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WHAT ARE COUNTERFACTUAL IMPACT EVALUATIONS TEACHING US ABOUT ENTERPRISE AND INNOVATION SUPPORT?

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ABSTRACT

Since 2008, the Evaluation Unit of the European Commission's Directorate-General (DG) for Regional and Urban Policy has been promoting counterfactual impact evaluation, ie the use of comparison/control groups.

The studies in the current paper enable us to examine over EUR 40 billion given to 235 000 firms under 12 support schemes in seven different EU Member States. Effects are considered in terms of investment, productivity, employment and innovation.

While research continues, a goal of the current paper is to summarise findings in time to inform preparation of the 2014-20 programmes – EUR 80 billion is being investing in enterprise and innovation support in the 2007-13 period and it seems likely that such support will figure prominently in 2014-20. First lessons include:

- Financial support to small and medium-sized enterprises (SMEs) in lagging regions can be effective and seems to counter some kind of capital constraint – in the median scheme examined, every euro of public support increased investment by EUR 1.30 and the jobs created are of good quality and durable. There are hints that financial support may be particularly effective since the economic crisis.
- There may, however, be room to make the policy more cost-effective – in some schemes support was as effective (or nearly as effective) when the grant was reduced or substituted by a loan.
- Moreover, there are early signs that the most effective support includes non-financial elements such as business advice, networking and measures to promote innovation.
- Finally, the positive results apply to SMEs only. Direct financial support seems to do little to change the investment behaviour of large firms and there is no evidence so far for wider benefits. Large firms may, however, have a role to play in innovation networks.

An additional goal of publishing a review at this (relatively early) stage is as a challenge to others to bring their own rigorous evidence to the debate. Further research is needed: first, to confirm whether the current results extend to a broader range of regional contexts and policy instruments; and secondly, to gain a better understanding of the mechanisms by which impacts occur. DG Regional and Urban Policy is actively working with Managing Authorities to promote impact evaluations, and the proposed new regulations for the 2014-20 period provide for beneficiary data to be published in a form usable by academics and researchers.

1. INTRODUCTION

Over the 2007-13 period, European regional and urban policy is investing some EUR 80 billion in support to enterprise and innovation, nearly a quarter of the EUR 347 billion allocated to regional and cohesion policy. This support takes the forms of grants, loans, venture capital, business advice, networking, innovation consortia, etc. As preparations for the 2014-20 period continues, it seems likely that enterprise and innovation support will figure at least as prominently as in the past.

It is therefore essential to estimate the impact of effectiveness of such support using state-of-the-art evaluation techniques. Since 2008, DG Regional and Urban Policy has had an ongoing programme of impact evaluation using 'counterfactual impact evaluation (see box). This evaluation by comparison/control groups, though technically challenging in the regional policy context, adds scientific credibility and rigour to estimates of impact.

As we repeat counterfactual evaluations and start to combine them with more observational forms of evaluation, a picture is gradually emerging of the impact and usefulness of various forms of enterprise and innovation support. Though this picture is still far from complete, there are already findings that should inform preparations of the coming round of programmes.

The studies in the current paper already enable us to directly examine over EUR 40 billion of public support (grants or net grant equivalent) given to some 235 000 firms under 12 support schemes¹ in seven different EU Member States. The purpose of the paper is therefore to set out the findings so far in an accessible form. Further technical details (and there are many) can be found in the papers listed in annex, as well as on the impact evaluation website of DG Regional and Urban Policy (see box).

The findings divide roughly into two halves, reviewing:

1. the **average** impact of support to enterprise and innovation – what can (and cannot) be expected from such support?
The paper reviews evidence on job creation, investment, production, productivity and innovation; and
2. the **relative** impact of different kinds of support (e.g. grants vs. loans, support to SMEs vs. support to large enterprises).
This is particularly significant since the choice of instrument (and policy target) is often the most pressing policy question.

Some of the evaluations do not cover the data necessary to evaluate all of the above questions. This can be because of data availability or policy relevance (for example, evaluations of most of the innovation schemes track innovation indicators, but not employment – and most of the other schemes do not track impacts on innovation).

All of the evaluations are tabulated at the end of the report, giving key details of the study and scheme(s) covered.

1 Most of the studies consider support in various timeframes falling somewhere between 2000 and 2010 (five to seven year datasets are typical), but two studies consider much longer term impacts and therefore use datasets stretching over 1986-2004 and 1995-2008 respectively.

DG Regional and Urban Policy and counterfactual impact evaluation

Counterfactual impact evaluations borrow a technique – control and comparison groups – from the social and medical sciences. These are particularly useful where a given policy instrument is applied to a large number of units – in regional policy this means enterprise and innovation support. However, before 2008 such techniques were unknown in regional policy and implementing them has been a significant technical challenge.

Two key problems arise: (1) finding a control group where the units did not receive support but are similar enough to the supported units for the comparison to be valid; (2) getting good quality data on outcomes in a way which can be linked to the data on support. Outcome data is a particular problem for measures that support less measurable goals, e.g. innovation.

Since 2008, the Evaluation Unit of DG Regional and Urban Policy has launched five such evaluations and encouraged several more in Member States. Moreover, we have also been actively building capacity in this technique. For example, we have run or helped run three summer schools (150 participants in total) with a particular focus on training Managing Authorities and Member State evaluators.

We have also been working to improve the data available in this area. This can be seen in bilateral agreements with national statistical offices, such as the ground-breaking agreement signed with the Italian statistical office, which made the Bondonio & Martini study (2012) possible. However, we are also seeking to put better data into the public domain: we asked the researchers from KU Leuven (2011) to make recommendations on the publication of regional policy beneficiary data in a ‘counterfactual friendly’ form, usable by academics and researchers. Their five recommendations have all been incorporated into the future Structural Fund regulations on data publication.

DG Regional and Urban Policy is also working on other rigorous impact evaluation methods. This includes techniques such as theory-based impact evaluation, which traces the underlying rationale or theory of intervention (‘causal chain’) to explain why an intervention works (or does not work). It also includes ex post cost benefit analysis, which is particularly useful for assessing the impact of large infrastructure projects.

Further training – on counterfactuals as well as other rigorous impact evaluation techniques – is in the pipeline. DG Regional and Urban Policy’s Evaluation Unit has active collaboration with several Member States and is open to developing this with new partners. For further information, see our impact evaluation centre website or contact our Evaluation Unit directly.

Impact evaluation centre: http://ec.europa.eu/regional_policy/information/evaluations/guidance_en.cfm#2

To contact DG Regional and Urban Policy, Evaluation Unit: regio-eval@ec.europa.eu

2. CLEAR IMPACTS ON INVESTMENT – AND IN SOME CASES A LEVERAGE EFFECT ⁽²⁾

The impact of grants and other financial support on investment cannot be taken for granted. A sceptic could say that enterprises take taxpayers' money and do what they would have done anyway – in this extreme scenario there would be no impact on investment. Moreover, surveys show that some of the beneficiary entrepreneurs themselves hold this sceptical position. Bondonio & Martini (2012) for example, found that for the national grant scheme (the so-called 'Law 488'), 36% of managers thought they would have undertaken the investment regardless (though this figure falls to just 13% for the other scheme they examined, the regional support scheme in Piemonte).

It is encouraging therefore to find that investment impacts can be readily demonstrated (see table 1). A distinction can be made according to whether the impact is greater or smaller than the grant (or grant equivalent):

- Where the investment is smaller than the grant, it is clear that there is a degree of deadweight – the average firm reduces their own investment, replacing it with public money. However, in only one case (Law 488 in Italy) does the ratio fall significantly below 1 – and Law 488 has since been abolished amid various concerns about effectiveness.
- In the majority of schemes, the increased investment is greater than the grant. It can therefore be said that the public investment has 'levered in' private money, multiplying the total impact of public investment. The effect is seldom dramatic (a median of 30 euro cents in addition to each euro of support), but it is useful.

The factors underlying impacts will be dealt with later, but it should be noted here that the schemes that scored higher on leverage are more likely to be giving out a smaller grant (or smaller grant equivalent via financial engineering) and to have more demanding eligibility criteria.

It may also be significant that the highest leverage was for the scheme observed during the period 2007-10, i.e. the financial crisis. Higher effectiveness of capital support during a period of capital scarcity is intuitively plausible, but at this stage it is more an avenue for further research than a hard finding.

TABLE 1 – Most support schemes have a significant impact on investment

Scheme	Study	Average public investment	Average increase in total investment	Leverage ^(*)
Innovation support 2008-2010, Germany	Czarnitzki et al (2011)	EUR 51 000	EUR 87 000	1.7
Investment support, eastern Germany	GEFRA and IAB (2010)	EUR 8 000/employee	EUR 11 000 – EUR 12 000/employee	1.4-1.5
SME support in Piemonte, Italy	Bondonio & Martini (2012)	Various, depending on grant type	Various	1.3
Innovation support 2000-2006, Thuringia, Germany	GEFRA and IAB (2010)	EUR 8 000/employee	EUR 7 500 – EUR 8 000/employee	0.9-1
SME grants in Poland	Trzciński (2011)	PLN 532 000 (c. EUR 133 000)	PLN 422 000 (c. EUR 106 000)	0.8
Law 488, Italy	Bondonio & Martini (2012)	Various, depending on size class	Various	0.5-0.7

(*) For explanation of leverage, see box. Leverage estimates are not always comparable across studies because of different methods and contexts. A high figure does not necessarily mean a better scheme – the 1.7 figure for innovation support in Germany covers 2007-10, a period when capital was (presumably) particularly welcome. The Law 488 figures were discarded in calculating the median since problems became apparent during implementation and the programme was abolished – all other programmes were considered successful.

2 The term leverage has several possible definitions – see box for clarification.

What is leverage?

Leverage at its simplest is 'investment induced'. A given source of money (e.g. European Regional Development Fund, ERDF) is deemed to have brought other money into play (either public co-financing from a Member State/region or private sector money). The policy significance is that the effect of public money is being multiplied.

Leverage is usually seen as a ratio:

$$\frac{\text{Total money (i.e. the original 'lever' money, plus the money induced)}}{\text{Original lever money}}$$

However, this simple ratio leaves open different options for both numerator and denominator, leading to at least four possible definitions of leverage that I have seen used in practice. I am going to argue (using the real life example in figure 1) that only one definition represents 'investment induced' in the causal sense.

A simple definition is to consider the EUR 2 000 of EU money (in the shape of the ERDF) as the lever, with national co-financing (EUR 6 000) and the private investment (EUR 12 000) as the investment induced. This gives a leverage of $(\text{EUR } 2\,000 + \text{EUR } 6\,000 + \text{EUR } 12\,000)/\text{EUR } 2\,000 = 10$.

This is clearly not leverage in a causal sense, most obviously because the ERDF is not doing all of the work. First, it is unreasonable to expect that the German authorities would not have done anything for eastern Germany in the absence of EU support⁽³⁾. Secondly, it is therefore odd to assume that the private sector investment can be traced exclusively to the ERDF fraction of public support.

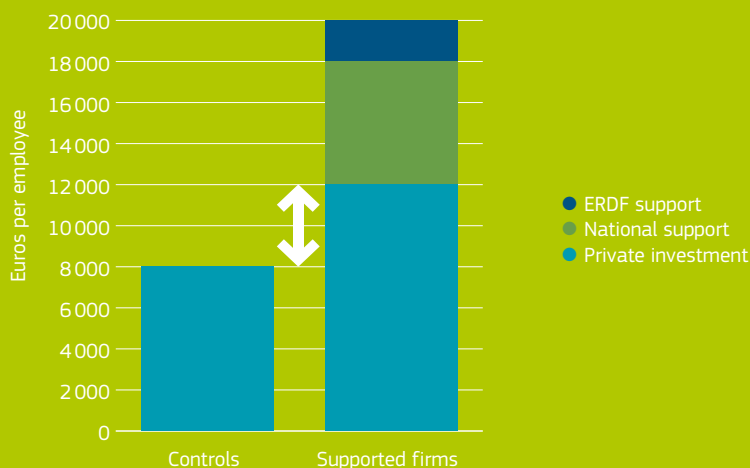
The most reasonable assumption is to assume that when two forms of public money – ERDF and national – are joined in one grant, they both contribute to the effect in proportion to their size. The lever is therefore total public money, i.e. EUR 2 000 plus EUR 6 000 equals EUR 8 000 – this is the denominator for the leverage equation above.

This leaves the private sector investment as the 'investment induced'. But how can we measure it? The formal method of calculation does not take account of the control group and looks only at the supported firms. Simply divide total investment (public plus private) by the value of public support. In the case below, this method leads to a leverage of $(\text{EUR } 12\,000 + \text{EUR } 8\,000)/\text{EUR } 8\,000$, i.e. 2.5.

However, as can be seen from the counterfactual, the formal method overstates the casual impact: some of the private investment would have happened regardless. The best causal definition of leverage is 'total additional investment' divided by 'total public grant' (or grant equivalent). Here we can see the value of having a counterfactual, enabling us to estimate additional private investment, represented by the arrow in the diagram and amounting to some EUR 4 000.

The new calculation is $(\text{EUR } 8\,000 + \text{EUR } 4\,000)/\text{EUR } 8\,000$ and the leverage is 1.5. For every EUR 1 of public money, approximately 50 cents of private money have been 'levered in'. The effect may be more modest in this calculation, but it is the closest to a causal definition and still represents an important impact of support.

Figure 1: Enterprise and modernisation grants in eastern Germany – GEFRA (2010)



³ In fact, the additionality criteria attached to cohesion policy are a tacit admission that national support levels are likely to be similar in the absence of ERDF.

3. SIGNIFICANT PRODUCTION AND EMPLOYMENT GAINS, BUT PRODUCTIVITY GAINS ARE MODEST OR ZERO IN MOST CASES

Successfully increasing investment is only the first step – it is also important to estimate impacts in terms of increased production and productivity. Here the news is more mixed – there are clear (and sometimes quite dramatic) increases in production, but productivity either stays the same or increases slightly (see table 2).

In other words, the main effect is usually that enterprises increase the scale of their operations – capital, employment and output grow in a roughly proportional fashion (so-called ‘capital broadening’). However efficiency gains and ‘capital deepening’ are generally modest. Interestingly, the principle exception (the Danish innovation consortia) shows the opposite effect: hardly any employment increases, but significant long-term productivity gains.

Whether to focus on broadening or deepening is an important policy choice. Capital broadening serves a useful purpose in economies where there is slack, e.g. to increase employment and reduce unemployment. In fact, in a time of economic crisis this may be the most desirable impact. However, capital deepening is crucial for long-term catch up by lagging regions – which tends to be driven by increased productivity more than by broadening production and employment.

TABLE 2 – Enterprise support reliably increases production, but the effect on productivity is usually small

Scheme	Study	Broadening?	Deepening?
Law 488 investment grant, Italy	Bondonio & Martini (2012)	Production rises in line with employment	No change in productivity
SME support in Piemonte, Italy	Bondonio & Martini (2012)	Production rises at least in line with employment	Small increase in productivity for loans, not for grants
Enterprise support in Northern Ireland	Hart and Bonner (2011)	Small, but statistically significant	Small, but statistically significant, increase
SME grants in Poland	Trzciński (2011)	Production rises in line with employment	No greater increase in productivity than in the controls
Regional Selective Assistance (RSA), an investment grant in the UK	Criscuolo (2012)	Production rises by more than employment	Increase in productivity is statistically insignificant
Danish Innovation Consortium Scheme	Centre for Economic and Business Research, Denmark (2010)	Small and statistically insignificant increase in employment	Significant: profitability of assisted firms grew 12% more than in controls in the 10-year period following assistance

A positive note is that no study found that productivity decreased after support – in other words, the evidence shows that job quality has not diminished. However, there is a warning from Criscuolo et al (2012): in this case (RSA investment grants in the UK) the median treated firm started with productivity 8% below average. Since supported firms grew but did not gain productivity, there is a risk that grants could be supporting ‘lame ducks’ – enterprises that are unsustainable in the long term.

The main effect of the classic grant schemes examined is therefore to make enterprises larger, rather than more efficient. Conversely, the three non-grant instruments all show some signs of promoting greater productivity:

- The loan instruments in Piemonte and the support package (including advice) in Northern Ireland both show modest gains in productivity, though firms clearly tend to continue at the same technological level (more on non-grant instruments below).
- The innovation consortia in Denmark show productivity growth sustained over a 10-year period, suggesting innovation and/or technical improvements.

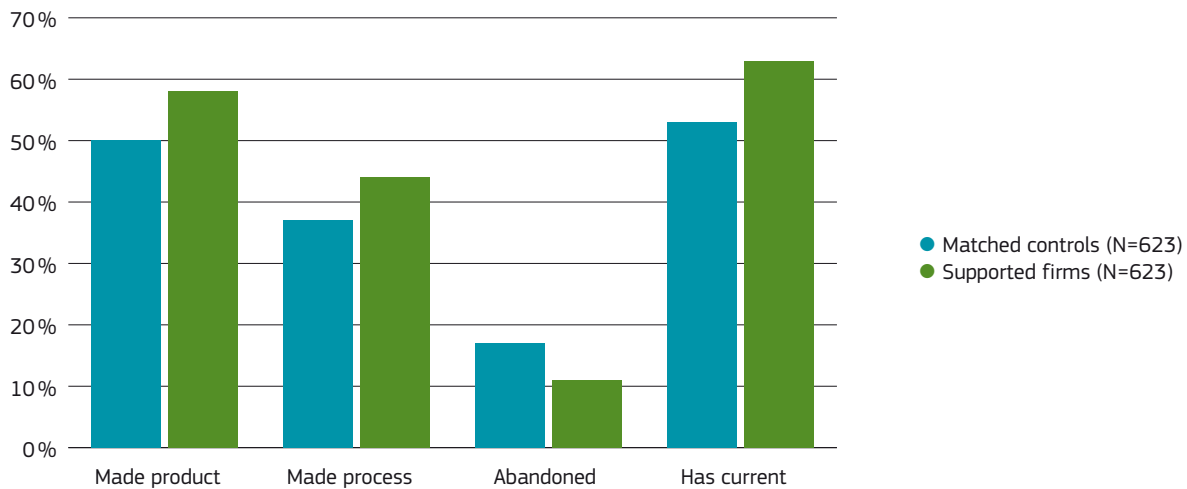
The question therefore arises: can support instruments be used to promote innovation?

4. INNOVATION: PROMISING SIGNS, WHERE SUPPORT TARGETS THIS

Innovation and technical progress are often difficult to track. A landmark study for DG Regional and Urban Policy (Czarnitzki et al, 2011) had a unique opportunity to link data from the Community Innovation Survey to beneficiaries of R&D grants in Germany (see figure 2).

Supported enterprises were much more likely than matched control firms to carry out both product and process innovation and to have an ongoing innovation project. Conversely, they were less likely to have abandoned an innovation project.

Figure 2: R&D grants in Germany impacted a wide range of indicators from the Community Innovation Survey



The same study suggested that support had been crucial for maintaining R&D in the Czech Republic during the financial crisis (the study examined the impact of support in 2008 and 2009). Patent applications fell by only 14% in supported enterprises, but 63% in non-supported enterprises in similar sectors. This is obviously a very crude indication, but the magnitude and statistical significance of the effect is a hopeful sign.

An obvious question concerns the bottom line: does innovation support have long-term impacts? CEBR (2010) considered this for innovation consortia, discovering that profitability increased 12% more than in controls over the 10-year period following the intervention, meaning greater profits of some EUR 260 000 in total over the period.

However, innovation support is not a panacea. GEFRA (2010) found that the investment impact of R&D grants was less than that for modernisation grants (leverage of 0.9-1.0 as opposed to 1.4-1.5 – see table in previous section). In this case it would be important to be sure that the innovation benefits were at least equal to the loss in leverage.

Moreover, because of the less tangible nature of innovation projects, these are more challenging for the public sector to score and manage. A study of subsidies to R&D in Italy found no additional impact – the average enterprise took public money, but did not change their behaviour from what it would have been without support⁽⁴⁾.

4 de Blasio, Fantino & Pellegrini (2009), *Evaluating the impact of innovation incentives: evidence from an unexpected shortage of funds*, Banca d'Italia, mimeo.

5. SUBSTANTIAL CREATION OF GOOD QUALITY, LONG-TERM JOBS (BUT FAR FEWER THAN SUGGESTED BY MONITORING DATA)

For estimations of jobs created, programmers have often relied on monitoring data – e.g. the firm reports that a given investment has resulted in 12 extra workers, the Managing Authority verifies this and registers 12 jobs created. There are obvious limitations to such figures, and the evaluation literature refers to them as ‘gross jobs’.

TABLE 3: Gross jobs do not equal impacts

Scheme (1)	Study	Jobs supported (i.e. gross jobs from monitoring data)	Jobs created (from counterfactual evaluation)
Investment support, eastern Germany	GEFRA and IAB (2010)	107 000 ‘created’, plus 439 000 ‘safeguarded’	27 000
Law 488 (investment support), Italy	Bondonio & Martini (2012)	82 000 ‘created’	12 000
SME investment grants, Poland	Trzciński (2011)	25 000 ‘created’	10 500

Monitoring data reflect total jobs **supported**, but clearly overstate (by a median factor of four in the examples above) the number of additional jobs or jobs **created**. Returning to the simple example, this means that, while the firm may have taken on 12 extra workers for the co-funded investment, it would have taken on nine even without the support – only three were additional and can be attributed to funding.

This is not necessarily a policy problem. Even with public support, the enterprise still provides most of the investment money for each individual project, so it does not seem unreasonable that a majority of the jobs would be created without public money. But in reporting gross jobs and monitoring data it should be borne in mind that:

- gross jobs are a useful tool for measuring progress and project activity, not an accurate guide to impacts; and
- jobs ‘safeguarded’ in particular seem to bear no relationship to impact⁽⁵⁾.

The problems with gross jobs and monitoring data are not new to evaluators, who have long preferred ‘net jobs’. This involves adjusting the monitoring data using beneficiary surveys – a sample of firms are interviewed to find out to what extent they would have carried out the investment without support. Methods vary, but typically this ‘coefficient of deadweight’ is then applied to all firms receiving the support.

Unfortunately, even such net jobs may not be a reliable guide to actual impacts. Bondonio & Martini (2012) conducted just such a beneficiary survey and calculated net jobs on this basis. The midpoint estimate was 36 000 net jobs created – more realistic than the 82 000 derived from monitoring data, but still a lot more than the 12 000 estimated more rigorously from the counterfactual evaluation.

An obvious question concerns job quality – programme managers will see little point in creating a large number of low quality jobs or jobs that are not ‘future proof’. There is more on this below, but:

- Bondonio & Martini (2012) assessed job quality using productivity and payroll costs as a proxy. Encouragingly, it found that in most cases the quality was similar to average jobs in the enterprises concerned. And, in the case of the loans to SMEs (the best performing instrument in their study), the quality is actually slightly higher than average; and
- Trzciński (2011) found using payroll costs that jobs created in SMEs received similar pay rises to those in the control group – and that jobs were maintained 3-4 years after support (i.e. the latest data available).

A final point of interest is the impact of these jobs on the local labour market – are workers being added to the labour force, or is one firm growing at the expense of another (displacement) or causing ‘crowding out’ at the level of the regional labour market? Criscuolo et al (2012) looked at this issue⁽⁶⁾, finding little evidence of displacement or crowding out at the regional level – the increased employment resulted in an almost one-for-one drop in long-term regional unemployment.

5 In fact, DG Regional and Urban Policy no longer recommends the use of jobs safeguarded as an indicator. See DG Regional Policy (2006), *Indicative guidelines on evaluation methods: monitoring and evaluation indicators*, http://ec.europa.eu/regional_policy/sources/docoffic/2007/working/wd2indic_082006_en.pdf

6 This study had a unique opportunity – a series of boundary changes combined with a very complete enterprise dataset. Opportunities to replicate this will be few and far between, but it is an interesting finding which could usefully be taken on board in other methods, e.g. macro-modelling.

6. SHOULD SUPPORT INCLUDE LARGE ENTERPRISES OR FOCUS ON SMES?

A clear finding is emerging that support is far more effective for SMEs than for large enterprises (see table 4). This finding is so far consistent across four different instruments in four different countries. Moreover, in each case, the scale of difference is striking – not smaller impacts, but **no impacts for large enterprises** (or even in one or two extreme cases, statistically significant but small negative impacts).

This raises the question: at what threshold does an enterprise become too large to assist? And is there a case for avoiding even medium-sized enterprises and focussing instead on the very smallest? Interestingly, the evidence is far more nuanced here. The studies divide between those finding no difference and those that hint (but do not find clearly) that smaller might be better.

The provisional conclusion must therefore be that support for all sizes of SME can be justified. But further research⁽⁷⁾ could usefully examine the capital constraints faced by medium-sized enterprises (i.e. those with between 50 and 250 employees).

TABLE 4: Strong evidence for avoiding support to large firms, favouring instead small and (probably) medium-sized enterprises

Scheme	Study	Finding on large enterprises	Comparison between SME size classes
Investment grants in Italy	Bondonio & Martini (2012)	Strong – impact was consistently positive across various size classes of SME, but insignificant or even negative for large enterprises (>250 employees)	Thorough examination found that impacts did not differ between various size classes of SME
RSA investment grants in the UK	Criscuolo et al (2012)	Strong – no impact for firms > 150 workers	Hints that impacts slightly higher for enterprises with less than 50 employees
Danish Innovation Consortium Scheme	CEBR, Denmark (2010)	Moderate – no impacts detected for firms > 150 workers, but smaller sample	Not examined
Innovation support 2008-10, Germany	Czarnitzki et al (2011)	Moderate – impacts strongly favoured the smaller grants (see section below). Link to firm size, but study did not disentangle the effect further	Possible evidence that smaller firms do better (see comments to left)
Investment support, eastern Germany	GEFRA and IAB (2010)	(Did not study large enterprises)	No difference found between various size classes of SME

Why the difference between large enterprises and SMEs?

- The favoured explanation in most studies (and in the economic literature more generally) is capital market constraints. Smaller enterprises often face obstacles in getting finance (whether in the form of credit limits or outright loan denial), so grants or financial instruments provide a real service. Large enterprises on the other hand do not face such constraints.
- However, some studies add other explanations. Criscuolo et al (2012) examine other data for the firms concerned (e.g. age) and conclude: 'We suggest that this [lack of impact for large enterprises] is due to larger firms being more able to 'game' the system and take the subsidy without changing their investment and employment levels, possibly combined with financial constraints for smaller firms.'

⁷ This research should probably include theory-based studies and not just counterfactual evaluation.

Support to large enterprises is sometimes justified not in terms of impacts on the enterprise itself but on **‘wider benefits’ to other firms and the region**. However, the available evidence so far questions this hypothesis in two ways:

1. Direct evidence: The one study (see table 5) that was able to review this directly found that, while large enterprises outlined wider benefits in applying for grants, only SMEs delivered – at least in terms of long-term employment and enterprise numbers. Of course, this does not exclude the possibility that there were wider benefits from large enterprises, but limits their scope (e.g. to **jobless** productivity gains and technology transfer).
2. Indirect evidence: Many of the studies cited above find that support does not change the behaviour of large firms in terms of investment and productive activity. If nothing changes inside the firm, how can one argue that change has been produced elsewhere? Again, this is not an absolute exclusion of wider benefits from large enterprises. But it does highlight an essential precondition (i.e. ‘How much does public money actually change large enterprises’ behaviour?’) that is easily overlooked in discussions of wider benefits.

TABLE 5: While large enterprises promised wider benefits, only SMEs delivered in a way that could be measured

RSA investment grants in the UK	Selection process	Evaluation (Criscuolo et al, 2012)
Large enterprises	Varied over time, but large firms typically had to demonstrate wider benefits to the regional economy in an ‘efficiency test’	Support to enterprises with >150 employees had statistically insignificant but negative impacts on employment and number of other firms in the region
SMEs	Varied over time, but SMEs typically did not have to demonstrate wider benefits	Support to enterprises with <150 employees had positive and significant impacts on employment and number of other firms in the region

The evidence here is based on what is (so far) a unique opportunity: Criscuolo et al (2012) had access to a very complete database of firms in the region, a nearly 20-year data series and an ideal situation for the evaluator (several changes in aid maps).

7. WHAT FORM OF SUPPORT IS BEST? FIRST HINTS FAVOUR FINANCIAL ENGINEERING AND NON-FINANCIAL SUPPORT

Although much of enterprise and innovation support is delivered through grants (and the focus of evaluations reflects this), there are early indications that loans are more effective than grants. An evaluation of SME support in Piemonte⁽⁸⁾ (in north-west Italy) found that various forms of financial engineering soft loans had a cost per job around half that of grants plus a surprisingly high impact on investment – EUR 5 per euro of gross grant equivalent. However, this should be offset against the costs involved in setting up and running such schemes. Further work is needed to examine costs and benefits for several schemes in different countries.

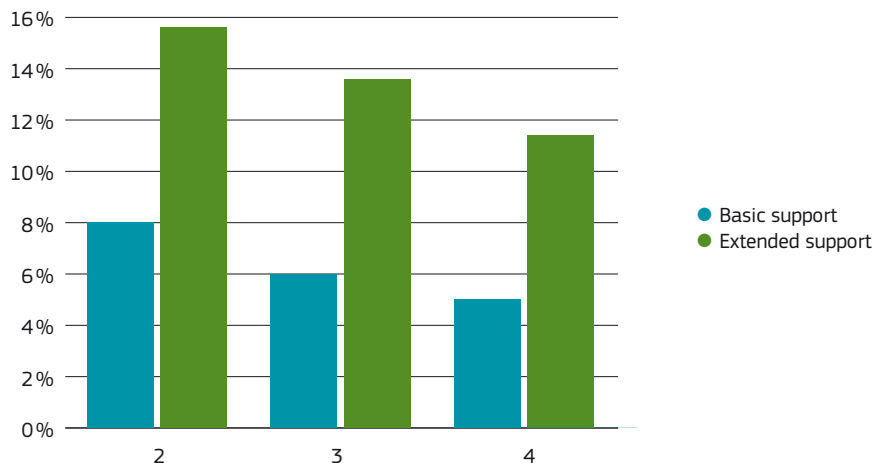
There are also signs of the effectiveness of non-financial, ‘soft’ support such as business advice. Research by Rotger and Gørtz (2009) suggests⁽⁹⁾ that just four to 12 hours of business advice (from a pool of professionals in the field of finance, marketing, law and other practical matters) made a difference to the long term survival of business start-ups (see graph). There was also a modest increase in jobs created (0.27 per firm for basic support, 0.50 for extended support) and a modest increase in long term enterprise growth for the extended (but not the basic) support.

The modest scale of the results should not obscure the potentially high cost-effectiveness of the scheme. At an average cost to the taxpayer of just EUR 600 per firm, this would give a cost per net new enterprise created (and lasting into the longer term) of around EUR 7 000–7 500 and per job of around EUR 1 500. This calculation does not allow for administrative costs, which will be high for such a small scheme (the value of the time spent by officials in managing each case – and entrepreneurs in applying – will certainly boost the EUR 600 considerably). Nevertheless, even high administrative costs would leave a very cost-effective scheme.

8 Bondonio & Martini for DG Regional and Urban Policy (2012) ‘Counterfactual Impact Evaluation of Cohesion Policy: Impact, cost-effectiveness and additionality of investment subsidies in Italy’.

9 The support was relatively small and some of the detected ‘impacts’ may simply be due to selection bias. However, counterfactual evaluations of business advice are very scarce; I have therefore included this study in the current paper by way of a challenge, to incite other researchers to examine such support.

Figure 3: Tentative evidence of an increased chance of start-up survival at two, three and four years after business advice in North Jutland, Denmark



There are also some hints that combining financial and non-financial support in one package contributes to impact. I have already cited the productivity gains from a support package including advice (Hart et al, 2011) and the long term profitability gains from innovation consortia, i.e. grant plus networking (CEBR, 2010). Moreover, a study of innovation support (Czarnitzki et al, 2007) explicitly considered various combinations, finding:

- strong evidence for the 'package of support' idea in the German schemes examined. There actually seemed to be a synergy between subsidy and networking – the R&D subsidies only had a significant effect where the firm also benefitted from networking, while the effect of the measures combined was much greater than the sum of their individual effects; and
- evidence of the real impact of networking in the Finnish schemes examined. Here the impact of financial R&D support was greater than that from networking, but both had significant impacts and they seemed to simply add up in a straightforward way (i.e. no obvious synergy effect). The implication here would still be to combine the two measures for maximum effect (especially since networking is usually much cheaper).

This is surely a promising line for further research (what kinds of soft support, to what enterprises and in what combinations with financial support?), but it is already clear that non-financial support can be effective.

8. WHAT ABOUT THE SCALE OF SUPPORT?

In an era of austerity, it is important to find the most efficient scale of support. It seems logical enough that there should be a broad optimal level – too small and administrative costs dominate effects, too large and much of the support will be deadweight (i.e. more than the amount necessary to trigger the change desired).

Obviously it is impossible to give precise guidance on the ideal level of support for each individual enterprise or regional context, since this must vary considerably. However, it is interesting to note that the current evidence shows no signs of under-support and plenty of cases where support is being overdone:

- Bondonio & Martini (2012) found that, even allowing for firm size, smaller grants are much more cost-effective than larger ones: cost per jobs averaged EUR 79000 for the smallest grants (less than EUR 125 000), rising to EUR 489000 for the largest grants (above EUR 500 000).
- Bondonio & Martini (2012) also noted that an outright grant often had a similar effect to the same sized soft loan, despite the lower cost to the taxpayer of the latter.

- Czarnitzki et al (2011) found that the presence or absence of a grant was the crucial factor. Size seemed to only weakly correlate to impact – the smallest grants had almost the same innovation impact as the largest ones. However, this was not the case for repeated grants to the same firm (e.g. two years later), which were as effective as a new small grant, rather than an extension or increase. This suggests a ‘little and often’ approach, rather than one big grant.
- A point which emerges from comparing across studies: the schemes that gave smaller support tended to have better results. This is notably the case for RSA in the UK, which had a deliberate policy of optimising support to the minimum necessary for the project to go ahead.

The conclusion must be that current schemes err on the side of too much support rather than too little. The implication is to:

- not automatically go to the state aid maximum, trying instead to assess the minimum support necessary for the project to go ahead; and
- consider giving the same support, but with all or part of the grant being replaced by a soft loan.

9. CONCLUSIONS AND NEXT STEPS

Counterfactual impact evaluations are generating a wealth of data on the impacts of enterprise and innovation support. We are starting to marshal solid evidence for issues which have vexed policy makers and evaluators for years: ‘Should support be given to large enterprises?’, ‘Does enterprise support displace or crowd out other activity in the region?’. This evidence has the potential to make our policy both more effective and more cost effective.

Work continues on a number of other counterfactual evaluations, encouraged and supported by the Evaluation Unit of DG Regional and Urban Policy. Moreover, the proposed new cohesion policy regulations promote this and other forms of more rigorous impact evaluation. There is therefore likely to be a lot of new evidence emerging in the coming years, which will nuance or take further some of the above findings.

However, it seems useful to draw together the findings so far, partly as an indication to those preparing the next round of regional policy programmes, partly as a challenge to other evaluators to bring their own rigorous evidence to the debate:

- Financial support is an effective way of increasing investment, production and employment in SMEs. It does indeed seem to be countering some sort of capital market constraint: in the median grant scheme, one euro of public money led to EUR 1.30 of total extra investment. Moreover the jobs created were of good quality and durable.
- Impacts were particularly high for the two schemes observed during the financial crisis⁽¹⁰⁾ – though there are other possible explanations for these results, it is at least intuitively plausible that the need for investment support would increase in the crisis.
- However, there is mounting evidence that financial support could be made more cost-effective. In one case the same amount of money as a soft loan proved more or less as effective as an outright grant. In another case, the smallest grants were almost as effective in promoting innovation as the largest ones.
- Moreover, while purely financial support reliably increased production, in most cases it hardly improved productivity – the firms got bigger but not more efficient. Increased production is desirable for firms with higher than average added value – or where the main policy goal is to reduce regional unemployment. But it is an additional argument for not financing ‘lame duck’, low added-value enterprises.
- The most strikingly successful measures – at least in this early analysis – were those that target not just capital market failures, but information market failures. For medium-sized enterprises, innovation support, networking and innovation consortia proved effective at increasing long-term growth and productivity. For small and micro enterprises, basic business advice may be the single most cost effective form of support. For SMEs of all size, this may suggest a tailored package mixing appropriate financial and non-financial elements.

10 See KU Leuven for DG Regional and Urban Policy (2011). The schemes covered are in the Czech Republic 2008-09, and in Germany 2007-10.

- For large enterprises, a repeated finding is that financial support does little or nothing to change outcomes – they take public money and do what they would have done anyway. This fits with recommendations elsewhere⁽¹¹⁾ to attract larger investments not by financial incentives, but by being a good place to do business. Moreover, early evidence provides no support for the notion of wider benefits (i.e. to other firms). Large firms may however have a role to play in networking and innovation consortia.
- Early research suggests that medium-sized enterprises (i.e. in the range 50–250 employees) are almost as capital constrained as their smaller cousins and should be treated similarly. Further research could help clarify the exact nature of the capital constraints faced in order to better design and target assistance.

The work is clearly far from complete, suggesting the following next steps for evaluation:

- Some instruments and combinations of instruments are unexplored or hardly explored using counterfactuals. The most obvious examples are the various types of soft support and different types of financial engineering – especially since early evidence favours these measures.
- Some instruments could usefully be changed a little and the variant compared with the classic instrument. For example, grants could be made smaller and/or combined with soft support. For soft support the timing and intensity could be varied.
- Even for some of the impacts with a lot of studies (e.g. grants and leverage) it would be useful to replicate these evaluations in other countries and contexts.
- The use of other forms of evaluation (notably observational, ‘theory-based’ methods such as case studies) to shed light on the results. For example, it is clear from the above studies that SMEs are capital constrained. Case studies would help establish the nature of the constraint, how size changes it, and to what extent (and how) this all depends on the context.

With the new programming period beginning in 2014, this is an ideal time to start thinking of how counterfactual impact evaluations can fit into programme plans. For various reasons (data, policy options) these evaluations are much easier with advance planning. The Evaluation Unit of DG Regional and Urban Policy is already helping various programmes and Member States with advice, support and training. We would actively welcome further partnerships – especially in Member States that have not yet conducted a counterfactual impact evaluation.

11 See for example Indermit Gill & Martin Raiser (2011) *Golden Growth: restoring the lustre of the European economic model*, World Bank.

ANALYTICAL BIBLIOGRAPHY

Title of study/evaluation	By whom	Year	Countries concerned	Policy instruments
Counterfactual impact of cohesion policy: impact and cost-effectiveness of investment subsidies in Italy	Bondonio & Martini for DG Regional and Urban Policy	2012	Italy	<ol style="list-style-type: none"> 1. Law 488 (investment grant scheme throughout Italy). The study focusses on the 6189 firms who received an average grant of EUR 419777 each in the period 2000-06 2. SME support schemes (loans, grants, interest rate subsidies) in Piemonte. Study focusses on the 10526 SMEs who received an average net grant equivalent of EUR 10830 each in the period 2005-09
An Analysis of Firm Growth Effects of the Danish Innovation Consortium Scheme	Centre for Economic and Business Research, Denmark	2010	Denmark	Innovation consortia, i.e. support for joint research projects between firms. 274 firms participated over the period 1995-2003 (though the dataset goes to 2008 to measure longer term effects), with an average grant of around EUR 370000 per firm
The relationship between R&D collaboration, subsidies and R&D performance: empirical evidence from Finland and Germany	Czarnitzki, Ebersberger & Fier	2007	Finland, Germany	Various forms of R&D support in the two countries: subsidies, networking, collaboration and mixed packages of support
The causal effects of an industrial policy	Criscuolo, Martin, Overman & Van Reenen	2012	UK	RSA ('Regional Selective Assistance' – an investment grant with employment conditions) given to 136000 firms over the period 1986-2004. The average grant was around GBP 125000
Ex post evaluation of the ERDF 2000-2006: Work Package 6c: Enterprise Support – an exploratory study using counterfactual methods on available data from Germany	GEFRA for DG Regional and Urban Policy	2010	Germany (eastern regions only)	<ol style="list-style-type: none"> 1. Investment grants and loans to the value of EUR 9.6 billion grant equivalent in eastern Germany over the period 2000-2006 2. R&D grants and loans in Thuringia over the period 2000-06
Data-Linking and Impact Evaluation in Northern Ireland	Hart and Bonner for DG Regional and Urban Policy	2011	UK (Northern Ireland only)	The full package of support (grants, advice, networking, etc.) offered in Northern Ireland in the period 2001-08
Counterfactual impact evaluation of cohesion policy: Examples from Support to Innovation and Research	KU Leuven for DG Regional and Urban Policy	2011	Czech Republic, Germany (but many others examined in data collection phase)	<p>Innovation grants, often combined with other forms of support.</p> <ol style="list-style-type: none"> 1. For the Czech republic, the scheme concerns 26075 projects granted an average of EUR 412 265 each in the period 2008-11. However, in the analysis only data for those supported in 2008 and 2009 was considered (for the others it is too early for impacts to show up in the data) 2. For Germany, the scheme concerns 47616 grants with an average value of EUR 190286 each (and median value of EUR 51000) in the period 2007 to early 2011. However for data and impact reasons, only grants given in 2007-10 were considered in the analysis
Evaluating the effect of soft business support to Entrepreneurs in North Jutland	Gabriel Pons Rotger and Mette Gørtz	2009	Denmark (North Jutland)	Business counselling for start-ups in the period 2002-05. Some 5000 start-ups were counselled at a total cost of around EUR 3 million, co-financed by the ERDF. There were two counselling options: basic (4 hours maximum, with an average of 3-3.5 hours taken) and extended (a further 4 to 8 hours maximum depending on the package). Advice was chosen by the firms themselves drawing on a pool of professionals in the field of finance, marketing, law and other practical matters. The firms had to pay 50% of the professionals' fees
Towards Innovative Economy – Effects of Grants to Enterprises in Poland (chapter on impact evaluation)	Rafał Trzeciński (ed. Jacek Pokorski)	2011	Poland	Investment grants to 2800 SMEs in the years 2004-06. The average grant was PLN 532000 (c. EUR 133000)

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