as an indirect result of large companies' investments. The above-mentioned data from Spain indicates that the number of indirectly created jobs could be about 4.6 times greater than the number of jobs created as a direct result of the project.

Company case study examples:

One of the automotive companies supported in **Spain** (LE1) created around 4,000 jobs during this period as a result of the past few years' investments. According to their estimates, every job created directly at the company generated four to five jobs indirectly in the local economy.

Another global company, which invested in **Poland** (LE1) and employed in total nearly 4,000 people, estimated that due to increased use of local subcontractors (regionally, but also at the European level), about 1,500 new jobs have been created as an indirect result of the project implementation, mainly at local SMEs.

As the examples show, the impact of large enterprises on employment at other entities can be considerable; however, this requires the existence of well-functioning business networks and co-operation between large companies and other entities. Overall, this effect is especially relevant for FDI projects and companies new to the region.

The implemented projects had an impact on work culture or workforce mobility in some cases; however, these results were usually related to the characteristics of the firms and the scope of the investment. Although these were not planned effects, impacts on work culture and workforce mobility were mostly observed under the LE1 theory (large-scale business investment) because of the size and the relative importance of supported projects to the local economies (for further data, see the next section on indirect effects and wider benefits). Typically, these were the most substantial investments in terms of total value of the support. Project implementation often resulted in the establishment of a new plant or the large-scale modernisation of an old one.

Excursus IV - Short narrative on the size of support given to large enterprises in the 2007-2013 period:

There is great heterogeneity in the level of support given to large enterprises. It varies among countries in absolute and relative terms. It also differs by type of support. Overall, large enterprises were subsidised with EUR 4.6 billion (expenditure codes: 05, 07 and 08), which comprises 21% of total direct enterprise support and nearly 2% of the total Cohesion Policy budget. The largest total amounts in funding for large companies were disbursed in Poland (EUR 1,153 billion) and Portugal (EUR 1,134 billion) and the smallest in Austria (EUR 133 million) and Spain (311 million). On average, companies received EUR 1.7 million. The largest amount of support per company was given in Portugal (EUR 3.5 million) and Poland (EUR 2.8 million), and the smallest in Spain (EUR 0.8 million) and Austria (EUR 0.9 million). The

programme case study analysis showed that the highest amounts of support were given under the LE1 theory (large-scale investment support); however, the amount of support varied strongly across countries. The total value of the support categorised under LE1 ranged from around EUR 50 million in Italy to a total value of EUR 642 million in Poland.

Limited evidence was found in the case studies regarding the effectiveness of support in relation to the amount of support. Many case study companies, regardless of the amount of support, declared that they would have implemented their projects without the subsidies (although typically at a later date, reduced scale or at another location). It is interesting to note that the twelve large companies that received the greatest amount of support reported that without ERDF subsidies they would have implemented the projects in the same fashion. Only one out of these twelve companies admitted that without support they would have changed the project scope. Companies with the smallest grants more frequently reported that the project would have had to be modified without support (6 out of 21). This trend, drawn from the large firms' own opinions, is particularly interesting when contrasted with the evaluators' assessments of causality with respect to the amount of support, i.e. that larger support amounts were more likely to be a strong cause of project implementation.

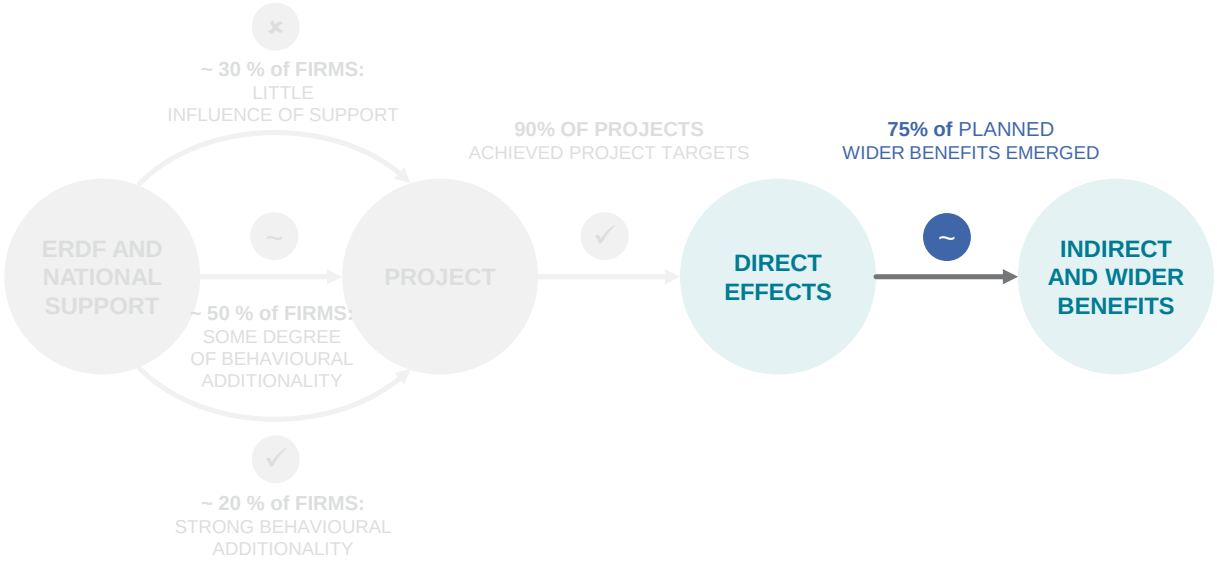
A counterfactual study on the efficiency of support to large companies indicates that the greater the support to large enterprises, the lower the efficiency. Bondonio and Martini (2012) in the aforementioned study on the impacts of subsidies for companies in Italy, found that when analysing the whole population of subsidised companies, for the largest grants (i.e. above EUR 0.5 million) the cost per single job created increased dramatically, reaching nearly EUR 0.5 million, comparing to about EUR 79,000 for grants below EUR 125,000 and about EUR 158,000 for grants between EUR 250,000 and EUR 500,000. These numbers may be even more discouraging for large companies, since the study either did not identify real impacts from large companies, or found them to be negative.

4.3. Indirect and wider benefits

Academic studies[57] have found that in order to comprehensively describe the 'effect packages' of large enterprise support, in addition to focusing on direct effects at the recipient-firm level (e.g. increased production capacity), an analysis should also describe indirect and wider benefits that are generated through support.

[57] See e.g. Narula, R. & Guimón, J. (2009): 'The Contribution of Multinational Enterprises to the Upgrading of National Innovation Systems in the EU New Member States: Policy Implications', Paper submitted to the OECD Global Forum on International Investment, Investment Division, Global Forum VIII on International Investment, Session (Vol. 2); Basile, R. et al. (2008): 'Location choices of multinational firms in Europe: The role of EU cohesion policy', Journal of International Economics, 74(2): 328-340; Novotný, O. & Jaburková, M. (2012): 'Large enterprises in the European Economy and their role in regional support programs', Working paper Faculty of informatics and statistics, University of economics Prague & Confederation of Industry of the Czech Republic.

Figure 18: Contribution of investment projects to the observed indirect and wider benefits



Source: KPMG/Prognos (2016), based on empirical evidence from the 45 company case studies.

Indirect and wider benefits were supposed to be induced by the local presence of the facility at the supported large enterprise and related to further effects of large enterprise support on the regional economy through changes in strategy, practices and competitive advantage among domestic firms or SMEs.[58] Based on the literature and early discussions with the Managing Authorities, the present evaluation identified a list of indirect and wider benefits that were included in the four consolidated Theories of Change in order to test whether enterprise support affected the area more broadly, beyond effects on the supported companies. The following section includes a critical assessment of these indirect and wider benefits, using evidence from the 45 company case studies, the literature and various other sources (e.g. interviews with local academics, comments from Managing Authorities and Intermediary Bodies).

At this stage of the assessment, the analysis accounts for the level of contribution of the supported investment projects to the observed indirect and wider benefits. Since the causal connection between the ERDF support and the project implementation was found to be weak in general, the positive changes discussed in this section have to be viewed critically. In most cases, the positive indirect benefits were the result of the projects and were not necessarily triggered by the EU funds (see discussion of causality in Section 4.1.).

The theory-based evaluation showed that the nature, extent and materialisation of indirect and wider benefits varied considerably across the implemented projects. The table below presents a list of indirect and wider benefits that all of the Theories of Change foresaw in the eight case study countries. Judging from the 45 company case studies, many of these effects were only partly realised by the projects, as summarised in the table below.[59]

[58] E.g. productivity improvements, presence of sophisticated customers, improved factor conditions, introduction of new process technologies etc.
[59] The table contains only those wider benefits that were included in all generalised Theories of Change.

Table 19: Achievement of indirect and wider benefits (company case studies)[60]

Indirect and wider benefits	Were the effects foreseen in the Theories of Change?					Total firms	Wherever the effect was foreseen…	
	Yes	Has the project induced the foreseen benefits?			No		The effect was induced (%)	The effect was at least partly induced (%)
		Yes	Partly	No				
Spillovers to small and medium-sized enterprises	**34**	12	12	10	**11**	**45**	35%	**71%**
Improved business infrastructure[61]	**13**	6	4	3	**32**	**45**	46%	**77%**
Improved social infrastructure[62]	**13**	2	9	2	**32**	**45**	15%	**85%**
Spread of improved work culture (working conditions, wage levels, timely wages, stability)	**8**	4	2	2	**37**	**45**	50%	**75%**
Improved workforce mobility	**6**	2	1	3	**39**	**45**	33%	**50%**
Attracting other companies, investors or FDI to the region	**4**	0	3	1	**41**	**45**	0%	**75%**
Weighted average							33%	**73%**

Source: KPMG/Prognos (2016), based on empirical evidence from the 45 company case studies.

Indirect and wider benefits were most frequently achieved where they were in line with the expectations of the programme planners. As shown in the table above, wherever indirect and wider benefits were foreseen in the Theories of change, the effects were at least partly induced in 73% of the cases. It is important to note here, however, that compared to the 90% occurrence rate of direct effects, the relatively lower rate for indirect and wider benefits could also be the result of the fact that these types of changes, such as improved social infrastructure, are slower processes and are expected to materialise over a longer timeframe.

In cases where spillovers to SMEs were expected to take place, the majority of the large firms managed to achieve positive effects. However, a causal relationship between the project and the spillover effects was only detectable in half of the company cases. The role of the project in achieving the indirect and wider benefits was weaker than in the case of direct effects (on production, productivity, employment and private investments). On the one hand, the reason for this apparently weaker contribution lies partly in the fact that indirect benefits were not only more difficult to observe, but also more problematic to attribute to a certain project.

[60] Please note that the percentage values indicated in the table are only for demonstration purposes and exclusively summarise the results of the 45 company case studies. The values may not be representative of the whole population of the supported large enterprises.
[61] Business infrastructure was defined as 'improved local transportation (rails, motorways) and ICT infrastructure' under Theory of Change LE1-LE2, while under Theory of Change LE3 and LE4 it was referred to as 'improved local R&D, transportation (rails, motorways and ICT infrastructure)'.
[62] Social infrastructure encompasses improved education in the programme area, support directed to schools and kindergartens, corporate social responsibility, cultural amenities etc.

Nevertheless, spillovers to SMEs were expected to happen in 34 out of the 45 company case studies. Of these, 71% of the firms achieved at least some of the expected results. Spillovers to SMEs, as described by the interviewees, were mostly visible in terms of:

- The spread of advanced and modern business practices of large enterprises among local SMEs as a result of becoming suppliers of the supported large enterprises;
- Increased quality standards among SMEs as a result of the emerging need to meet the quality requirements of large firms;
- Increased co-operation between large enterprises and smaller firms, also contributing to general economic growth in the region.

Among cases in which such effects were expected to take place, 29% of the large firms reported no impact, even though these benefits were perceived as important by the Managing Authorities of the Operational Programmes.

Similar patterns can be observed in improvements to workforce mobility, work culture and business and social infrastructure, as well as in the attraction of other firms to the region. Where the effects were planned, more than 50% of the large firms managed to achieve at least some results.[63] The size of these effects and their causal relationship with the project varied considerably across the company case studies. The reasons for this variation were manifold, as discussed in the next sections.

The indirect and wider benefits were not country-specific. Some wider benefits were identified in all eight case study countries, to varying extents. Wider benefits were more frequent in the Eastern European and the Iberian countries (Poland, Hungary, the Czech Republic, Portugal, Spain), and were somewhat less notable in Germany, Austria and Italy. However, the case studies do not suggest that geographical location is an explanatory factor for this variation.[64]

[63] Answering 'yes' or 'partly' in the table above.

[64] As Dachs (2009) shows, the studies identifying positive (knowledge) spillovers from large enterprises in a region roughly equalled those identifying no effects or even negative consequences. He argues that three pre-conditions must be met for spillovers to function: (1) large enterprises (and their subsidiaries) have to possess knowledge valuable to indigenous (small and medium-sized) enterprises; (2) the sender must be willing to allow spillovers and (3) there is a sufficient absorptive capacity in the receiving organisations.

The nature and size of indirect and wider benefits depended greatly on the characteristics of the projects and local conditions. According to the evidence from the 45 company case studies, some theories (meaning projects with different foci) were more successful in inducing indirect and wider benefits than others.

For projects under the LE1 theory (large-scale business investment), larger project size was decisive in inducing spillovers to SMEs (e.g. creating demand for quality jobs outside the enterprises). While these effects still varied from case to case, at least some spillovers were realised for all of the supported projects. Projects under this theory were particularly successful in creating demand for quality jobs outside the enterprises (in more than 12 of the cases, the project was the cause of the increase). Nine out of the sixteen companies assessed the project as the cause or pre-condition for inducing spillovers to SMEs, while in eight cases the projects attracted other companies, investors or FDI to the region (which is the most favourable outcome across the Theories of Change). These projects were generally of larger size and thus were often able to influence local labour markets in a positive way (both directly and indirectly); they could make an impact on local businesses and, in some cases, on the attractiveness of the region.

Company case study examples:

An Asian multinational firm (LE1) made a EUR 69 million investment in **Poland** in order to introduce new models of produced devices and to increase the production capacity of an existing plant. As a result of the project, the company increased its use of local subcontractors. According to company representatives, about 1,500 new jobs have been created as a result of these co-operations, most of them in small and medium-sized enterprises.

A large domestic multinational firm in **Spain** (LE1) invested in the improvement of logistics capacity to guarantee supply in line with the increased demand for their products. According to an employee, the project generated high demand for quality jobs, requiring constant learning and self-improvement in the region. Working conditions of local professionals both in terms of stability and workforce mobility improved. Overall, the investment turned the logistics centre into a point of reference for the region.

Projects under the LE2 theory (technology upgrading) had fewer indirect and wider benefits. In contrast to other theories, only limited impacts on the local SMEs (in 7 cases out of the 13 in the LE2 category of projects) and on the improvement of workforce mobility were identified. These projects were smaller, more internally focused and confined to upgrading certain technological processes. As a result, the Theories of Change reconstructed across the case study countries tended to overestimate the extent to which these projects could affect entities external to the supported enterprises. Twelve of the company case studies confirmed the creation of demand for quality jobs. The need for more qualified staff was closely related to the type of implemented project; most of the demand was based on the use of knowledge-intensive technology.

Company case study examples:

A large domestic **Austrian** enterprise (LE2), a manufacturer of different forms of powder for the metallurgical industry in a rural area of Styria, implemented a technology project (lab infrastructure) for the recycling of hard scrap. Indirect and wider benefits related to the project were scarcely observed. According to the CEO, the project was seen as too specific and technology-related to generate impacts on local businesses through

technological spillovers. At the same time, the technological competence created through the project led to significant follow-up investments by the foreign parent company in a Technology Lab, which created additional demand for qualified staff and strengthened partnerships with local universities.

A large domestic **Portuguese** beverage company (LE2) implemented a modernisation project for the technological upgrade of a production line by means of introducing high-technology equipment. This direct investment resulted in increased production capacity (increase of 100 million litres per year) and in the reduction of energy and water consumption. The project had some positive indirect benefits as well, which were mainly seen as closely related to the activities of the large enterprise: the improvement of the logistics network of companies subcontracted by the large enterprise and a decrease in occupational accidents thanks to the safer production line. But for local SMEs, apart from quality improvement in their services to meet the requirements of the company, no significant effects were recalled during the interviews.

As a consequence of the innovative nature of the projects, projects under the LE3 theory (innovation support) were the most successful in inducing indirect and wider benefits. Compared to the other theories, these projects were particularly successful in inducing spillovers for the local SMEs, as found for all six company case studies in this category. First, the new innovative activities stimulated local SMEs in the programme area to upgrade their own activities in order to meet the requirements of the large firms. Furthermore, implemented projects were beneficial for SMEs because they became more closely involved in the activities of large firms. In addition, several success stories emerged that were related to the increased human capital base in the area (which all of the case studies confirmed), better workforce mobility (in five out of the six cases) and improved work culture (also in five out of the six cases).

Company case study examples:

The large **Czech** supplier of hospital and nursing beds (LE3) invested EUR 1.9 million in order to enhance and modernise its development centre for new products, with the aim of extending the product portfolio of the company. Thanks to the knowledge intensity of the modernisation, the project contributed to the hiring of high-skilled employees from within and outside the region where the company operates, improving the human capital base and workforce mobility in the programme area. In addition, local SMEs were affected by the need to fulfil the quality requirements of the large enterprise.

A large firm in **Italy** (LE3) implemented an investment project in order to modernise the production of cables through introducing more advanced technology and the use of high-tech basic materials. The investment resulted directly in increased production and productivity, which increased the need for the services of local SMEs connected to the enterprise. The increased productivity and the modernisation of production (which improved working conditions) also attracted employees from outside the region where the project was implemented.

Among projects under the LE4 theory (investment in R&D capacity), wider benefits have only partly been observed in the medium-term, mostly related to the research components of the projects. The development of the human capital base in the programme area and the spillovers to local small and medium-sized enterprises and universities were commonly identified benefits in nine out of the ten company case studies. As explained in these narratives, this was a direct consequence of

the research component of the large firms' projects, i.e. the need for additional qualified labour and co-operation with partners from the private and public sectors. The scope of these effects depended greatly on various characteristics of the supported projects, such as the research area (e.g. in case of projects implemented in the pharmaceutical industry, outcomes are probably visible only after years), the characteristics of the beneficiaries (whether their corporate strategy and culture revolved around continuous innovation and R&D activities) and, in some cases, the characteristics of the programme area (existence of R&D infrastructure and a qualified labour force).

Company case study examples:

A **Hungarian** R&D investment (LE4) by a large US multinational company induced many indirect benefits (e.g. organisation of special courses at the local university, elementary technology education spread to primary and high schools, attracting workforce from within a 50 km range of the site). Apart from the R&D project, these effects were largely influenced by the company's past activities, strategy and operating philosophy.

In contrast, a **German** example (LE4) from the medical engineering industry identified limited notable effects on the region. Strengthening of a local cluster was partly realised; however, collaboration with partners new to the region was limited.

Larger-sized projects (above EUR 2 million[65]) tended to result in more spillovers to SMEs more frequently. Out of the projects receiving either 'large' or 'medium-sized' support, the majority of the firms were confirmed to have caused at least some spillovers to SMEs, while in the cases of projects receiving 'small' support amounts, this ratio was below 50%. The contribution stories from the company case studies suggested that the larger projects were more likely to involve strategic investments in new plants and significant expansions than the smaller ones. These investments, therefore, had more potential to affect the companies' business networks and their broader environments than those primarily concerning technological upgrades (which required less financial support).

Projects with larger support size tended to attract more firms or FDI to the programme area. Out of the total of seven responses confirming that the project attracted other firms or FDI to the programme area, four projects received more than EUR 10 million, two projects between EUR 2 and 10 million, and only one project fell below the EUR 2 million level. For reasons similar to those discussed in the previous paragraph, larger projects affected the environment of the large firm more extensively; therefore, they were more likely to attract other firms (typically suppliers) to the programme regions.

Only a limited number of evaluations presented evidence of indirect and wider benefits. This can be explained by the focus of these evaluation reports, often investigating effects at the enterprise level, and devoting less attention to the evaluation of indirect and wider benefits in a broader context.

[65] Categorised as 'medium' or 'large'. The 45 projects were divided into three size groups by the evaluators as follows: 'large' for amounts of EUR 10 million and above, 'medium' (EUR 2–10 million), and 'small' (EUR 0–2 million). Accordingly, in total 12 'large', 12 'medium' and 21 'small' projects were identified.

The literature was scarce on the scope and size of indirect and wider benefits of large enterprise support. In these papers, the most frequent spillovers were innovation related. For instance, evidence on the 'Leading Edge Cluster Competition'[66] policy in Germany shows that innovation spillovers were often actively induced by large enterprises, and those firms were often directly inviting other SMEs and research institutions to start co-operations.

Table 20: The sectoral distribution of the 45 company case studies analysed under the different Theories of Change

	Theories of Change			
Sub-sectors	**LE1 (large-scale business investment)**	**LE2 (technological upgrading)**	**LE3 (innovation support)**	**LE4 (investment in R&D capacity)**
Aerospace	1	1	2	-
Automotive	5	1	-	1
Basic materials	4	2	-	1
Consumer goods	3	1	1	2
ICT and electronics	1	4	-	3
Life sciences	1	-	1	3
Other	-	1	2	-
Packaging and paper production	1	3	-	-

Source: KPMG/Prognos (2016).

4.4. Alternative explanations of the observed changes

In order to ascertain that there is direct causality between the projects and the outcomes, it is necessary to rule out alternative explanations for the observed changes. Alternative explanations are plausible theories that may also have caused the outcomes. Failing to account for alternative explanations can lead to 'confirmation bias', a cognitive bias with a tendency to confirm existing beliefs about how outcomes came about. In this evaluation, these beliefs are represented by the Theories of Change. In order to counteract this bias, the evaluation identified the most plausible alternative explanations, external to the Theory of Change, and examined whether they had a noteworthy influence on the outcomes of large enterprise support.

According to the information collected during fieldwork, the causal relationship between project implementation and observed changes is more complex for large firms than for SMEs. Unlike for many SMEs, the implemented projects are components of corporate strategies and fit into an investment lifecycle. Often they are meaningful only if implemented together with other major investments (for instance, in the case of a plant enlargement coupled with purchase of machinery). Another major difference is that large firms tend to operate in national and international markets and thus are influenced not only by local but also by global economic environments. It is reasonable to assume that conditions both within and outside the firm play a noteworthy

[66] Cantner, U. et al. (2013). Policy Induced Innovation Networks: The Case of the German 'Leading-Edge Cluster Competition', in The Geography of Networks and R&D Collaborations (pp. 335–352), Springer.

role in realising outcomes. Therefore, the most important of these theories were tested during the evaluation, as summarised in the table below, which is followed by an explanation.

Table 21: Alternative explanations of the outcomes of large enterprise support (company case studies)

Alternative explanations	Did it happen?						Total firms
	Yes	Yes, and its influence on the change was			No	n/a	
		Decisive	Important	Minor/none			
Internal to the firm							
Other development funds, state subsidies	**28**	2	17	8	**15**	2	**45**
Other major company investments	**23**	6	11	3	**22**	0	**45**
Capital injections from parent company	**10**	6	3	6	**31**	4	**45**
External to the firm							
Favourable (or unfavourable) market trends	**27**	6	13	8	**17**	1	**45**

Source: KPMG/Prognos (2016), based on empirical evidence from the 45 company case studies.

The largest, multinational firms often implemented other investments, financed from other EU funds or state subsidies or their own funds, which emerged as important alternative explanations of the outcomes. As discussed earlier with respect to additional private investments, around one-quarter of the analysed company case studies implemented subsequent investment projects that were directly linked to their EU funded projects. Also, the company case studies identified many cases where the investments were preceded by other major projects. In a few cases, multiple projects took place in the same period. The large firms mostly used other development funds and state subsidies (28 cases out of 43) or financed these projects from their own funds (23 cases out of 45). Capital injections from parent firms were less frequent (10 cases out of 41), although they were only possible in the cases of international and global firms. Even though companies were able to separate the EU-funded projects from others in terms of *accounting* or *technological* parameters, the case study narratives proved that attribution of the *outcomes* to individual projects proved more difficult in the presence of multiple investment projects. In these cases, the labelling of the outcomes of different projects could be rather artificial, notably with regard to the attribution of new jobs created or additional value added. These findings underscore the fact that for the largest firms, other investment projects were often important alternative, or rather co-existing, causes of the observed outcomes.

Company case study example:

A US-owned **Polish** firm from the aviation-manufacturing sector (LE3) implemented two major projects in the 2007–2013 period, both using EU funds. One of them allowed the firm to start the production of substantially modified and upgraded goods thanks to an innovation, while the other one concerned the establishment of an R&D centre. Successful operation (manufacturing of products to be sold in the US) depended critically on both projects. Therefore, the achieved outcomes regarding production level, productivity and employment depended on both projects to a certain extent.

The level of achieved outcomes was also influenced by sector-specific market trends and large firms' capacity to react to those trends. Around half of the analysed company case studies concluded that market trends had directly influenced the outcomes of the support to a material extent (in 19 out of 44 cases the role of this factor was rated 'decisive' or 'important'). The impacts of the financial crisis, which were sector-specific, had an obvious impact on most firms, influencing not only production levels and productivity but also location choice, due to different costs of capital and labour. The observed changes were particularly dependent on the influence of the changing market, and required that the large firms possess the necessary management capacity to incorporate long-term developments into their decision-making regarding these investments. As pointed out at the stakeholder seminar, the internalisation of market trends affects not only the investment behaviour of large firms, but also the performance of their investments after project implementation.

Company case study example:

A **Spanish** domestic multinational company in the ceramics-manufacturing sector (LE1) earned a position as a producer of mid- to high-range products in the global market. The financial crisis, beginning in 2008 in Spain, significantly affected the construction industry, a sector closely linked to the ceramics industry. In response, the company invested in the future, and used EU funds to regain its competitive position and to overcome the economic crisis through to the internationalisation of its business. Nevertheless, because of the sharp decrease in regional employment levels during the years of the economic crisis, the company could only focus on job preservation rather than on the creation of new jobs.

In some cases, the case studies identified the existing long-term global contracts of the parent company as a strong influence on the investments of the subsidiaries. In the few cases where they were relevant, global contracts made at the headquarters of the large firms had a decisive influence on both the parameters of the large firms' investments (location, scope, timing etc.), and their outcomes (production level, employment), rendering the role of these contracts a relevant alternative explanation for achievements.

Company case study example:

An Italian multinational company in the cosmetics and healthcare industry established a new factory in **Hungary** (LE1). The investment comprised two projects, one concerning the establishment of the plant itself (financed from a regional Operational Programme), and one related to purchasing of equipment, technology, IT infrastructure and other infrastructure development. The two projects were interrelated, and the impacts were difficult to attribute to either one. Even though these two projects together demonstrated positive direct effects and indirect benefits in a less-developed micro-region of the country, the location choice of the firm was decisively influenced by the existing business relationships of the parent firm, namely another division of the Italian holding company that was already present in the same region.

In conclusion, other major investments, global market trends and existing global contracts often played important, yet seldom exclusive, roles in realising outcomes. The company case studies and the stakeholder seminar provided evidence

for the relevance of these alternative explanations, especially for the largest firms operating in international markets. Generally, these factors have not rendered the EU-funded projects irrelevant to achieving the outcomes, but have emerged as important factors to consider in future Theories of Change.

4.5. Sustainability

A project in a Cohesion Policy context can be seen as sustainable when it continues to deliver benefits to the project beneficiaries (i.e. the supported large enterprise) and the region for an extended period after the Commission's financial assistance has been terminated. Following this definition, sustainability has two key dimensions to be assessed: an impact dimension regarding the direct and wider regional economic benefits resulting from the supported projects, and a time dimension specified in the Cohesion Policy context with a mandatory five-year grace period for investments by large enterprises (minimum requirement). Large enterprise projects that were assessed in this ex post evaluation were at varying implementation stages, most of them being close to completion in years 2014/2015. Likewise, particularly for the wider benefits targeted by large enterprise support, major time lag effects between project implementation and materialisation of wider benefits must be considered, making it difficult to assess this sustainability dimension thoroughly at this moment.

Wherever it was possible to judge, the presence of the large enterprises was secure and the supported large enterprise projects were sustainable within the mandatory five-year grace period. By and large, the supported projects assessed in this study met the targets for total jobs created (including research jobs, where relevant) and investment induced, corresponding to the requirements set out in the grant agreements.[67] Nevertheless, it has to be emphasised that even though the case study selection aimed at selecting both successful and unsuccessful projects, the sample in the analysis does not include cases where the funds were withdrawn or failed to meet the requirements.

Longer-term sustainability beyond the compulsory grace period is much more uncertain due to many external factors. In 39 out of the 45 case studies longer-term sustainability of investment projects depended on various external conditions. In a longer timeframe (beyond 8–10 years), sustainability is much more insecure and depends typically on a bundle of factors, most importantly on:

- The investment lifecycles, technology lifecycles and corresponding decisions on follow-up investments in the region (identified as key determinants for sustainability in 13 cases);
- The corporate strategy and subsidiary mandate (especially in the context of large multinational firms; identified in 12 cases);
- The nature of the investment and operating history of the large enterprise in the region (identified in six cases);
- The location benefits and regional context (identified in six cases); and

[67] In addition to the interviews with the Chief Executive Officers, the Managing Authorities from Austria, the Czech Republic, Spain and Hungary also assessed the projects in general as sustainable in the medium term (five to six years).

- Market development and demand (identified in three cases).

This bundle of factors is often a combination of location-specific and overarching determinants of sustainability, and changes in any of these factors can have an effect on the large enterprises' intention to stay in the region or to relocate. In addition to the main determinants frequently mentioned by the companies, company officials identified the availability of future public financial support as a crucially important factor in the duration of their operations in four cases. In case of the largest multinational corporations, sequential opportunities for funding were assessed as additional means to strengthen the comparative advantage of a region compared to lower-cost locations outside the EU (e.g. Turkey, China, and Malaysia). This finding also corroborates the relevance of the causality problem discussed in Section 4.1, namely that in most of the cases, ERDF support made a limited contribution to the project outcomes. Strongly connected to sequential funding opportunities, the pattern of multiple-support to large enterprises was also identified as a key determinant in ensuring the sustainability of projects. Multiple-support was perceived as effective in cases where the projects were part of a long-term strategy, such as in case of Styria, where continuously supporting a knowledge-driven development (moving consecutively from FDI support and support to large-scale business investments to supporting the upgrading of R&D capacity) resulted in embedding subsidiaries of large enterprises in the regional innovation system. Similar strategic considerations were found in Thuringia (Germany) and Poland, though not with the same track record.

Country example for facilitating sustainability of large enterprise support through a long-term strategy – the case of Styria, Austria.

Styria is a good example where it could be observed that large enterprise support requires long-term strategies and persistence. Styria started to implement a long-term strategy for large enterprise support going back to the 1980s to accompany structural change processes and lead to a more innovation- and export-oriented business structure.

Nowadays, Styria is considered to be an important location for R&D and innovation in Austria and the EU. Compared to the average level of R&D expenditure of 1.97% of GDP in the EU 28, Styria had an expenditure of 4.4% of GDP in 2011. With approximately 3.11% in private R&D investment, Styria scores higher than the Austrian (1.84%) and EU 28 average (1.24%). This increase in aggregate R&D&I expenditure can be directly attributed to the presence of the R&D units of multinational enterprises. Foreign funding of R&D activities has increased more rapidly than any other funding source over the past 15 years in Austria. However, R&D expenditure has not always been at this level: for example, in 2002, business R&D expenditure in Styria was at 2.2% and gross expenditure on R&D was at 3.3%. The shift towards more 'innovation-driven regional specialisations' in Styria was notably influenced by ERDF measures during the 2000–2006 period. It was also influenced by other types of public support. All of this support closely focused on attracting business units of large enterprises.

During the 2000-2006 period, ERDF support was strongly focused on inward investments and foreign multinationals. The focus of large enterprise support shifted significantly in the 2007-2013 period. This was mainly motivated by the successful structural transformation process of Styria, in which large enterprises played an important role. Styria is now well above-average in R&D intensities and high value-adding industries for

the programme area. At the same time, public officials reported the need for large enterprise support to prevent a 'branch plant'-syndrome from emerging, due to the high number large enterprises in Styria that are externally controlled by foreign corporations. Hence, the key focus of large enterprise support was on embedding the firms into the regional business ecosystem, strengthening local sourcing and value-chain integration, with a particular focus on the so-called 'leading regional companies'.

The nature of investment of the large enterprise in the region strongly affected the level of sustainability. In 13 of the 45 cases, substantial sustainability was usually associated with projects where the main expected outcome of the investment was securing or improving market position and technology leadership. In these cases, the means of assuring competitive position was through product development, increasing production capacity by establishing or expanding production sites and investing in new technology. This finding points to the influence of the nature of the investment on the sustainability of large enterprise support.

The key determinants for the sustainability of large-scale business investments (Theory of Change LE1) were typically long-term corporate strategic development plans involving high investment volumes. In particular, when considering the comparatively low average aid intensity for large enterprises of about 20%, firms face significant sunk costs if investments are withdrawn before amortisation, reinforcing the need for longer-term and sustainable investment decisions. In eight of the 16 cases company officials explicitly mentioned that the commitment to large-scale investments in infrastructure and machinery are viewed as long-term investments and are usually part of a broader corporate strategy for increasing growth and competitiveness.

Company case study example:

A **Polish** indigenous large enterprise operating in the production of coke and coal derivatives received support for two projects that led to the large-scale upgrading of out-dated production technology (dating to the 1960s) to adapt products to the needs of the market. The first project was finished in 2011. Completion of the second project is planned for the third quarter of 2015. The total value of both investments amounted to approximately EUR 100 million, with EU funding accounting for over EUR 20 million.

The industry in which the Polish company is operating is modernising itself in cycles of about 20 years. In consequence, the introduction of technology today established its use for about 20–30 years. This is especially important from the point of view of the sustainability of jobs created.

In the case of LE2 (technological upgrading), most of the projects are likely to be sustainable, as the supported projects were generally part of the companies' regular investment cycles. While in the case of smaller technology investments (less than EUR 1 million) there were typically no visible changes, due to their primarily company-level scope, larger projects could lead to more relevant and longer-term structural effects. Seven out of the thirteen companies confirmed that the risks of discontinuing activities (such as firing recently-hired, qualified employees, relocation of technology-intensive production) related to the upgrade of production lines or the purchase of new technology was relatively small.

For the LE3 theory (innovation support), varying sustainability results were identified for the supported projects. Higher sustainability levels were only identified for projects that not only supported the large enterprise in developing an innovation through research activities, but also supported the company in the next phases of commercialising the innovation, i.e. transferring the research results to production and marketing of products. This view is supported by existing counterfactual impact evaluations,[68] which have noted that projects that integrate support to R&D and technological upgrades to plants result in positive net impacts in terms of product, process and service innovations.

Company case study example:

In the **Czech Republic** a large aerospace manufacturer, mainly focusing on the engineering, manufacturing and sales of military and civil aerospace technologies, fully owned by an investment group with origins in Czechoslovakia, created a modern workplace for the production of large composite parts of aircraft structures and helicopters. The company expected that demand for composite parts would grow and they wanted to be prepared to meet it. The investment in the modern workplace was included in the strategic plans, but without support from EU funds the project would have been implemented on a smaller scale and somewhat later. Overall, the project has been successful for the enterprise and has had positive spillovers for the region. The managers anticipate growing importance of composite parts production in future years, which would ensure the sustainability of results and further growth in the number of employees. They also expect to shift towards more sophisticated production technologies.

Finally, for LE4 (investment in R&D capacity), the level of sustainability was assessed as satisfactory. Seven out of ten company case studies were judged to be sustainable; however, as return on R&D investments is usually achieved only in the long term, sustainability of direct effects has to be assessed with care. Increased R&D expenditure seems to have influenced endogenous development in most company cases, creating a basis for further innovation and technological development. Effects on regional innovation capacities and their sustainability are even more difficult to assess, and depend heavily on the network capital in the regional innovation system. Only in the case of investments in R&D infrastructure (industrial parks, R&D campuses and labs) is sustainability of the impacts, further induced investments and collaborations considered probable for the future.

As a supporting factor, a long operational history of a firm (indigenous or foreign) also reduces the likelihood of relocations significantly under normal market conditions due to the typically large amounts of investment at the site and corresponding sunk costs. In six of the 45 companies, traditional ties (in the case of indigenous companies) and embeddedness of the companies in the region (especially in the case of multinational firms) were key external factors in ensuring the sustainability of the supported projects and increasing the likelihood of additional subsequent investments.

[68] Promuivitalia (2014): 'Esercizio Valutativo n. 3 - Gli effetti degli incentivi all'innovazione sulla capacità innovativa e sulla crescita delle imprese - Rapporto intermedio di valutazione programmazione 2007-2013'.

Company case study example:

A multinational company founded in the nineteenth century in **Austria** (taken over in the late 1980s by a German holding) operates in the production of packaging glass, focusing on the healthcare sector, at its site in Styria. The supported investment at the traditional production site in Styria, specifically in a new energy-efficient glass trough, was highly important because a lack of investment would likely have ultimately resulted in the shutdown of the production site. The support helped to lower operation costs, as the Austrian production site is more costly for industrial production (due to labour costs, energy costs etc.) than production sites in other countries. The investment will most likely secure the production site in Styria for roughly the next 20 years, the lifespan of the newly installed glass trough.

If the investment project leads to competence-creating units (e.g. Centres of Excellence), its role in the corporate portfolio increases (i.e. its mandate), which increases the likelihood of higher sustainability. Large enterprises, particularly multinational ones, show a considerable degree of heterogeneity based on several parameters (industry, entry timing and mode, mandate). In particular, subsidiaries differ from each other in terms of their mandates, responsibilities and activity structures: while some subsidiaries acquire competence-creating mandates, others mainly exploit the competencies of their corporate networks for production purposes.[69]

Company case study example:

An important Brazilian manufacturer in the aeronautics industry opened two new plants in **Portugal**, both based in the city of Évora, south of Lisbon. The units are dedicated respectively to manufacturing machined metal structures and composite material assemblies, and are provided with the latest technologies in the world. The investment has been a key point of the company's deployment in Portugal. Both manufacturing centres are considered Centres of Excellence and are a technological reference point for the parent company, being responsible for the manufacturing of the most innovative components. The project also contributed to the creation of 350 jobs and increased human capital formation (through agreements with vocational training centres, the University of Lisbon and the University of Évora). The Municipality of Évora signed an agreement with a vocational training centre for developing an educational system specialising in the aeronautics sector. Jobs created in this company as well as in companies subject to its pull effect are high-quality jobs requiring relatively high levels of education. The national government launched active policies for hiring unemployed people, implementing vocational training for students and attracting exchange students to ease the recruitment situation for the developing regional aeronautics industry.

As the company case studies indicate, higher sustainability can be expected where specific competencies or knowledge infrastructures were created, which made the investment site distinctive within the corporate portfolio. While this, on the one hand, increases the competence-creating mandates within the parent group, on the other hand, it also increases the likelihood for the subsidiary to embed with local

[69] Compare Mudambi, R. & Santangelo, G. (2015): 'From Shallow Resource Pools to Emerging Clusters: The Role of Multinational Enterprise Subsidiaries in Peripheral Areas'. *Regional Studies,* DOI: 10.1080/00343404.2014.985199

partners. This is particularly the case for large enterprises in high-tech industries (e.g. electrical and electronics, chemicals and pharmaceuticals[70]) where global competition is tougher and where these firms are trying to tap into the local resource pool through acquisitions and to give their local units a competence-*creating* mandate. Large enterprises operating in more mature industries (e.g. steel, mechanics) may instead enter through acquisitions, but typically grant their local units a competence-*exploiting* mandate, limiting their embeddedness in the region.[71]

Local ownership of the project can positively influence sustainability. In a similar vein to the findings on competence-creating units and mandates, good arguments were also made that projects that were strategically managed at the investment site itself showed a higher level of ownership. Ownership describes the level of identification that stakeholders have with the investment project, and determines their level of personal responsibility. It is seen a prerequisite for the sustainability and success of projects. A similar analysis was presented by a Polish Intermediate Body, which rated ownership as a key factor in making projects sustainable and in changing attitudes, including those of partners of large firms (e.g. SMEs, R&D institutions, government clerks and local administration). The Intermediate Body called this ownership considerations the 'rooting effect'; i.e. the Operational Programme's indirect goal was to steer incentives in such a way as to induce the potential partners to get to know each other.

Long-term sustainability varies by sector due to the different lengths of their investment cycles and capital needs. As noted in the company case studies and the stakeholder seminar, the characteristics of the industry are decisive when considering the prospective sustainability of project impacts. In simple terms, projects in industries with longer investment lifecycles, of 15 years or more (e.g. aerospace, automotive and materials industries), have a higher probability of achieving long-term sustainability, but are also associated with higher capital needs. If the industry in which the supported large enterprise operates is modernising itself on a 15–20-year cycle, the introduction of a production line or technology today establishes its use for about 20–30 years. This is especially important from the point of view of the sustainability of jobs created. In the short lifespans of technological investments, long-term sustainability depends on whether the company will be able to earn the necessary inputs for its next large-scale investment, which is affected by both market conditions and corporate performance.

Overall, especially from a sectoral perspective, the sustainability of the supported projects depends strongly on the market conditions. In markets with longer-term contracts and stable demand (e.g. as found in all four cases related to the aerospace industry), external shocks that could hamper the sustainability of public investments are less likely. Markets with fierce global competition and unstable markets (e.g. the solar industry) are much more risky. In fact, it should not be forgotten that shifting market conditions can jeopardise many of the positive developments associated with any type of enterprise support.

[70] In 13 of the 45 company case studies the high-tech nature of the industry in which the firms operated had a positive impact on the duration of their investment projects.
[71] ibid.

Example from a market with fierce global competition:

As recent evidence from Thuringia (**Germany**) shows, two large enterprises in the solar industry, receiving over EUR 83 million in support from regional state aid in the 2007–2013 period, closed or significantly downsized their operations due to market turbulence and challenging subsidy schemes in Asia (a subsidy race). Despite positive findings from a recent ex post evaluation of these projects[72] (including the creation of 1,200 jobs, establishment of R&D centres and positive spillover effects through value chain integration of local suppliers and R&D collaborations), the sustainability of these funded projects appears in a different light just a few years later.

Sustainability is also dependent on the regional context. Investments by both indigenous and foreign enterprises that are more related to the existing industrial structure are more likely to achieve a higher sustainability. The existence of an industrial heritage (found in 13 out of 16 cases under the LE1 theory, large-scale business investment), a supportive local government (especially relevant in 12 out of 16 cases, also under the LE1 theory), a well-developed regional innovation system (including R&D infrastructure) and the availability of R&D partners (9 out of 10 cases, primarily under the LE4 theory, investment in R&D capacity) were proven conducive to the sustainability of the supported projects. Company officials noted that these regional context factors, due to the necessity of proximity to local universities, human capital and business partners (both suppliers and customers), had impacted their investment choices.

Company case study example:

As one of the main actors in the analytics/medical engineering cluster in Jena, Thuringia (**Germany**), the supported large enterprise develops and produces diagnostics tests (e.g. for HIV or tuberculosis) based on optical technology that can be used in the field without the need of a laboratory. The company was founded as a spinoff in 1998 by scientists at a research institute in Jena. It was bought in 2006 by a global company headquartered in the United States with which the company had co-operated on several R&D projects before. Due to its founding history, the subsidiary in Jena is well grounded and highly involved in scientific and research networks. One of the key advantages of the site in Jena from the company's perspective is its embeddedness in these research networks and its proximity to research institutions and companies from the analytics and optics industries.

To interpret this observation, recent academic studies on the role of technological relatedness among industries and regional growth performance offer helpful explanations[73]. At a general level, these studies show that technological relatedness is a key factor in enabling regions to diversify into new industries and create new growth paths. Technological relatedness implies that the development or entry of a new industry in a region is more likely to be successful and sustainable when it matches the existing industry portfolio in the region. Likewise, industries are more likely to leave or fail in a region when important technologically related industries are missing. New regional growth paths do not start from scratch, but are strongly rooted in the historical economic

[72] Compare DG Competition (2012): 'Ex post evaluation of regional aid guidelines'. Brussels.
[73] Compare Neffke, H. & Boschma, R. (2011): 'How Do Regions Diversify over Time? Industry Relatedness and the Development of New Growth Paths in Regions', *Economic Geography,* 87(3): 237–265.

structure of the region, which has important implications for the sustainability of projects in different sectors.

Despite the higher risks incurred when entering a new market, the supported FDI investments are sustainable in the medium term due to their status as parts of longer-term strategic plans. The results of the company case studies, regarding both firms new to the region (4 cases) and already present (41 cases), and the assessments of the Managing Authorities indicate that the majority of large enterprises tend to retain their location once they are settled, at least for the lifecycle of the investment. Only then will a re-evaluation of the investment decision become likely. Depending on the success of the investment, companies may decide to either disinvest or to deepen their operating commitment. When the latter occurs it is often accompanied by even stronger utilisation of production advantages in the region (use of subcontractors, R&D co-operation, clusters, co-operation with schools etc.). While no direct evidence regarding the formation of business ecosystems was found in the company case studies, the explanation given above indicates that these structural effects often appear after a certain period of time.

As entering a new geographic market is associated with risk and uncertainty, some FDI projects fail. Failed FDI projects often receive extensive publicity due to their large size and name recognition. However, supporting the finding above, the academic literature suggests that plants owned by multinationals are on average more enduring because of their higher average productivity, their heavier use of capital and their larger size.[74]

4.6. Efficiency

The evaluation compares the efficiency of support to large enterprises to the efficiency of support to SMEs. For the purposes of the evaluation, efficiency was defined simply and measured as public support per job created (gross efficiency).[75] The calculation is based on monitoring data received from Managing Authorities and data from Work Package 0 'Data collection and quality assessment' of the ex post evaluations of the 2007–2013 programming period. Data was in most cases only available at the programme or priority-axis level. Therefore, efficiency could only be analysed on an aggregate level and not by Theory of Change.

It is important to consider that efficiency data by to enterprise size is limited with regard to availability and reliability. Data on the efficiency of public support, allowing for the comparison of large enterprise support and SME support, was available for only four of the eight case study countries and regions. More advanced monitoring data would be helpful in systematically relating indicator values to the characteristics of the beneficiaries. Data by enterprise size was not available in the Czech Republic and Poland. In Italy, data was available only for large enterprises. For Valencia (Spain) an

[74] See e.g. Bernard, J. & Jensen, J. (2007): 'Firm Structure, Multinationals, and Manufacturing Plant Deaths', *The Review of Economics and Statistics*, 89(2): 193-204.

[75] A more advanced calculation would also need to consider the **degree of deadweight** to fully estimate the efficiency of funding. Considering the finding that full deadweight can be identified in one-third of the company case studies, the findings on efficiency presented below become more nuanced. Unfortunately, no comparable data on deadweight effects for SMEs is available to perform a comparative assessment. However, as the literature shows (compare WP4, First Interim Report, p. 35), deadweight effects of 28–35% are possible for SMEs as well.

estimate for large enterprises could only be obtained for the indicator 'jobs created and safeguarded', impairing the comparability of the efficiency of large enterprises and SMEs. In Hungary, the efficiency indicator based on job creation was not available, and efficiency had to be calculated as cost (public support) per EUR 1,000 increase in gross value added (GVA) in order to compare large enterprise and small and medium-sized enterprise support.

The comparison of efficiency in absolute terms across different case studies is of limited value due to differences in cost calculation and possibly differing methods for establishing the number of jobs created. The exact definition of what counts as a job created varies among the case studies analysed. Data can therefore show tendencies, but the comparability of the costs per job created across different case studies is limited.

Bearing these limitations in mind, **a focus on differences in efficiency by firm size *within* a country** is more helpful than a comparison of the efficiency of large enterprise support *across* different case studies. **Comparing the efficiency of support according to company size, there is some evidence that large enterprise support was more efficient than SME support within case study countries.** Out of the four case studies for which the efficiency of large enterprise and SME support could be reasonably compared, in three cases (Styria, Thuringia and Hungary) the efficiency of support was considerably higher for large enterprises than for SMEs. The public cost per job created was about one-third lower (Thuringia, 35%; Styria, 29%) for large enterprises than for SMEs. In Hungary, the cost of an increase in gross value added was 78% lower in the case of large enterprises. In only one country, Portugal, was the efficiency of public support to large enterprises lower than the efficiency of support to SMEs. Large enterprise support in Portugal was 15% more costly per job created than support to SMEs. The figures for Spain could not be compared as the employment indicator also included safeguarded jobs in the case of large enterprises.

Table 22: Efficiency of support to large enterprises and SMEs (not intended for comparison among countries due to different systems of data collection and job creation calculations)

	Cost (ERDF support) of one job created (EUR)		Cost (public support)[1] of one job created (EUR)	
	SMEs	Large enterprises	SMEs	Large enterprises
AT (Styria)	38,790	27,546	77,658	55,148
DE (Thuringia)	72,502	47,048	96,670	62,779
PT	213,125	138,119	373,998	430,700
ES (Valencia region)	47,985	13,598 (incl. safe-guarded jobs)	59,981	16,997 (incl. safeguarded jobs)
HU	-	-	1.22 cost (public support) per EUR 1,000 increase in gross value added (GVA)	0.27 cost (public support) per EUR 1,000 increase in gross value added (GVA)

Source: KPMG/Prognos (2016), based on data provided directly by Managing Authorities or taken from Annual Implementation Reports. [1] Includes ERDF and national public co-financing.

The higher efficiency of public support was coupled with a more reliable achievement of targets and efficient utilisation of public funds by large enterprises. According to public officials (e.g. in Styria and Thuringia), the interruption rate of large enterprise projects was much lower than that of SMEs. Typical reasons include more stable enterprise structures, higher management capacity and more strategic planning. Large enterprises therefore have a higher probability of reaching job creation targets. Furthermore, large enterprises usually receive lower aid intensity; i.e. for the same project size, large enterprises receive less public support, resulting in higher efficiency. The higher percentage of private resources tied to project implementation may also give a higher incentive to large enterprises to successfully reach project objectives and targets.

4.7. Contribution of the projects to general economic health and the development of SMEs

The overarching rationale for large enterprise support as part of EU Cohesion Policy in 2007–2013 was to contribute to regional economic growth, strengthen the development of SMEs and thereby to drive cohesion. The four re-constructed Theories of Change have identified two predominant outcomes that are to be expected from large enterprise support in the programme areas:

1. The large enterprises' activities contribute to the long-term increase of the employment rate in the programme area (including highly skilled jobs);

2. The large enterprises' activities contribute to regional economic growth (through growth of exports and innovative activities).

While the assessment of causal relationships between the supported projects of large enterprises and regional growth variables is extremely complex, following the logic of the theory-based evaluation enabled the analysis to systematically track large enterprises' contributions by analysing whether the intended change was achieved, whether external factors (other than EU support) had a significant influence on the outcomes and whether the key assumptions were relevant.

The following sections present the results according to the desired outcomes listed above.

Labour market

Labour markets were positively affected in the programme areas; however, the weak causal connection between the ERDF support and the projects led to limited contribution of the support to the observed outcomes. As the analysis on the direct employment effects of large enterprise support has shown, an estimated 60,000 new jobs were created in the countries analysed.[76] In most countries the interventions achieved or even exceeded their employment targets, particularly in

[76] Data from Italy and the Czech Republic is not included because it could not be differentiated by enterprise size. Moreover, for about 10% of these jobs, it is not clear whether they are new jobs created or safeguarded jobs because Spanish authorities in the Valencia region could only report undifferentiated numbers.

Austria, Germany, Poland and Portugal.[77] However, as the number above represents the 'gross' number of jobs created, it is possible that the jobs would have been created without ERDF support, as well.

As a result of increased production, the introduction of knowledge-intensive technologies and expanded research activities in 40 out of the 45 company case studies, the implemented projects directly increased demand for new jobs. Because of the size of the investment projects in some cases, this also led to increases in employment levels in the programme area from a longer-term perspective. As Table 23 shows, in the case of large-scale business investments (Theory of Change LE1), in particular, a long-term increase in employment levels due to the project was common; in 13 out of 16 company cases, this long-term job increase was reported and the investment was seen as large enough to influence the labour market. In seven cases, the project's contribution was rated as having a decisive magnitude, while in another five cases it was assessed as only an important contributing factor. For other interventions, such as for the LE2 theory (technology upgrading) and the LE4 theory (investment in R&D capacity), the positive examples equal the negative ones.

Company case study example:

The supported large enterprise from the manufacturing sector has a long history in **Italy**. The head of the group is located in the United Kingdom. The firm implemented a large project for the optimisation of the firm's core production lines (engines for the aeronautic sector and electrical engines) through industrial research activities. The project included both refundable support for acquiring new assets and technologies and non-refundable support. Stakeholders stated that the project has had an important effect on both direct and indirect demand for jobs and on long-term increase of employment in the area. The large enterprise is an important employer in the area and its economic situation affects the labour market significantly. Company stakeholders indicated that young and female employment grew, and the project improved labour force mobility as well, as employees commuted from greater distances to work for the large enterprise.

Table 23: Contribution of supported large enterprise projects to the intended change

Theory of Change and intended change	Has the intended change been realised because of the project?						Total firms
	Yes	Magnitude of the project's contribution			No	n/a	
		Decisive	Important	Minor/none			
LE1 (large-scale business investment)							
Long-term increase in employment in the programme area	**13**	7	6	1	**3**	2	**16**
LE2 (technology upgrading)							
Long-term increase in employment in the programme area	**7**	1	4	4	**5**	4	**13**
Growth of exports	**7**	3	2	4	**6**	4	

[77] Poland is a notable exception here: in Poland, by the end of 2013, around 12,850 jobs were created in large companies, remaining far below the target of 42,550. Targets were set too optimistically (regarding large-scale business investments in particular) and did not take into account the impact of the financial crisis.

Theory of Change and intended change	Has the intended change been realised because of the project?						Total firms
	Yes	Magnitude of the project's contribution			No	n/a	
		Decisive	Important	Minor/none			
LE3 (innovation support)							
Long-term increase in employment in the programme area	**6**	0	5	0	**0**	1	**6**
Growth of exports	**6**	1	4	1	**0**	1	
LE4 (investment in R&D capacity)							
Long-term increase in employment in the programme area	**4**	0	3	1	**5**	6	**10**
Contribution to innovation capacity in the programme area	**8**	2	4	1	**2**	3	
All	**51**	14	27	12	**21**	21	**45**

Source: KPMG/Prognos (2016), based on interviews with company representatives, Managing Authorities and Intermediate Bodies and academic experts (n=130).

As part of the assumptions test, it was found that in more than two-thirds of case study companies (33 out of 45) the economic environment the companies were operating in enabled business growth. This was particularly interesting in view of the fact that many projects began during or in the aftermath of the global financial crisis and during the euro crisis.

Based on the 45 company case studies, a 'good' to 'moderate' contribution to the demand for 'quality jobs' was found. Slightly more than half of the projects were judged to have contributed to the companies' increased demand for quality jobs, while 45% of them saw only a moderate contribution. This is further confirmed by monitoring data, where available, and qualitative insights from the company interviews. For instance, in the case of Styria, the target value of 250 new R&D jobs was missed, and only 108 R&D jobs were created by the end of 2013, though over 86% of those were created by large enterprises. Similarly, in a company case study from Thuringia, it was found that support to multiple R&D projects over the funding period helped the firm expand its R&D staff continuously, directly ensuring the creation of quality jobs and contributing to general job growth. For the Czech Republic, in the context of support for technological upgrades, projects created mostly lower-skilled positions because firms were expanding production capacities and needed to extend transportation staff. Also, for the Italian convergence regions it was found that, regarding the quality of jobs created, large enterprise projects generated no specific positive impulse.

Company case study example:

The supported company is one of the biggest European players in the field of semiconductor foundry. Its headquarters are located in Thuringia **(Germany)** and it is, with a total of 650 workers, one of the most important employers in the region. As a foundry, the company develops custom-fit products for other semiconductor businesses and thus primarily produces special technologies for applications in the manufacturing, automotive and medical industries. The supported MEMS Centre was the initial project for a range of follow-up investments. During the implementation of the project the company hired around 10 new employees, and after the launch of the project around 80 new positions for qualified staff were created. Since the start of the project, MEMS turnover, wafer capacities and level of employment have doubled.

Considering that many of the supported projects would have been implemented by the large enterprises anyway, it is not possible to attribute all of the new jobs created in those companies to EU support directly. Likewise, due to the limited magnitude of support to large enterprises in general economic terms, no direct impact on employment levels could be detected. Moreover, while one can observe a positive relationship between the increase in regional employment and job creation by supported large enterprises in some regions (e.g. in Thuringia, Styria and Poland), in the Southern European regions the overarching economic downturn could not be counterbalanced by large enterprise support. The latter observation points to an important aspect of job creation in 2007–2013: as reported by the Managing Authority in Valencia, the downsizing process associated with the economic crisis meant that some supported large enterprises were forced to focus on the preservation of existing jobs rather than on the creation of new ones. In such cases it was found that the increased company competitiveness resulting from the supported projects enabled them to withstand the crisis without dismissing as many personnel as they would have been forced to dismiss in the absence of support. During 2007–2013, roughly 6,440 jobs were directly created or safeguarded in the Valencia region, compared to 880 jobs directly created by SMEs in the same period.

Export rate

Export capacities and export performance of the supported large enterprises improved; however, similarly to job creation, this positive effect is only moderately the result of the ERDF support. This finding particularly refers to projects under two Theories of Change focused on scaling up export capacities: LE2 (technology upgrading) and LE3 (innovation support). In 17 out of 19 company case studies under these two interventions, the implemented projects led to an increased capacity to export; the project was the main cause for the scaling up of the export capacities for 11 of these (compare

Table 24).

Table 24: Increase of export capacities at the firm level

Increased capacity to export	Was it observed?		*Was the project the…*			
Theory of Change	**Yes**	**No**	***Cause***	***Pre-condition***	***Supporting factor***	**n**
LE2 (technological upgrading)	11	2	*8*	*3*	*0*	**13**
LE3 (innovation support)	6	0	*3*	*2*	*1*	**6**
Total	**17**	**2**	***11***	***5***	***1***	**19**

Source: KPMG/Prognos (2016), based on 19 company case studies and interviews with company representatives.

Support to upgrade growth and exports capacities specifically through technology investment occurred in five of the case study countries: Austria, the Czech Republic, Germany, Italy and Portugal. As was found for Portugal,[78] export volumes of supported large enterprises under the innovation incentive systems rose by 15% in 2007–2011, compared to a decrease of 1.6% in the control group. In multiple other cases, e.g. an indigenous large enterprise from the materials and recycling industry, a foreign large enterprise in the automotive industry (both from Styria) and a domestic multinational company in the semiconductor industry (from Thuringia), technological advantages achieved through support led to a notably better market position and export performance.

Company case study examples:

The supported transformer plant was founded in 1892 in Styria **(Austria)** and was acquired by a German parent company in 2005. The overall project idea was a result of a boom in the energy sector that led to new innovations and developments. Demand in the Middle East had drastically increased and the supported firm was negotiating a large contract with a potential customer in that area. To provide the needed products, the supported large enterprise had to establish new buildings and facilities (e.g. to provide space for a new capacitor battery). The new production capacity especially facilitated the growth of the export sector. Beyond the initial contract that sparked the idea for the project, further contracts were won (e.g. in Singapore and Abu Dhabi), again increasing capacity and leading to further investments. It is expected that, had the project not been implemented, the firm's economic performance would likely have declined, as it would not have been able to compete globally due to constantly falling prices. Realising economies of scale and increasing export performance was an important objective and effect of the supported projects and corresponding follow-up investments.

The other supported large enterprise in the field of paper production is a non-integrated producer with a production site in Figueira da Foz in the Centro-Baixo Mondego region in **Portugal**. The company is owned by an international group and currently holds a significant share of the European and Iberian paper markets. The kind of pulp produced is used for a wide range of papers, from fine paper grades to tissue, printing and writing. The investment project involved the modernisation and extension of the existing bleached eucalyptus craft pulp production facilities. The low cost of raw materials from South American competitors (mainly Brazil) made an increase in productivity necessary

[78] See Instituto de Estudos Sociais e Económicos e Quaternaire Portugal (2013): 'Study of mid-term evaluation of operational programme competitiveness factors (compete)' ('ESTUDO DE AVALIAÇÃO INTERCALAR DO PROGRAMA OPERACIONAL FATORES DE COMPETITIVIDADE (COMPETE)'.

to maintain competitiveness. As a result of the supported project the company became one of the most efficient paper pulp producers worldwide. The increase in production has been fully directed towards exports to international markets. The strong export focus has significantly reduced the impact of the unfavourable economic situation in Portugal during the economic and financial crisis. Due to the increased export volume, the economic activity of the harbour in Figueira da Foz, which almost exclusively serves the supported enterprise, has doubled. The harbour now charges 150 ships per year, compared to 75 units before the project was implemented, and the time to charge each ship has been reduced from one week to 2–3 days due to technical improvements.

The supported projects of large enterprises contributed to the regional export base, but only at the margin. While the link between the increased export capacity of the firm and the regional exports seems plausible, the size of the effect in the region was not found to be large enough to be noteworthy. Moreover, as has been shown in the Polish case study, export shares of supported large enterprises were already at very high levels (nearly 90%), a finding that is likely similar in the other case study regions. Nevertheless, the increased export capacity of large enterprises strengthened the regional export base, an important determinant of economic growth. As the development of exports in the case study regions show, in all but one case (Thuringia) an increase in export shares was realised during the period 2007–2013.

Table 25: Export share in the selected case study countries and regions

Export share	Countries							
	AT (Styria)	DE (Thuringia)	PT	Italy (Convergence regions[1])	CZ	HU	PL	ES (Valencia region)
2007	39* (2009)	**31.2****	**31.0**	**14.9*****	**66.6**	**78.6**	**38.8**	**n/a**
2013	46*	30.1**	39.6	16.6***	77.3	88.8	46.1	n/a
Per cent change	17.9	-3,5	27.7	11.4	16.1	13.0	18.8	n/a

Source: KPMG/Prognos (2016) based on Eurostat. Exports of goods and services in % of GDP, tet00003. * Source: WIBIS—Wirtschaftspolitisches Berichts und Informationssystem Steiermark. ** Source: Regionaldatenbank/Destatis. Export turnover/total turnover for manufacturing sector. *** Source: I.Stat. Own calculation of exports/GDP. [1]Campania, Puglia, Calabria, Sicilia.

Innovation capacity

The innovative capacity of a country or region is heavily rooted in its microeconomic environment, in areas such as the prevalence of R&D jobs in the workforce, the business capacities for R&D and entrepreneurship and the depth of knowledge networks. EU funding to large enterprises was meant to contribute to this development by supporting investments in R&D capacity (LE4). As Table 26 shows, in the ten company cases studied here, the majority of intermediate outcomes were reached, from increases in business capacities for innovation and the development of new products and processes to R&D collaborations and knowledge spillovers to SMEs. In most cases, ERDF support catalysed this change, and large enterprises could implement their innovative activities before the planned date established in the corporate investment plans and, in some cases, could add new elements to the scope of the investments (development of more products, R&D activities supported in more than one area). This finding is in line with a number of econometric studies that found that firms, including

larger ones, receiving direct support to R&D from Cohesion Funds or other sources increase their innovation activity and improve in competitiveness (input additionality).[79]

Table 26: Intermediate outcomes from supported projects on regional innovation capacity

Intermediate outcomes from projects	Was it observed?		*Was the project the…*			
LE4 (investment in R&D capacity)	**Yes**	**No**	***Cause***	***Pre-condition***	***Supporting factor***	**n**
Firm increases capacity to innovate	10	0	6	1	1	**10**
Further R&D collaborations are induced	8	2	1	1	5	
Development of additional new products and processes is stimulated by increased capacities to innovate	10	0	5	1	3	
Knowledge spillover to SMEs induced by collaborations	8	1	1	4	2	
Total	**36**	**3**	***13***	***7***	***11***	

Source: KPMG/Prognos (2016), based on ten company case studies and interviews with company representatives.

As the causality assessment showed, there appears to be no causal relationship between EU funds and project implementation. Rather, EU funds reduced potential risks and extended the scope of R&D activities. Even for R&D (and thus riskier) projects, the availability of EU funds served as a pre-condition or supporting factor only (i.e. not the main cause of the R&D project), despite the fact that the considerable risk reduction enabled by EU funds in many cases increased motivation to implement the project. At the same time, the assessment did not detect that public support supplanted private R&D at the large enterprises. In other words, the supported large enterprises received ERDF funds precisely because they planned to undertake R&D projects. In fact, there are rather complementarities than substitution effects between public support and private R&D.[80]

Corporate partners interviewed stated that in eight out of the ten cases their projects contributed to the innovation capacity in the programme area (in two cases decisively, in another four cases with important contributions). While knowledge spillovers to SMEs have occurred frequently, evidence from the company case studies on other longer-term structural effects were only recorded in a few cases.[81] Relevant

[79] See e.g. Warwick, K. and A. Nolan (2014): 'Evaluation of Industrial Policy: Methodological Issues and Policy Lessons', OECD Science, Technology and Industry Policy Papers, No. 16, OECD Publishing; PAG Consult (2014): 'Effects of Cohesion Policy Support Targeted at Large Enterprises in Poland – evaluation summary', Presentation at 5th International Evaluation & Monitoring Conference, Budapest; Czarnitzki, D. et al. (2011): 'Counterfactual impact evaluation of cohesion policy', Work package 2: Examples from Support to Innovation and Research. Final Report, Katholieke Universitet Leuven.

[80] This finding is in line with Guellec & van Pottelsberghe de la Potterie (2003) and Garcia-Quevado (2004), who find a large complementarity of public and private R&D funds. However, neither publication, nor this evaluation, can provide answers about the scope of additionality. Following Cunningham et al. (2013) it is likely that the additionality for direct R&D support is greatest for small firms, but this evaluation also shows a certain degree of input additionality for large enterprises. See Guellec, D., and Van Pottelsberghe De La Potterie, B. (2003): 'The impact of public R&D expenditure on business R&D', Economics of innovation and new technology, 12(3): 225-243; Garcia-Quevado, J. (2004): 'Do public subsidies complement business R&D? A meta-analysis of the econometric evidence', Kylos 57: 87-102; Cunningham, P. et al. (2013): 'The Impact of Direct Support to R&D and Innovation in Firms', NESTA Working Paper, No. 13/03.

[81] It must be noted here that a) only a very small sample of supported large enterprises was analysed (about 10% of the supported large enterprises) and b) projects were not selected using random samples (which could result in bias).

changes to the regional innovation capacity were identified only in 3 out of the 45 company case studies. These include the establishment of a Technology Lab for recycling technology by an indigenous large enterprise in Styria, the establishment of a Research Centre in the biotech industry by a domestic Hungarian large enterprise and the establishment of a technology and production site for a large enterprise from the aerospace industry in the Czech Republic. Other effects, such as the attraction of R&D units from other countries to the regions, were also hardly noticeable. Nevertheless, while starting at different base levels, in all case study countries and regions a high increase in business R&D expenditure could be recorded.

Table 27: Business R&D (BERD) in the case study countries and regions

Case study countries											
BERD as % of GDP	**AT** (Styria)	**DE** (Thuringia)	**PT**	**IT** (Convergence regions*, 2011–2012)				**CZ**	**HU**	**PL**	**ES** (Valencia Region)
2007	2.46	0.98 (2011)	0.58	0.47	0.18	0.02	0.23	0.77	0.49	0.17	0.37
2013	2.49 (2011)	1.05	0.65	0.53	0.19	0.03	0.23	1.03	0.98	0.38	0.41 (2012)
Per cent change	*19.9*	*7.1*	*12.1*	*12.8*	*5.6*	*50.0*	*0.0*	*33.8*	*100.0*	*123.5*	*10.8*

Source: KPMG/Prognos (2016), based on Eurostat. Total intramural R&D expenditure (GERD) by sectors of performance and NUTS 2 regions. Expenditure of the business enterprise sector as percentage of GDP.

Generally, longer-term structural effects on the regional innovation capacity require a lot of time. In fact, as the case study example from Styria below illustrates, it can take decades for such longer-term and sustainable increases in innovation capacities to emerge.

Country case study example:

Styria is now considered to be an important location for innovation and R&D in **Austria** and the EU. Compared to the 1.97% of GDP expenditure on R&D in the EU-28, Styria had an expenditure of 4.4% of GDP in 2011. With around 3.11% in private R&D investment, Styria scores higher than the Austrian (1.84%) and EU-28 (1.24%) averages. In comparison to other federal states, Styria had the highest R&D rate in 2011, with a considerable gap to the second-highest scoring state, Tyrol, which had a rate of 3.4%. This increase in aggregate R&D and innovation expenditure was found to be a direct result of the presence of R&D units of multinational enterprises. Furthermore, foreign funding of R&D activities has increased faster than any other funding source in Austria during the last 15 years.

The shift towards more 'innovation-driven regional specialisations' and the ensuing innovation potential of Styria was notably influenced by ERDF measures during the 2000–2006 period, as well as by other forms of public support, all closely focusing on attracting high-value–adding and knowledge-intensive business units of large enterprises. Continuous efforts are needed, however, to maintain and advance this positioning, as global competition, primarily from Asia, rises. This induces high innovation pressure that forces large multinational companies to intensify their efforts (see also the next section on the general economic regional strategy).

Negative wider effects on the regional economy, such as market distortion or crowding out of SMEs from the labour market, were generally not observed. Such adverse trends were identified only in two company case studies. While corporate officials typically have a good oversight of their respective markets, including the development of the landscape of bigger and smaller competitors, this ex post evaluation was not designed to explore the full spectrum of these impacts at the regional level; therefore, the findings remain inconclusive.

Company case study examples:

In one case, a large **German** firm in the communication systems sector (LE4) concluded that growth was only possible at the expense of other competitors, hence the investment contributed to crowding out of other companies (with German, French and Chinese origins) from the market.

As another example, a multinational German firm (LE1–2) in the automotive electronics industry made a large investment in a convergence region in **Hungary** with limited supply of qualified labour force. The company attracted the most talented people from the labour market, to the detriment of the local SMEs.

However, some more controversial effects were observed in Thuringia, particularly the pressure of large enterprises on raising wage levels[82] and competition for well-educated employees. According State Authorities, however, these pressures on wage levels by large enterprises are viewed positively, as income levels in Thuringia are still below the national average, making competition for highly skilled employees strong. From the perspective of individual SMEs, this might be disadvantageous, yet it is expected that they will increase wage levels appropriately.

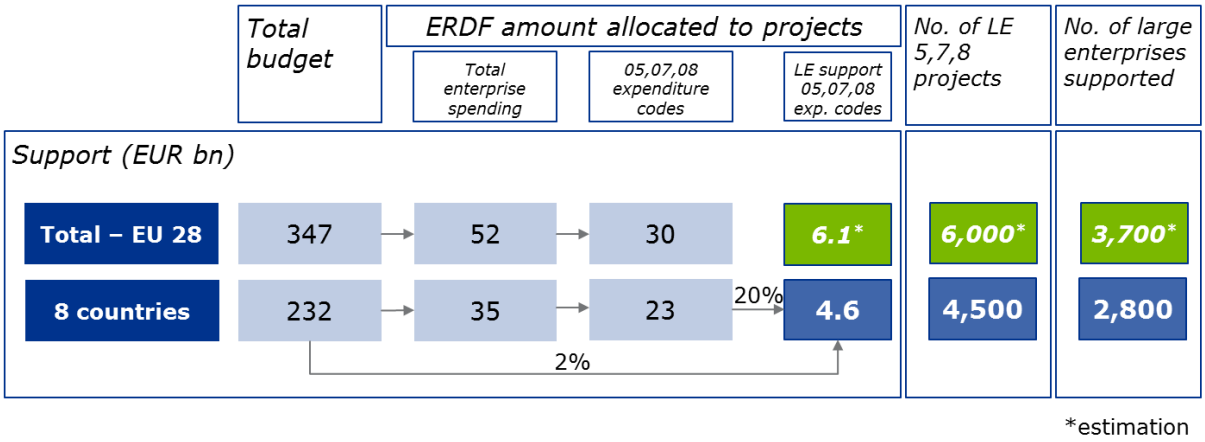
[82] As shown by van Klaveren et al. (2013), based on a web survey by Wageindicator, in nine of out ten countries the median gross hourly wage level in MNEs was substantially higher than that of domestically owned firms. Only in the Czech Republic was, the opposite true. See van Klaveren, M. et al. (2013): 'Multinational Companies and Domestic Firms in Europe: Comparing Wages, Working Conditions and Industrial Relations', Palgrave Macmillan.

5. CONCLUSIONS AND POLICY IMPLICATIONS

5.1. Overview of key findings and conclusions

In the 2007-2013 period, the total support from Cohesion Policy programmes reached EUR 347 billion; of which EUR 52 billion was spent on enterprises, of that EUR 30 million was spent on direct enterprise support. Direct financial support to large enterprises is estimated at around EUR 6.1 billion for the EU-28. This makes up approximately 20% of all ERDF spending on direct enterprise support, and 2% of the entire Cohesion Policy budget. Poland, Portugal and Germany together account for half of the total large enterprise support within the EU-28.

Figure 19: Overview of large enterprise support from the ERDF in 2007-2013



Source: KPMG/Prognos (2016). The eight case study countries were: Austria, the Czech Republic, Germany, Hungary, Italy, Poland, Portugal and Spain.

Subsidies to large enterprises are often controversial in policy and science debates, and are frequently believed to have little effect on the large enterprises' behaviour. Large firms usually have good access to the labour market, to cutting edge technologies and, most importantly, to finance. As commonly argued, economies of scale allow large firms to compete effectively and to finance a steady investment cycle over time from the market. The justification of subsidies therefore tends to be realising additional indirect and wider benefits that spill over from large firms to SMEs and to the regions in which they operate. Influencing the large firms' location choice (internationally or within a country) is another oft-cited argument.

Against this background, an in-depth evaluation was necessary to provide the European Commission and regional policy-makers with a solid basis for decision-making on future support. Following a comprehensive, theory-based evaluation approach, this ex- post evaluation led to the following key conclusions:

1. **A wide array of factors were observed to have determined the investment decisions of large enterprises in the context of Cohesion Policy support.**

The dominant cause for project implementation in the case of large enterprises was corporate strategy (found at 44 out of the 45 analysed company cases). EU funds have influenced the behaviour of large firms to some extent, yet strategy-based decision-

making on investments remained a fundamental characteristic of large firms. Other factors that influenced the large firms' behaviour often included tax incentives, the availability of transport infrastructure, the local industry structure and the availability of a qualified labour force.

2. **In 20% of cases, ERDF support was one of the main causes of project implementation, resulting in the desired behavioural change.**

In 20% of cases, the evaluation found strong, direct causal relationships between the support and the projects. Such pattern was found, for instance, in the case of "mid-caps", where ERDF helped overcome the financial problems faced by the enterprises in the aftermath of the crisis. The induced behavioural change in these cases constituted the implementation of strategic projects that would not have been implemented otherwise.

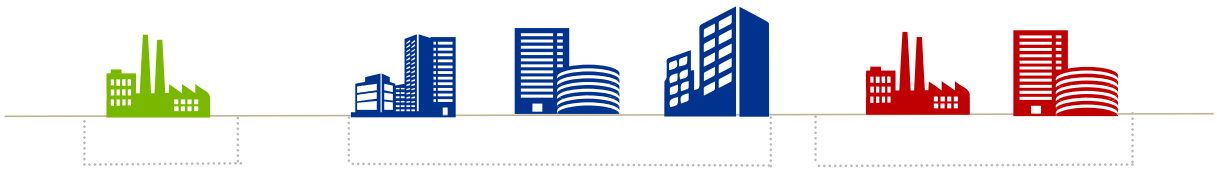
3. **In 50% of cases, ERDF support was successful in inducing behavioural change in the supported large enterprises, particularly influencing the timing and scope of the implemented projects.**

In 50% of cases, EU funds were not one of the main causes of project implementation, but had a great influence on the timing and scope of projects. In the absence of the support, these enterprises would have delayed their investment, divided their projects into smaller phases, or would have had to purchase less advanced or environmentally friendly technology or constructing smaller-sized facilities.

4. **In 30% of cases, ERDF support has not influenced the large firms' investments decisions.**

EU support has not significantly changed the behaviour of the remaining 30% of the firms regarding their investment decisions, and thus can be considered ineffective from a Cohesion Policy perspective. Considering that these supported projects would have been implemented by the large enterprises in a very similar way, it is unreasonable to attribute these changes to EU support.

Figure 20: Overview of findings on the contribution of EU funds to large enterprise investment behaviour



~20% of cases were **significantly influenced** by the support.

In **~50%** of cases ERDF support led to **some behavioural additionality** by

…acting as a **catalyst** to the projects

…**amplifying** the investment scope

…granting **access** to finance for „mid-caps" with growth potentials

In **~30%** of cases ERDF support had only **little influence**

Source: KPMG/Prognos (2016), based on empirical evidence from the 45 company case studies.

5. Large enterprise projects were successful in reaching the intended direct outcomes, but the effects can only partially be assigned to the support.

All country case studies have shown positive direct effects in gross terms. In total, 90% supported large enterprises were successful in meeting and sometimes outperforming the formal targets set for their projects.

Figure 21: Overview of direct effects and indirect/wider benefits induced by large enterprises[83]

Source: KPMG/Prognos (2016), based on empirical evidence from the 45 company case studies.

The supported large enterprise projects realised EUR 1.5-1.6 of ***private investment*** **for** one EUR of public support. Among the company case studies, in almost 90% of the cases (40 out of 45 companies), the implemented projects involved additional private investment on top of the fixed co-financing rate.

The objectives of the support regarding ***employment*** were generally met. Large enterprises were accountable for numerous jobs created in the programme regions and at least 60,000 new jobs were created under the evaluated programmes in the eight countries (in gross terms). In 40 out of the 45 company case studies, the implemented projects led directly to demand for new jobs, including 'quality jobs' (in more than half of the company case studies).

In 41 out of 45 cases, the supported project led to increased ***production capacities***. The EU-funded projects also made direct contributions to the *export capacities and export performance* of the supported large enterprises, most prominently in five of the case study countries, namely Austria, the Czech Republic, Germany, Italy and Portugal.

[83] The values in brackets represent the achievement of the effects out of those analysed company case studies where the effects were foreseen to take place.

Regarding the influence on the ***national and regional innovation capacity***, the majority of intermediate outcomes were reached in the 10 company case studies looking at R&D&I projects (from increases in business capacities for innovation, the development of new products and processes in R&D collaborations and knowledge spillovers to SMEs). In most cases, the project was seen as the cause of change and high degrees of complementarity rather than substitution effects between public support and private R&D were identified.

In sum, this evaluation has shown that there is a strong and stable causal relationship between the implemented projects by supported large enterprises and the desired direct outcomes. Large enterprises implement projects following a longer-term strategic approach (meaning that they are also less likely to react merely based on a funding impulse) and show much lower interruption rates altogether, leading to high levels of effectiveness.

But it must be noted, that the above effects are reported in gross terms, without taking into account the varying behavioural additionality of the large firm support. Therefore, these directs effects cannot be fully attributed to the support (see previous conclusions).

6. **Where planned, indirect and wider benefits were realised in 75% of cases; however, in many cases the lack of planning for indirect and wider benefits, focusing on inputs and direct results, prevented the occurrence of such impacts**

Where indirect and wider benefits were foreseen in the Operational Programmes and project selection systems, 75% of planned wider benefits have at least partly emerged. This relatively lower rate for indirect and wider benefits, compared to the 90% occurrence rate of direct effects, could be the result of less explicit focus on these types of changes and they were often not part of the planned outcomes. Theories of change in general focussed more on direct results (such as job creation and increased investment and input support) than wider benefits such as for instance improved social or local business infrastructure.

Among the 34 company cases studies where spillovers to SMEs were expected, 24 resulted in some positive effects. Similar patterns were observed as regards improved business infrastructure (local transportation and ICT infrastructure) and social infrastructure, the spread of improved working culture (better working conditions, increased wages, stability) and better workforce mobility, as well as the attraction of other investors or FDI to the region.

However, the nature of the effects and the extent to which they can be attributed to the projects varied widely across the company case studies. One possible explanation for this variation can be seen in the elapsed time needed for the actual materialisation of wider benefits (different time lags). Changes such as direct spillovers to SMEs or changes in local transportation and ICT infrastructure are more visible and can materialise in a shorter period of time, while changes such as improved working culture or social infrastructure might be limited in the first 2-3 years, but develop in 10-15 years' time.

Another explanatory factor is seen in the characteristics of the projects implemented by the large firms. In the case of knowledge- and innovation-intensive projects (such as the development of a new product or the introduction of new, modernised technology) wider

benefits were more likely to be expected in terms of spillovers to SMEs thanks to the innovative nature of the projects. In research-intensive areas, such as in projects implemented in the pharmaceutical industry, wider benefits were most likely to appear in the form of increased human capital and increased regional innovation capacity.

But despite the achievements summarised above, indirect and wider benefits are highly complex and difficult to facilitate through large enterprise support. This is due to the more collateral relationships of the supported projects and the desired indirect and wider changes, the complexity of the underlying processes and the number of interacting agents (e.g. SMEs, universities, R&D labs, local government). For instance, for knowledge spillovers to take place, not only it is necessary that the large enterprise possess knowledge valuable to domestic SMEs, but also that the sender be willing to allow spillovers and the receiving organisations (SMEs, local universities) possess sufficient absorptive capacity.[84]

7. Supported large enterprise projects were sustainable within the mandatory 5-year grace period.

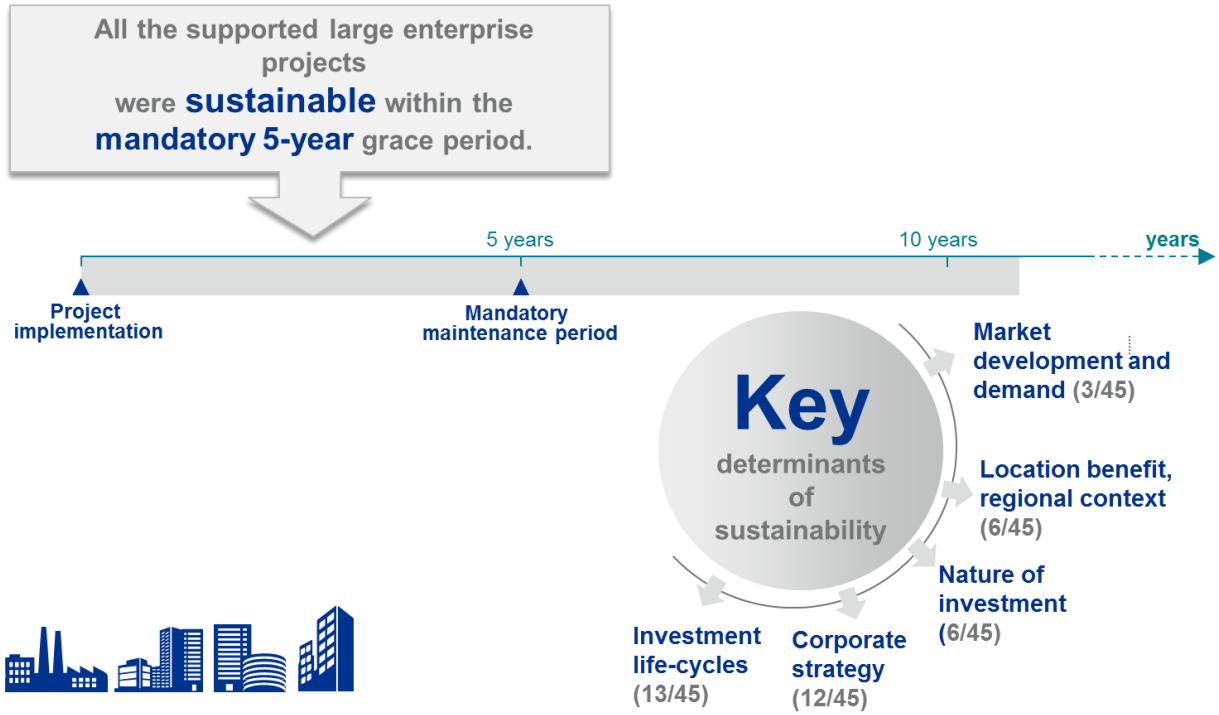
A project in a Cohesion Policy context can be regarded as sustainable when it continues to deliver benefits to the project beneficiaries (here: the supported large enterprise) and the region for an extended period after the Commission's financial assistance has been terminated. Where it was possible to judge, in the majority of company cases targets were met (e.g. total jobs created, investment volume), in line with the requirements set out in their grant agreements for the mandatory 5-year grace period.

8. Longer-term sustainability is dependent on a bundle of company- and regional-level factors.

Longer-term sustainability beyond the compulsory grace period, however, is more uncertain. Company case studies showed that in a longer time-frame (beyond 8 to 10 years), sustainability typically depended on a bundle of factors (see Figure 22), most importantly on the nature of the investment and the operating history of the firm in the region, the typical investment life-cycles and corresponding decisions on follow-up investments in the region, the permanence of corporate strategy and subsidiary mandates, overall market developments and demand and finally the location benefits. Several company case study examples underscored the points above: for instance, a large indigenous enterprise from Poland in the coal derivatives industry received support for two projects to upgrade outdated production technology – an investment of this sort in this industry typically has an investment life cycle of about 20 years. Similar findings were made for a large aerospace manufacturer (Czech Republic) and a multinational enterprise from the healthcare manufacturing industry (Austria). Furthermore, as observed in the case of a supported Brazilian multinational enterprise from the aeronautics industry operating in Portugal, developing so-called 'Centres of Excellence' significantly raised the mandate of the subsidiary within the corporation, leading to greater sustainability.

[84] See Dachs, B. (2009): 'Innovative activities of multinational enterprises in Austria', Structural Change and Structural Policies (19), Peter Lang.

Figure 22: Key determinants of sustainability of supported large enterprise projects[85]



Source: KPMG/Prognos (2016), based on empirical evidence from the 45 company case studies.

From the analysis of the sustainability of support one can conclude that if large enterprise investment projects lead to competence-creating units (e.g. centre of excellence, both in production and R&D&I), the role and mandate of this unit in the corporate portfolio is more likely to increase. This alters the likelihood of higher sustainability and can also facilitate the occurrence of indirect and wider benefits over time. This is partly due to the greater autonomy over decisions about local linkages in lieu of decisions coming from headquarters' level, comparing the various options available to the corporation globally. In addition, it was found that large enterprise investment must also 'fit' with the location's resource endowments, the sectoral profile and the future potential of 'smart specialisation': the better the fit and relatedness of the investment to the existing business ecosystem, the greater the prospective value of the investment for the regional economy.

Finally, also the availability of future public financial support (e.g. grants) was mentioned by company officials, but only as a complementary factor. Nevertheless, multiple granting was a common feature in the 2007-2013 period, with an average number of projects at 1.6 per large enterprise and a number of firms receiving support for five or six projects.

All in all, as an **overarching conclusion** from this evaluation it can be concluded, that if subsidies were designed in a way that induced 'behavioural additionality', they could increase the propensity of large enterprises and their subsidiaries to create local benefits. This particularly applied to support schemes for large enterprises that had incorporated

[85] Please note that the key determinants of sustainability were identified retrospectively, after all of the interviews were conducted. The determinants were not tested explicitly in the data collection phase, the list is the output of our empirical observation.

more specifically the logic of facilitating wider benefits, e.g. by the compulsory establishment of regional ties with local SMEs, research labs or universities following the logic of joint (research) projects. This raises the question whether stricter conditionalities for supporting large enterprises that go beyond the direct allowance/restriction of supporting specific activities (e.g. 'new economic activities', 'diversification of existing establishments', as in the RAG 2014) could help to facilitate these type of effect.[86] At the same time it could be observed that the strategic capacity of Managing Authorities and the various types of intermediaries (e.g. regional development agencies, investment promotion agencies, state investment banks etc.) were important determinants of effectiveness (as could be seen in the case of Styria, Austria, for instance).[87] Their capacities to act as strategic partners for policy development and implementation, including the selection of beneficiaries based on profound project selection criteria, can be seen as a key success factor for value-adding large enterprise support.

5.2. Policy implications

Based on the interpretation of the available evidence, the following policy-relevant conclusions can be made regarding large enterprise support.

1. ERDF support should be more selective, focusing on inducing benefits for SMEs, attracting investment from third countries and helping mid-caps obtain financing.

In principle, large firm support in Cohesion Policy can be considered effective if the company responds to the support, changing its behaviour in a desired direction. The subsidy might be used for good projects *per se*, but it becomes ineffective (resulting in deadweight costs) in the absence of an induced change, i.e. a cause-effect relationship between the public financial support and the observed effects. Changes that can be attributed to the support justify the effectiveness and the accountability of the spending.

Based on the findings of this evaluation, the following changes can be reasonably expected from the large firms in the context of Cohesion Policy.

[86] DG Competition (2014): 'Guidelines on Regional state aid for 2014-2020', Competition policy brief, Brussels.
[87] See for similar findings Work Package 2of this ex post evaluation, 'Support to SMEs', p. 12.

Table 28: Expected behavioural changes of large enterprise support

#	Expected behavioural change	Resulting effect	Key intended beneficiary
A. The large firm has access to finance			
1	The large firms induces additional (non-financial) spillovers for local SMEs, which would not happen anyway	The SMEs benefit from transferred know-how and business practices, which can lay the groundwork for future growth and competitiveness	Local SMEs
2	The large firm invests in a Member State instead of a state outside the EU	Additional value added and demand for jobs in the EU territory	Local job seekers, business partners
B. The large firm (mid-cap) has limited access to finance			
3	The mid-cap is able to implement a project (thanks to the aid) or is able to implement it considerably faster or on larger scale, allowing growth and international competitiveness[88]	The large firm survives, and provides a stable and increasing demand for its suppliers	The large firm itself, business partners, local job seekers

Source: KPMG/Prognos (2016), based on the review of Operational Programmes, the reconstructed Theories of Change, and empirical evidence from the 45 company case studies.

Large enterprise support induced financial and non-financial benefits for SMEs and the regional innovation system in instances where the supported companies operated in research-intensive industries carrying out R&D activities:

Inducing spillovers to local SMEs has been another common objective of policies that support large firms. Knowledge and technology transfer, among other factors, is of key importance for regional development strategies. These interventions assume that the support of large enterprises induces a change in the firm's behaviour, leading it to involve other firms in its operation (to enable technology-based spillovers) or in its research activities (to enable knowledge-based spillovers) to a greater extent. The key policy objective is to achieve something that would not have happened without the incentive effect of the support. As this evaluation shows, in 70% of the cases where spillovers were expected, they were achieved (24 out of 34 cases), particularly through large-scale business investment projects (LE1) and innovation or R&D related projects (LE3 and LE4). Only in the case of LE2 'Technological Upgrading' were these types of spillovers seldom reached (only in 3 out of 13 cases).

Technology-related spillovers were effectively achieved with large-scale business investments ('LE1'), while knowledge-related spillovers worked well with innovation support ('LE3') or investment in R&D capacity ('LE4'). Spillovers in the period 2007-2013 were often not planned in the theories, and even though many projects were successful in this regard, their realisation was influenced more by the firm's character and industry than the programme's targeted intervention.

Spillovers to SMEs have emerged in cases where the companies:

- operated in highly technology-intensive or knowledge-intensive industries;

[88] When a company is in financial difficulty, support can only be given under the 'State aid for rescuing and restructuring firms in difficulty' Community guidelines.

- engaged in novel activities (new products, R&D activities, etc.); and
- were ready to co-operate (due to the impulse of the support) and to share their knowledge with their business partners.

Potential ways to influence the behaviour of large enterprises from the regional policy-maker's perspective included:

- Managing Authorities or Intermediary Bodies contribution to presenting potential research partners (for R&D investments);
- developed R&D infrastructure (for R&D investments); and
- availability of potential local suppliers and business partners (for technology investments).

ERDF support channelled to firms operating in industries with extensive need for suppliers and with a strategy to collaborate with local business partners often resulted in increased sourcing in favour of local SMEs.

This particular result of ERDF support revolved around the projects' ability to induce additional demand for suppliers, and large firms' willingness to use local firms to supply goods and services. These are, however, indirect objectives, which proved difficult to enforce and control for policy makers. It is also problematic to assume that the large firm would not have used the local suppliers in the absence of support. Nevertheless, this evaluation has shown that in the case of support to large-scale business investments (LE1), in 12 out of 14 cases, an increase in local sourcing (both industry and services) was identified, and only in three cases were these changes not caused by the supported project (i.e. the support being only a minor supporting factor). Similarly, with regard to innovation support (LE3), in all six of the investigated company cases, local business activities expanded as a result of the supported projects.

ERDF Support was the most effective in this regard if the supported companies:

- operated in industries with a high need for a large (and long) supplier network (e.g. automotive industry);
- implemented large investment projects, which result in additional production levels (selling more existing or new products); and
- integrated local suppliers into their supply chains.

Quote from the stakeholder seminar:

'The investment in Poland might have happened anyway, without the funds, but definitely with a different scope. Thanks to the applied funding criteria, investments are shaped to be more innovative and more influential on the surroundings. In our case, we observe an effect on local SMEs, as they improve their standards, provide better quality and apply new technologies in order to comply with requirements of large firms. In order to generate benefits from large enterprise projects, you have to involve them in local supply chains.' (Intermediary body representative)

Attracting investments from outside Europe was found particularly challenging but if successful bringing high benefits:

Large enterprise support to FDI from outside Europe was not found in many cases. Where it was found, it was difficult to assess: in three cases, there was no information on alternative location choices, while in one case, EU funds strongly aided an investment by a Brazilian multinational firm in Portugal rather than in the US similar to the investment of a North American firm choosing the EU over Malaysia.

Generally, one can conclude that only the largest firms with global operations are more likely to face such investment decisions. The key condition of successful support was that the location of the investment was flexible in order to make a credible claim that the support could influence the company's decision. Even though this raises many practical challenges (e.g. the way to prove the influence of the support, or to ascertain competition among locations), the benefits of such intervention for both the EU and the local economy can be high. Most prominently, it creates additional value added and jobs within a Member State, without any detrimental economic effects in another. Investment choices of such firms were most typically influenced by:

- assistance from local government and intermediary bodies to find appropriate investment sites;
- the presence of qualified human resources – regional tradition and heritage of the industry in the region;
- high quality local R&D infrastructure (for R&D investments) and developed regional clusters;
- easy access to transport infrastructure; and

Quote from the stakeholder seminar:

'Our company aimed to expand and globalize. At the same time, one of the Portuguese regions made the aeronautics and space sector a priority in their regional development strategy. One of the main reasons why we chose Portugal against other, non-European countries, as the location of our new site was the availability of EU Funds. As a result, around 350 new jobs were created and we spent already EUR 50 Million in the region. As in our industry investment cycles are long, we plan to stay in this region for the long term.' (Firm representative)

- tax incentives.

Large enterprise support helped withstanding the crisis for mid-caps facing financial and business challenges:

Large firms are heterogeneous in size and internationalisation. Some of them are globally competitive and operate in international markets, while others are confined to national or regional markets. As this evaluation has found, only 13% of the supported large

enterprises had more than 1,000 employees, while 43% had fewer than 250. In between, there is a segment of domestic large firms that fall typically only slightly above the threshold of 250 employees, and in certain characteristics and business challenges show similarities with SMEs. Most importantly, these firms may also suffer from the lack of economies of scale (in global terms) or limited access to finance. In these cases, there is an economic rationale to providing financial support to these firms in order to allow them to invest in large projects of strategic relevance, to become more competitive and to grow, along with their whole value chain. Among those, firms that operate in priority industries (for the country or region) may have even more economic reasons for using public money. As we could observe in many cases in the evaluation, additional financial support influenced the timing and the scope of a project. This in turn boosted the results of the projects, and allowed enterprises to be in the right place in the right moment. This is of crucial importance to the global competitiveness of EU companies.

Such large projects would worked best with investments that resemble the Theory of Change regarding large-scale business support ('LE1') and investment in R&D capacity ('LE4'). These theories are more geared towards supporting investments of strategic importance, which are decisive for future growth and international competitiveness.

The interventions were the most effective, in case of firms that:

- were indigenous firms without direct access to external financial resources from other companies within the same group;
- operated in strategically important industries for the country or region;
- employed fewer than 1,000 employees in consolidated figures (or below a similar limit set out by local authorities);
- had strategic importance of their investment for their future growth and competitiveness; and
- were able to provide proof of the decisive role of the support (also in terms of scope and timing).

2. Key determinants enabling sustainability of large enterprise support should be differentiated in support to FDI and support to indigenous large enterprises or subsidiaries already in the region.

The durability of operations of large enterprises that have received support from EU funds is a key specification of the Preamble 61 of the General Regulation in order to reduce the risk of short-term effects and undue advantages. Moreover, delivering continuous benefits to the project beneficiaries (i.e. the supported large enterprises) and the region for an extended period after the financial support has finished is key to sustainability. Based on the evidence found, there are certain conditions under which longer-term sustainability can be promoted. Key determinants of sustainability can be differentiated by support to FDI and support to indigenous large enterprises or those subsidiaries already in the region.

Support to Foreign Direct Investment:

FDI strategies based on incentives for the attraction of large enterprises were most effective when they were based on a careful diagnosis of the 'strategic fit' with the

sectoral structure (industrial relatedness). In other words, the benefits from FDI could be maximised when the investment projects being attracted had the greatest possible match with the regional areas of expertise / specialisation fields that those large enterprises may be able to tap into.

Generally, this requires a very selective approach to FDI promotion in which the limited resources are used to attract those investment projects that can provide the greatest opportunity for local linkages between the foreign enterprise and regional stakeholders (SMEs, universities, cluster initiatives, etc.). Enormous global competition for high-quality FDI requires a proactive policy approach that targets the most appropriate investment projects and offers the most appropriate incentive packages for the individual firms being targeted. This involves a mind-set shift from FDI strategies prioritising quantity towards those focusing on quality. It also highlights the need for a closer connection between FDI and industrial and regional innovation strategies under EU Cohesion Policy – an approach that fits well into the current smart specialisation framework.

Moreover, less developed regions are not very likely to attract significant R&D&I capacities from large enterprises in the future. There are only a few locations within the EU that have the appropriate scientific and technological infrastructure to achieve this. Instead, these less-developed regions could facilitate the upgrading of existing manufacturing and sales operations and foster demand-driven R&D in their region.

Promotion of sequential investment of large enterprises could pull in further activities from these subsidiaries, through which they can simultaneously become more integrated within the global network of the parent company and more embedded within the host location's innovation system. The rationale must be to increase the strategic importance of the subsidiary to its headquarters so that sequential investments are increasingly competence-creating with higher value added. Such an approach is based on the view that large enterprises engage in R&D&I investments abroad either sequentially or through acquisitions, but rarely through Greenfield investments.[89] Hence, targeted incentive schemes that propel the subsidiaries' engagement in local knowledge networks

Quote from the stakeholder seminar:

'In 2007, growing the IT service centre in Hungary was a strategic decision for us. When we started our operations, we focused on low-end services. We had to develop the necessary skills internally, since they were unavailable on the existing market. Without the availability of specific support for trainings, the company would have chosen China or India to provide these services. By now, thanks to EU funding, we have built up the necessary skills and knowledge and we are able to provide mostly high-end services. Today, we cooperate with local universities that offer relevant, technology-related subjects to their students.' (Firm representative)

[89] Compare Cooke, P. and Schwartz, D. (2011): 'Foreign Direct Investment and Regional Innovation', in: Cooke, P. (Eds.) Handbook of Regional Innovation and Growth; Narula, R. and Guimón, J. (2009): 'The Contribution of Multinational Enterprises to the Upgrading of National Innovation Systems in the EU New Member States: Policy Implications', in: Paper submitted to the OECD Global Forum on International Investment, Investment Division, Global Forum VIII on International Investment, Session (Vol. 2).

and become fully embedded are appropriate.

Intermediate bodies, such as economic development agencies, should evaluate the existing stock of foreign subsidiaries in the region to identify individual opportunities for upgrading. Based on these assessments, customised services and incentives can be offered to support the subsidiary management to upgrade activities at their site, e.g. by engaging in (small scale) R&D activities locally with the hope that they will grow over time. Once a subsidiary has built up some R&D capacity, the chances for follow-up investments by the parent are more likely, further strengthening the subsidiary mandate and its ties to the region.

Support to indigenous large enterprises and subsidiaries of foreign large enterprises already in the region:

Support channelled to large enterprises already in the region of project implementation was particularly successful in cases where the companies were part of collaboration networks to become closely embedded in regional innovation systems. Fostering linkages and creating clusters around large enterprises can be an effective strategy when support measures and incentives are implemented intelligently.

Providing subsidies to large-scale investment projects of large enterprises, either indigenous or foreign, with the target of acting as a 'seed' for cluster development, will not automatically lead to substantial linkages and growth of local SMEs. Large enterprises are operating under substantial efficiency pressures and are forced to rationalise their activities. Decisions about local collaborations are often not made at the subsidiary level (in the case of foreign firms) or are made with restraint (in the case of indigenous firms).

Quote from the stakeholder seminar:

'Think of innovation systems and an organic, not linear approach to innovation. Spillovers are not automatic. There is an internal and external perspective to consider. The internal: look at what happens at the enterprise, e.g. can subsidiaries access new knowledge? The external factor: the local context, e.g. what is the level of knowledge and skills in the region? Some companies are capable of influencing the overall environment and to foster local R&D capabilities. Governments can support this dynamic, but a lot depends on the companies' decision.'
(Academic expert)

Incentives for large enterprises to consider local partners could be created by regional policy-makers to foster regional collaborations and the creation of linkages with SMEs. Relevant options could be:

- As has been argued in Chapter 4, oftentimes, local business partners in these regions in the appropriate industry exist, but do not meet the quality and reliability standards of the large enterprise. This leads to adverse effects on the expected wider benefits of large enterprise support in the sense that the large enterprise either imports the necessary inputs from elsewhere or produces them, when possible, in-house. Local SMEs will then not profit from the externalities derived from the large enterprises' activity. To mitigate this, policy-makers could

invest more targeted in supplier upgrading and offer comprehensive services to assist local firms in enhancing their skills.

- As it takes considerable efforts for 'outsiders' to become familiar with new institutions and local firms, in order to become 'club members' of the innovation system, systematic support by regional authorities could prove very important.[90] This should not be limited to promoting linkages between large enterprises and local SMEs. Embedding approaches could also include linkages with local universities and public R&D centres. Furthermore, they could offer extended assistance to large enterprises, in particular foreign ones, in recruiting local researchers (strengthening retention of both large enterprises and talent) and attracting R&D staff and engineers from abroad.

Finally, evidence was found that fostering the conditions that enable existing large enterprises and subsidiaries to penetrate into higher value-adding activities (in particular into R&D) are of high importance. To support this process, a demand-oriented upgrading of human capital endowments and public R&D was observed as promising, e.g. by means of the following approaches:

- Upgrading corporate value chains in a region requires improving human capital in line with demand (incl. R&D staff, technicians, etc.). Tertiary education institutions must be able to generate sufficient numbers of graduates at different levels, and should offer specialised programmes for the key industries and specialisations for which demand exists.

- Development of customised training for large enterprises in local universities and polytechnics (e.g. on-the-job training programmes) in order to encourage collaborations. Particularly for less developed areas, a fruitful policy could be to offer FDI subsidies tied in to the foreign investor providing some level of specialised training to potential employees (which can then be co-financed by public funds).

- Building research capacity in the public sector tied to the key specialisation areas of the region. Two types of R&D capacity should be considered: firstly, investments into supply-side R&D (i.e. longer-term research projects) should be undertaken to generate scientific outputs (patents, publications, etc.), which can act as an important source of knowledge inputs for larger R&D establishments of large domestic and foreign firms. Secondly, public R&D centres should provide dedicated services to large enterprises (testing, technical services and infrastructure, consulting) and actively work in the identified specialisation areas, clusters or sectoral concentrations with the primary purpose of meeting the needs of a sector or group of firms.

A particular concern revolves around the issue of multiple support, be it in one funding period or covering an even longer time span. The evaluation has shown that large enterprises in the 2007-2013 period implemented an average of 1.6 projects each with EU funding. Some firms were even supported for 4-5 projects. Considering the varying effectiveness of supported large enterprise projects, multiple support cannot be unconditional, but must be part of a longer-term strategy and lead towards longer-term

[90]For instance, the Irish government was one of the first to set up the so-called 'National Linkage Programme' in the early 1980s to foster linkages between inward investors and the domestic industry. Also, of the new EU Member States, the Czech Republic set up a 'Supplier Development Programme' with the objective of intensifying and strengthening contacts between domestic suppliers and multinational manufacturers already operating in the Czech Republic or planning to invest there.

structural effects, e.g. in the case of additional large-scale business investments ('LE1'), and / or the establishment of competence-creating units alongside closer regional ties ('LE3' or 'LE4'). Multiple support for pure technological upgrading or similar support directed strictly at internal capacity development within the large enterprise should not be eligible from EU funds, as large enterprises have sufficient resources to finance these types of projects.

When assessing the potential sustainability of projects, three further key determinants should receive particular attention. While there is no evidence that supporting certain industries would increase or decrease the chance of sustainable impacts, some sectoral characteristics proved to have an influence on the expected sustainability of supported projects. Based on the company case studies, these were:

- the length of the investment life cycle;
- the capital needs of the investments (sunk costs); and
- the stability of market conditions.

The longer the investment life cycle is and the more capital the investment needs, the more sustainable the project is likely to be. In markets with longer-term contracts and stable demand (e.g. aerospace), external shocks that could hamper the sustainability of public investments are also less likely. Markets with fierce global competition and unstable markets (e.g. PV industry) are much riskier. For enterprise policies, this means that, particularly in the case of large enterprises, where there are only a few economic reasons for subsidies in steady environments, a careful diagnosis of potential 'market sustainability' including the above-mentioned criteria is needed. While such an assessment would not provide a guarantee of sustainable project outcomes, it would reduce uncertainty for public financial support.

5.3. Discussion points

This theory-based impact evaluation uses a systematic qualitative testing approach with transparent assumptions and effect categories that can help identify relevant and partially hidden direct effects and indirect benefits of the support to large enterprises. As the methodology relied heavily on semi-structured interviews with corporate officials and Managing Authorities and Intermediate Bodies, **triangulation of evidence and critical reflection on the findings**, including input from independent academic experts, was important for the validity of this evaluation. The evaluation has shown that the 'power of stories' and a comprehensive, comparative case study approach to evaluating complex interventions in Cohesion Policy can contribute effectively to making evaluative judgments.

At the same time, one must be aware of the **risk of biases** due to the empirical basis of the evaluation, and the fact that a formal generalisation of the results from the company case studies can only be made with care and the significance of the effects (especially on regional economy) is extremely difficult to judge.

In the years to come, focused **counterfactual impact evaluations** will be needed to assess the significance of effects resulting from large enterprise support in more detail.

However, evaluation strategies should take into account the fact that counterfactual impact evaluations are focused on microeconomic (company level) effects and, as we described earlier, the fact that the rationale for supporting large companies often goes beyond the particular company (spillovers to SMEs, etc.). Evaluations should attempt to capture the broader impacts and the so-called **multiplier effects**, and also place emphasis on the **three following issues**:

- Supported projects are surprisingly disparate in terms of **size**. Only 13% of supported large enterprises had more than 1000 employees at the project site, while 43% had less than 250 (though in the latter case this was often because they were part of a larger company or group). In other words, only a minority of projects concerned large plants of large enterprises – the two most common categories are small plants of larger groups and mid-caps (companies with between 250-3,000 employees). These findings point towards the need for a more differentiated size categorisation (including a category for mid-caps) to allow for more differentiated funding strategies, alongside more concrete and binding definitions of data collection in the case of supported large enterprises.

- In order to make a **comparative judgement of the effectiveness** of large enterprise support, analogous information regarding SME support should be collected. This should include comparable information on the full scope of causality and more detailed insights on project quality and the efficiency of support.

- Finally, as put forward by a number of public officials, particularly in Austria, Germany and Hungary, the **interruption rate** of large enterprise projects was much lower than that of SMEs. This was often seen to be due to more stable enterprise structures of large firms, and the reason behind the lower project cancellation rates was found in higher managerial skills of large firms and in their more extensive strategic planning. As this evaluation could not systematically analyse cancellation rates in order to verify this observation, future studies (also from a comparative perspective on large enterprises and SMEs) could investigate this more intensively.

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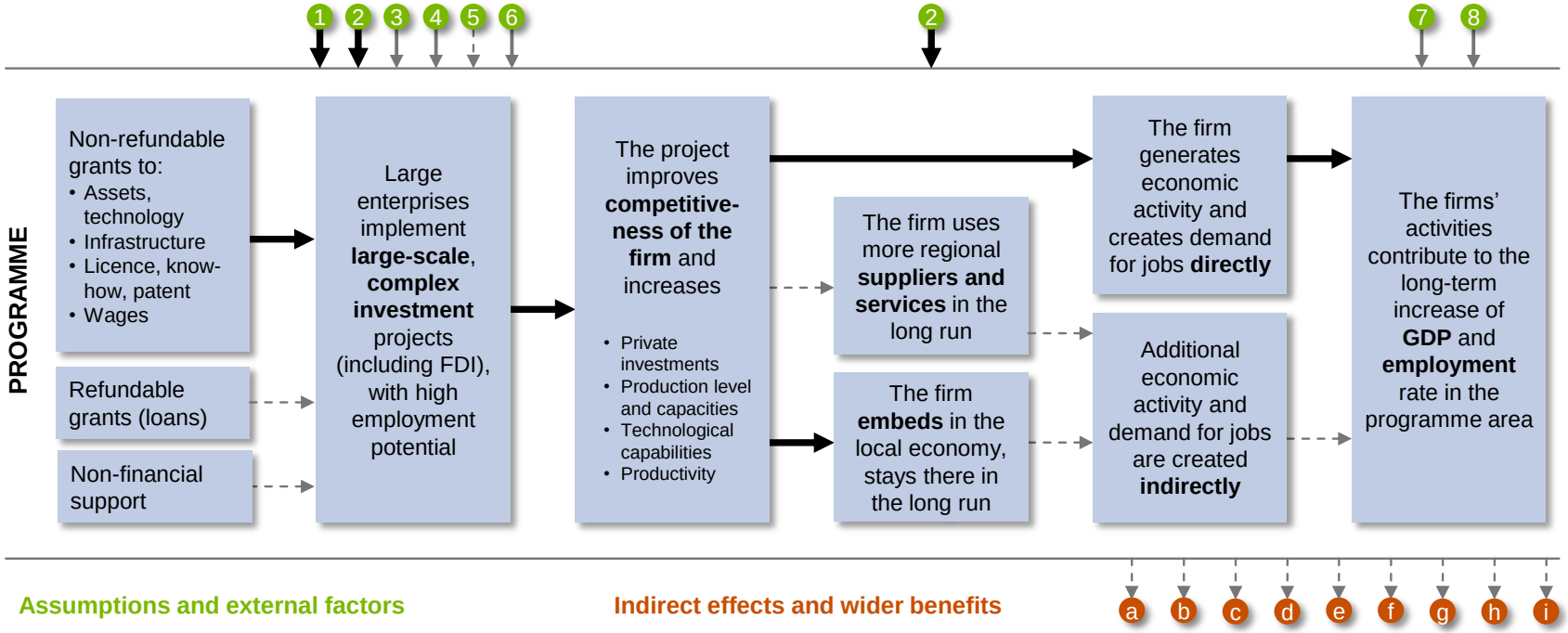
7. APPENDIX: THE FOUR GENERALISED THEORIES OF CHANGE

7.1. Theory of Change 'LE1': Large-scale business investment



Assumptions and external factors

1. Tax incentives are competitive (internationally)
2. Company strategy supports long-term stay in the country
3. Developed basic infrastructure (motorways, airport access, ICT infrastructure)
4. Business / industry „heritage" is present in the area
5. Supportive local government (permits, procedures)
6. Labour market supplies labour in required number and qualification levels
7. Investment is large enough to influence the labour market
8. General economic conditions enable growth

Indirect effects and wider benefits

a. Increased demand for „quality" jobs in the area
b. Attracting other companies/investors in the region
c. Improved local transportation and ICT infrastructure
d. Improved social infrastructure (education, culture etc.)
e. Spillover of improved business practices, skills, knowledge, R&D and efficient technologies (local enterprises)
f. Spread of improved working culture (working conditions, wage levels, timely wages, values, stability etc.)
g. Greater workforce mobility
h. Crowding-out of SMEs from labour market (skilled labour)
i. Distort market equilibrium (effect on SMEs & non-supported)

Legend

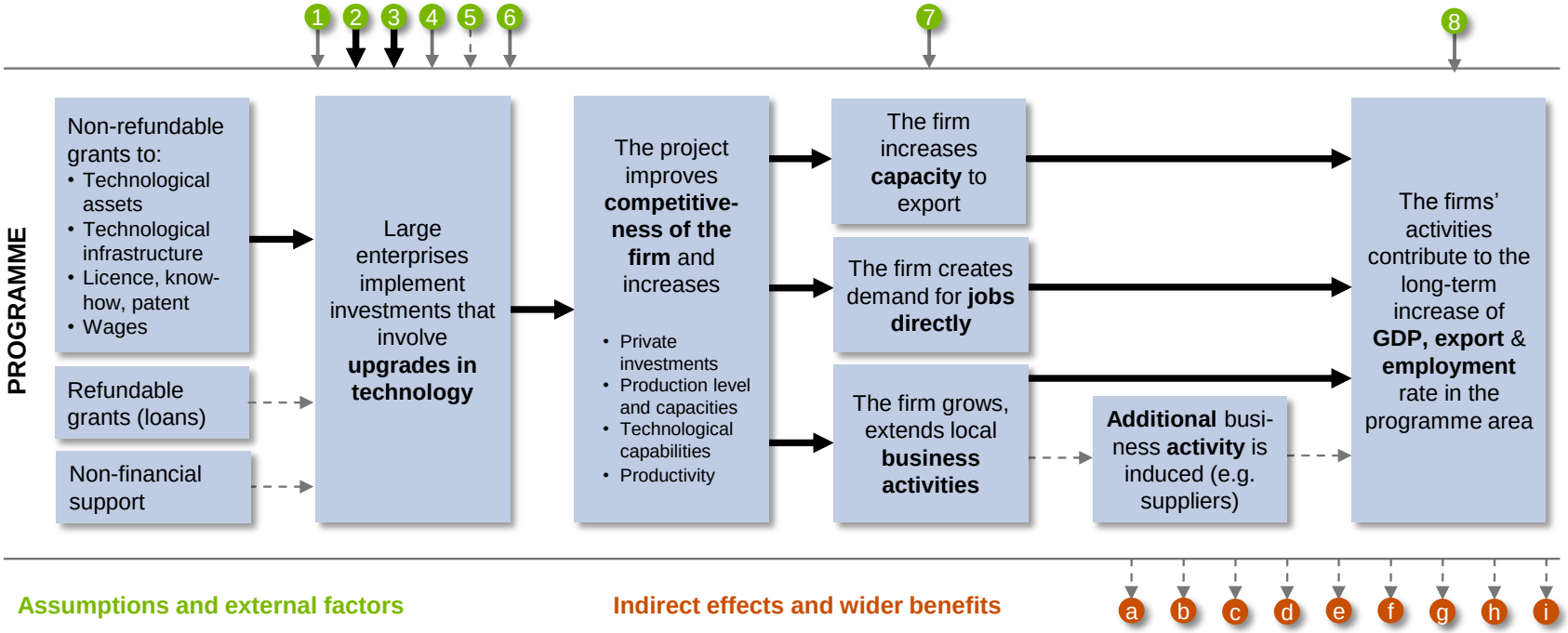
CAUSE: *A* is one of the main, fundamental causes of *B*) ('**must have**')

PRE-CONDITION: A is a necessary pre-condition of B, but not the main cause of that (lacking of which prevents B)

SUPPORTING FACTOR: A is contributing to B, but is neither a cause nor a pre-condition of that ('**nice to have'**)

Source: KPMG/Prognos (2016).

7.2. Theory of Change 'LE2': Technological upgrading



Assumptions and external factors

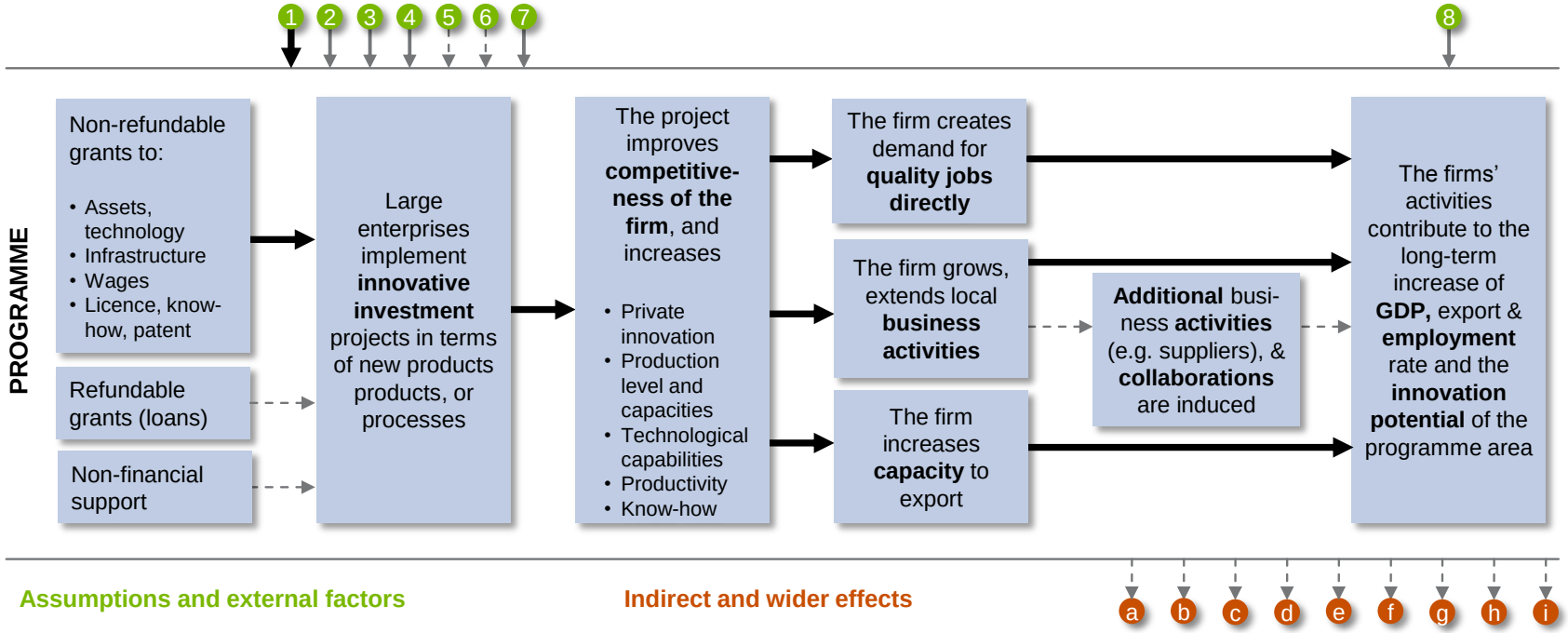
1. Tax policy is favourable
2. Company strategy foresees growth and export
3. Absorptive capacity in enterprise stock for technological upgrading
4. Developed basic infrastructure (motorways, airport access, ICT infrastructure)
5. Supportive local government (permits, procedures)
6. Labour market supplies labour in required number and qualification levels
7. Technological improvement is not contrary to employment growth
8. General economic conditions enable growth and export

Indirect effects and wider benefits

a. Increased demand for „quality" jobs in the area
b. Attracting other companies/investors in the region
c. Improved local transportation and ICT infrastructure
d. Improved social infrastructure (education, culture etc.)
e. Spillover of improved business practices, skills, knowledge, R&D and efficient technologies (local enterprises)
f. Spread of improved working culture (working conditions, wage levels, timely wages, values, stability etc.)
g. Greater workforce mobility
h. Crowding-out of SMEs from labour market (skilled labour)
i. Distort market equilibrium (effect on SMEs & non-supported)

Source: KPMG/Prognos (2016).

7.3. Theory of Change 'LE3': Innovation support



Assumptions and external factors

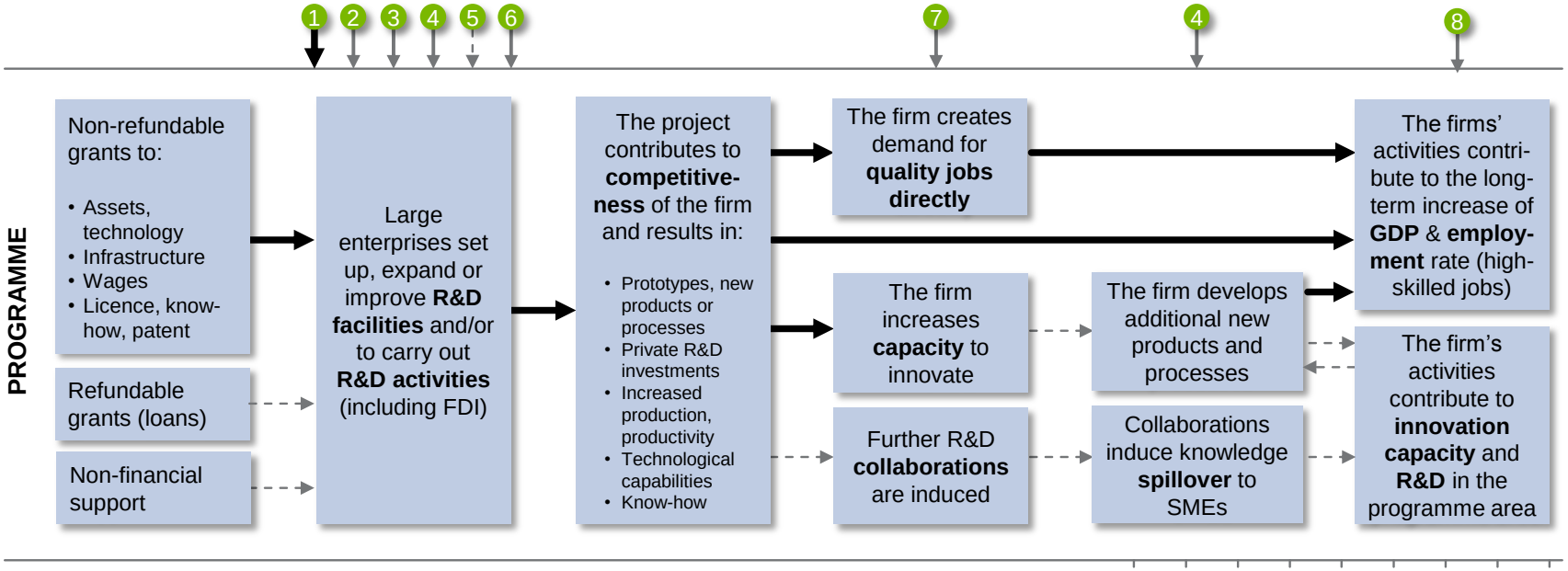
1. Company strategy foresees innovation, growth and export
2. Developed basic infrastructure (motorways, airport access, ICT infrastructure)
3. Developed regional innovation system (absorptive capacity) and R&D infrastructure (etc. research centres)
4. Availability of R&D partners for collaboration
5. Business culture is supportive of collaborations
6. Labour market supplies labour in required number and qualification levels
7. Innovation is not contrary to employment growth
8. General economic conditions enable growth

Indirect and wider effects

a. Developed human capital base in the area
b. Attracting other companies/R&D in the region
c. Improved local R&D, transportation, ICT infrastructure
d. Improved social infrastructure (education, culture etc.)
e. Spillover of improved business practices, skills, knowledge, R&D and efficient technologies (local enterprises)
f. Spread of improved working culture (working conditions, wage levels, timely wages, values, stability etc.)
g. Greater workforce mobility („quality" jobs)
h. Crowding-out of SMEs from labour market (skilled labour)
i. Distort market equilibrium (effect on SMEs & non-supported)

Source: KPMG/Prognos (2016).

7.4. Theory of Change 'LE4': Investment in R&D capacity



Assumptions and external factors

1. Company strategy foresees innovation, growth and export
2. Developed basic infrastructure (motorways, airport access, ICT infrastructure)
3. Developed regional innovation system (absorptive capacity) and R&D infrastructure (etc. research centres)
4. Availability of R&D partners for collaboration
5. Business culture is supportive of collaborations
6. Labour market supplies labour in required number and qualification levels
7. Innovation is not contrary to employment growth
8. General economic conditions enable growth and export

Indirect effects and wider benefits

a. Developed human capital base in the area
b. Attracting other companies / R&D in the region
c. Improved local R&D, transportation, ICT infrastructure
d. Improved social infrastructure (education, culture etc.)
e. Spillover of improved business practices, skills, knowledge, R&D and efficient technologies (local enterprises)
f. Spread of improved working culture (working conditions, wage levels, timely wages, values, stability etc.)
g. Greater workforce mobility („quality" jobs)
h. Crowding-out of SMEs from labour market (skilled labour)
i. Distort market equilibrium (effect on SMEs & non-supported)

Source: KPMG/Prognos (2016).

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