

CESifo DICE REPORT

Journal for Institutional Comparisons

VOLUME 14, No. 2

SUMMER 2016

Forum

CROWDFUNDING

Jörg Rocholl

Paul Belleflamme,
Nessrine Omrani and
Martin Peitz

Joan MacLeod Heminway

Lars Hornuf and
Matthias Schmitt

Robert Wardrop and
Tania Ziegler

Armin Schvienbacher

Research Report

EXPOSURE TO FEMALE COLLEAGUES BREAKS
THE GLASS CEILING – A SUMMARY OF
THE FINDINGS FROM A LAB EXPERIMENT
IN THE FIELD

Henning Finseraas,
Åshild A. Johnsen,
Andreas Kotsadam and
Gaute Torsvik

Reform Model

REGULATORY POLICY ADJUSTMENTS
IN GERMANY'S EXPORT PROMOTION
INSTRUMENTS IN LIGHT OF CROSS-BORDER
PRODUCTION CHAINS

Alexander Sandkamp and
Erdal Yalcin

Database

TAXATION AND FEMALE LABOR SUPPLY

EXTENSION OF COLLECTIVE AGREEMENTS

ENVIRONMENT AND DEMOCRACY

INFLUENCE OF PARENTAL AND IMMIGRANT
BACKGROUND ON ACADEMIC PERFORMANCE

News

NEW AT DICE DATABASE,
CONFERENCES, BOOKS

- Survey Results
- Survey Participation
- Forecasts
- Institutional Comparisons (DICE Database)**
 - › Business and Financial Markets
 - › Education and Innovation
 - › Energy, Resources, Natural Environment
 - › Infrastructure
 - › Labour Market
 - › Migration
 - › Public Sector
 - › Social Policy
 - › Values
 - › Other Topics
- Topical Terms in Economics
- Glossary for the "Ifo Wirtschaftskommission"
- Time-series and Diagram Service
- Educational Material
- LMU-Ifo Economics & Business Data Center (EBDC)
- Ifo Prussian Economic History Database (IPEHD)

Home > Facts > Institutional Comparisons (DICE Database)

Database for Institutional Comparisons in Europe (DICE)

The Database for Institutional Comparisons in Europe – DICE – is one of Ifo's service products and can be accessed free-of-charge online. The database allows users to search for cross-country comparisons of systematic information on institutions, regulatory systems, legal requirements and the mechanisms of their application. Although DICE is not a statistical database, it also contains data on the outputs (economic effects) of institutions and regulations where relevant.

Search DICE

The entire DICE database is searchable. Here you can enter a search term for the whole database. Use the page [Search the DICE Database](#) to refine your search and set further filters.

Most recent entries to the DICE Database

DICE Database (2016), Overview of crowdfunding regulatory frameworks in a selection of EU member states, 2016 | [Details](#) | [Download](#)

DICE Database (2016), Labour migration policies: Limits, fees, rules and processing time, 2014 | [Details](#) | [Download](#)

DICE Database (2016), Immigration of international students to the EU | [Details](#) | [Download](#)

DICE Database (2016), PISA 2012: Mean mathematics scores, penalty scores for immigrants, age of first tracking | [Details](#) | [Download](#)

› [DICE News of the Month](#)

Latest CESifo DICE Report Database Articles

DICE Database (2016), The Nature of Self-employment | [Details](#) | [Download](#)

DICE Database (2016), An International Comparison on Energy Taxation in 2015 | [Details](#) | [Download](#)

Database for Institutional Comparisons in Europe (DICE)

- › [DICE Database](#)
- › [About DICE](#)
- › [List of all institutional fields](#)
- › [Search DICE](#)
- › [DICE News of the Month](#)



DICE Visual Storytelling

- › [Interactive graphics application Visual Storytelling](#)



Publication

- › [CESifo DICE Report](#)



Department

- › [Ifo Center for International Institutional Comparisons and Migration Research](#)



CESifo DICE Report

ISSN 1612-0663 (print version)

ISSN 1613-6373 (electronic version)

A quarterly journal for institutional comparisons

Publisher and distributor: Ifo Institute

Poschingerstr. 5, D-81679 Munich, Germany

Telephone ++49 89 9224-0, Telefax ++49 89 9224-1462, e-mail ifo@ifo.de

Annual subscription rate: €50.00

Editors: Marcus Drometer, Silke Friedrich, Christa Hainz, Romuald Méango

Editor of this issue: Christa Hainz (hainz@ifo.de)

Copy editing: Lisa Giani Contini, Katrin Oesingmann, Daniela Wech

Reproduction permitted only if source is stated and copy is sent to the Ifo Institute.

DICE Database: www.cesifo-group.org/DICE

Forum

CROWDFUNDING

- An Introduction to Crowdfunding**
Jörg Rocholl 3
- Understanding the Strategies of Crowdfunding Platforms**
Paul Belleflamme, Nessrine Omrani and Martin Peitz 6
- Securities Crowdfunding and Investor Protection**
Joan MacLeod Heminway 11
- Success and Failure in Equity Crowdfunding**
Lars Hornuf and Matthias Schmitt 16
- A Case of Regulatory Evolution –
A Review of the UK Financial Conduct Authority’s Approach to Crowdfunding**
Robert Wardrop and Tania Ziegler 23
- Crowdfunding and the ‘Alternativfinanzierungsgesetz’ in Austria**
Armin Schwienbacher 33

Research Report

- Exposure to Female Colleagues Breaks the Glass Ceiling –
A Summary of the Findings from a Lab Experiment in the Field**
Henning Finseraas, Åshild A. Johnsen, Andreas Kotsadam and Gaute Torsvik 37

Reform Model

- Regulatory Policy Adjustments in Germany’s Export Promotion
Instruments in Light of Cross-Border Production Chains**
Alexander Sandkamp and Erdal Yalcin 44

Database

- Taxation and Female Labor Supply in OECD Countries**
Till Nikolka 55
- Extension of Collective Agreements in Europe**
Katrin Oesingmann 59
- Environment and Democracy**
Daniel Leithold and Jana Lippelt 65
- Schooling Institutions and the Influence of Parental and Immigrant Background
on Academic Performance**
Yuchen Guo, Till Nikolka and Katrin Oesingmann 68

News

- New at DICE Database, Conferences, Books** 72

AN INTRODUCTION TO CROWDFUNDING

JÖRG ROCHOLL¹

Markets for crowdfunding have experienced rapid development and significant growth in recent years. While they were barely known to a broader audience until recently, they have now developed into a multi-billion dollar industry worldwide, including various types of financing and securities markets. The key feature of crowdfunding markets is that they lack any form of traditional financial intermediation. This is characterised by a financial institution such as a bank that is responsible for screening and monitoring and has the right incentives in place to act in the capital providers' interest by having, for example, sufficient skin in the game through a substantial portion of a loan on its books.

In crowdfunding markets, by contrast, individuals directly finance other individuals or companies, without an intermediary. Suppliers of crowdfunding services regularly describe themselves as platforms that do not undertake a genuine risk assessment or take any risk in the project to be funded.

This raises the important question of why individuals or companies prefer to be directly financed by other individuals rather than using traditional financial services. One reason, the more benign one, would be that they dislike traditional financial institutions, including their transactions costs, and would rather receive financing directly from sympathetic individuals. A less benign reason could be adverse selection, i.e., crowdfunding markets may only serve those in need of financing who have been rejected by traditional financial services and are now desperately seeking a lender of last resort. In the latter case, the expected default rates in crowdfunding markets would be significantly higher than those for companies with traditional financial service providers.

The substantial growth of crowdfunding markets is significantly driven by the public availability and verifiability of information for the screening process of those individuals or companies seeking external financing. To put things into perspective, an industry report states: "Global crowdfunding experienced accelerated growth in 2014, expanding by 167 percent to reach USD 16.2 billion raised, up from USD 6.1 billion in 2013. In 2015, the industry is set to more than double once again, on its way to raising USD 34.4 billion." (crowdsourcing.org 2015).

The significant availability and growing pool of capital from crowdfunding has attracted lively political and regulatory interest. On the one hand, policy-makers see crowdfunding as a promising opportunity to provide a financing source, particularly for small and medium-sized enterprises, many of which would otherwise suffer from financing restrictions. In the United States, this interest has led to strong bipartisan support for the creation of the "Jumpstart Our Business Startups (JOBS) Act", signed by President Obama on April 5, 2012, which legalised crowdfunding by authorising SEC-approved² portals for companies enabling them to seek funding from anyone. Crowdfunding could thus have the potential to fundamentally change the investment and financing process, as well as to provide greater transparency. On the other hand, regulators are concerned about the potential threats to investor protection in the absence of a regulated financial intermediary in charge of the screening and monitoring process. The Consumer Financial Protection Bureau (CFPB) states, that crowdfunding markets "could have significant implications for consumers seeking alternative sources of credit" particularly in the form of online lending in peer-to-peer transactions (USGAO 2011, 56). One major concern that has been stated by numerous regulators and academics is that investors could be taken advantage of by unscrupulous lenders.

The academic literature on this topic has analysed the market for crowdfunding with growing interest. However, despite the growing importance of crowdfunding markets and their perception as markets of the



¹ ESMT Berlin.

² SEC = United States Securities and Exchange Commission.

future, our understanding of their functioning is still limited. Clearly, they differ from traditional markets, specifically due to the lack of a formal intermediary. Important questions include: How does the lack of financial intermediaries affect market outcomes? Which incentives on the part of the agents involved merit specific attention? Which externalities have to be considered? How does the interplay between sophisticated and unsophisticated investors, as well as the demand and supply side, evolve? Which type of regulation is needed, and how does the existing regulatory framework in different countries take into account the specific characteristics of these markets?

Answers to these questions provide an important step towards a better understanding of the functioning of crowdfunding markets. The papers in the current CESifo DICE Report 2/2016 deal with various aspects of crowdfunding and provide answers to some of the questions above. These papers are briefly summarised here and put into perspective in terms of the general context.

In their paper entitled “Understanding the Strategies of Crowdfunding Platforms” Paul Belleflamme, Nessrine Omrani, and Martin Peitz view crowdfunding platforms (CFP) as two-sided platforms for coordinating the supply of (funders) and demand (fundraisers) for capital. While positive external effects can be expected to exist between the magnitude of these two groups in both directions, the authors argue that these external effects are more complex, giving rise to the existence of CFPs (“why”). In particular, the cross-group external effects of more fundraisers on funders may not always be positive, particularly in cases where a larger number of projects on a platform a) reduces the likelihood of these projects being funded and thus of proving successful or b) increases the level of information asymmetry. Furthermore, the within-group external effects of fundraisers may turn negative, as an increase in the number of fundraisers could reduce the likelihood of each single fundraiser receiving funding. CFPs thus have to define strategies to capture the value they create for their users (“how”). This can take the form of price strategies, i.e. by charging only fundraisers, or non-price strategies, i.e., by making fundraisers use “All-or-Nothing” offers to induce them to set realistic funding targets, or by bringing in sophisticated funders to take over the role of information verification, similar to that of a bank in a regular lending transaction.

In her paper entitled “Securities Crowdfunding and Investor Protection” Joan MacLeod Heminway address-

es the concern of fraud in crowdfunding markets and the resulting response of protective regulation. She begins by defining crowdfunding “as a method for financing businesses or projects that involves soliciting and securing funding from a broad, disaggregated mass of potential funders, typically through the internet.” The author subsequently argues that different types of regulation are needed for different types of crowdfunding (donative, presale, reward, securities, and investment crowdfunding). Focusing on crowdfunding securities, Heminway argues that the regulation of crowdfunding follows the regulation of securities in the form of “mandatory disclosure, liability for fraud, misstatements, or omissions, or substantive regulation as investor protection tools” and points to the various sets of rules and their priorities in various countries.

Lars Hornuf and Matthias Schmitt, in their paper “Success and Failure in Equity Crowdfunding”, concentrate on equity crowdfunding as a relatively new phenomenon among the various types of crowdfunding, with a particular focus on Germany and the United Kingdom. They find that the failure rates for crowdfunded ventures in Germany do not exceed those of startups in general, suggesting that these ventures cannot be regarded as classical lemons. They also highlight certain forms of staging whereby investors can retain control over the use of funds. Furthermore, the authors argue that venture capitalists and angel financiers use the outcome of crowdfunding processes as a valuable signal for their own investment decisions. Overall, exits have not been overly promising to date, which suggests that the returns for a well-diversified investor would be negative to date in Germany. While this evidence stands in contrast to that of positive returns in the United Kingdom, it casts some doubt over the long-term growth and viability of these markets in Europe.

In their paper “A Case of Regulatory Evolution – A Review of the UK Financial Conduct Authority’s (FCA) Approach to Crowdfunding” Robert Wardrop and Tania Ziegler describe the regulatory treatment of crowdfunding in the United Kingdom, Europe’s market leader. The FCA differentiates between four types of crowdfunding activities, including loan-based and investment-based crowdfunding, and three types of investors, including sophisticated and ordinary investors, and allows platforms to provide their services only to certain types of investors. The authors conclude from current feedback from industry participants that the existing regulation is working effectively.

Finally, and related to Wardrop and Ziegler, Armin Schwiendbacher's paper "Crowdfunding and the 'Alternativfinanzierungsgesetz' in Austria" focuses on the specific regulation of crowdfunding in Austria that was implemented in 2015, describing the various facets of this regulation and its application to crowdfunding ventures in Austria. He points out that national regulation may soon reach its limits as platforms become pan-European or even more international, calling for even broader regulation. Similarly, opportunities for regulatory arbitrage may arise and lead to the same need for international harmonisation.

References

Crowdsourcing.org (2015), Global Crowdfunding Market to Reach \$34.4B in 2015, Predicts Massolution's 2015CF Industry Report.

United States Government Accountability Office (USGAO) (2011), Person-to-Person Lending. New Regulatory Challenges Could Emerge as the Industry Grows, *Report to Congressional Committees* GAO-11-613, Washington.



UNDERSTANDING THE STRATEGIES OF CROWDFUNDING PLATFORMS¹

PAUL BELLEFLAMME,² NESSRINE OMRANI,³
AND MARTIN PEITZ⁴



Crowdfunding can be seen as an open call made through the internet to provide financial resources to support new ventures. Several forms of crowdfunding coexist, which mainly differ by the type of compensation that they propose to funders. Compensation can be monetary or may take another form. In the case of monetary compensation, funders are investors and may be offered equity stakes ('crowdinvesting'), interest payments ('crowdlending'), or a fraction of profits ('royalty-based crowdfunding'). When compensation is not monetary funders are consumers or donors and may be offered a product in pre-sale, combined with some perks ('reward-based crowdfunding'), or some warm glow ('donation-based crowdfunding').



Whatever its form, crowdfunding mostly takes place on crowdfunding platforms (CFPs). Our objective in this article is twofold: we wish to show *why* and *how* CFPs facilitate the interaction between entrepreneurs trying to raise funds (the 'fundraisers') and consumers/investors willing to participate in the financing of new projects (the 'funders'). The 'why' has to do with the external effects that crowdfunding generates, not only *across* the groups of funders and fundraisers, but also *within* each of these groups; we argue that the complexity of these effects is much more efficiently dealt with by a CFP than through bilateral relationships between funders and fundraisers. As for the 'how', we present the strategies that CFPs put in place to address the problems raised by the various external effects.

¹ This article was prepared for the CESifo DICE Report; it is largely based on Belleflamme, Omrani and Peitz (2015).

² Université catholique de Louvain (CORE and Louvain School of Management) and CESifo.

³ PSB Paris School of Business.

⁴ University of Mannheim, Mannheim Centre for Competition and Innovation (MaCCI), and CERRE.

Crowdfunding and external effects

CFPs can be seen as 'two-sided platforms': they enable the interaction between two 'sides' (here, fundraisers and funders) whose demands need to be coordinated.⁵ The open and large-scale nature of crowdfunding explains why an intermediary (i.e., a CFP) can achieve this coordination more efficiently – i.e., at lower transaction costs – than the members of the two sides by themselves. The transaction costs stem from the presence of external effects across the two groups: the value that each group attaches to the interaction depends on the participation of the other group. Typically, the more funders participate, the more crowdfunding becomes attractive for fundraisers, and *vice versa*. We therefore expect these so-called 'cross-group external effects' to be positive on both sides; we also expect CFPs to manage these external effects by choosing an appropriate price structure for access and participation on the platform by the two groups.

As we now show, things are slightly more complex. Firstly, some cross-group external effects may be negative. Secondly, 'within-group external effects' may also exist, according to which the value that a user attaches to the interaction with the other group also depends on the participation *within* this user's own group. Finally, CFPs also use a wide array of non-price strategies to manage the various external effects.

Cross-group external effects on CFPs

Cross-group external effects arise when one group's valuation of the platform depends on the participation of the other group. Let us first examine the *impacts of funders' participation on fundraisers*. These effects are positive without any ambiguity. A platform that attracts a larger pool of potential funders benefits fundraisers in two ways. Firstly, and quite obviously, the presence of a larger crowd of funders increases any fundraiser's chance of financing their project. Secondly, entrepreneurs often use CFPs as marketing channels to evalu-

⁵ For an introduction to two-sided platforms, see Belleflamme and Peitz (2015, Chapter 22).

ate (and possibly stimulate) demand for their product.⁶ Again, the larger the crowd of consumers/investors, the more efficient this market testing can be. Yet, to the extent that fundraisers use a project on a CFP as part of a price discrimination strategy, they may not always be interested in an expansion of the pool of funders. A necessary condition for this to happen is that not only the size, but also the composition of the group of funders on a CFP will have to change.⁷

As for the *impacts of fundraisers' participation on funders*, it seems at first glance that they are also positive. We can indeed see two reasons why funders are likely to prefer platforms with a larger number of fundraisers: firstly, platforms with more fundraisers provide funders with a wider choice of projects to fund; secondly, when compensation is non-monetary, funders are more likely to obtain rewards that fit their tastes on platforms that attract many fundraisers. A couple of mitigating factors, however, spring to mind. Firstly, a larger number of campaigns on a platform could reduce the chance that any of them would be successful (i.e., would reach the required threshold), which would affect funders negatively. Yet, as such risk results from coordination failures among funders, CFPs can neutralise it by guiding interested funders to campaigns that are close to becoming a success. A second negative cross-group external effect arises if asymmetric information problems become more serious as the number of fundraisers on a platform grows larger. As discussed below, information asymmetries cause two types of issues for funders on CFPs: funders may not only lack the necessary information to assess the chances of success of the proposed campaigns; they may also not be able to control how fundraisers use the funds that they have collected. Whether these problems are more acute (or the cost for funders and platforms of alleviating these problems is larger) on platforms with more fundraisers is an empirical question.

Within-group external effects on CFPs

Fundraisers and funders also care about the participation of their own group members on the platform. Within the group of *fundraisers*, external effects are mostly negative: as fundraisers compete for funders' contributions, the more campaigns a platform hosts, the tougher the competition. However, a larger pool of fellow fundraisers may promote the exchange of good practices among them, or may attract a larger supply of consultancy services adapted to crowdfunding. This suggests that external effects may sometimes be positive within the group of fundraisers.⁸

Within the group of funders, external effects can be expected to be positive. This is certainly the case if a project needs to reach a pre-specified threshold of financing to be carried out. This is known as the 'threshold-pledge' or 'All-or-Nothing' (AON) model (an alternative is the 'flexible funding' or 'Keep-it-all' (KIA) model, which allows a fundraiser to collect any funds raised, even when the target is not reached). In this case, the presence of additional funders on a platform increases the probability that some project will be realised, which benefits all funders.

Other external effects may also come into play within the group of funders. They result from the sequential process that funding follows on CFPs, which induces a form of dynamic behaviour among funders. We have already mentioned that asymmetries of information prevail on CFPs as, typically, funders have little information about the reliability of fundraisers and the quality of their projects. Because funding is sequential, funders may try to infer information from the behaviour of fellow funders (even if the latter do not possess better information to start with). In particular, funders may rely on the existing support for a given project to gauge its potential, thereby creating a type of peer-effect known as 'collective attention effect'. The sign of this effect – i.e., whether it ultimately benefits or harms funders – depends on the first funders. For instance, if the first funders had poor information or made a bad decision, herding will lead subsequent funders to back the wrong horse.⁹ There are reasons to believe that this scenario is relevant in practice, as funders lack the capabilities and the incentives to devote the appropriate resources to due

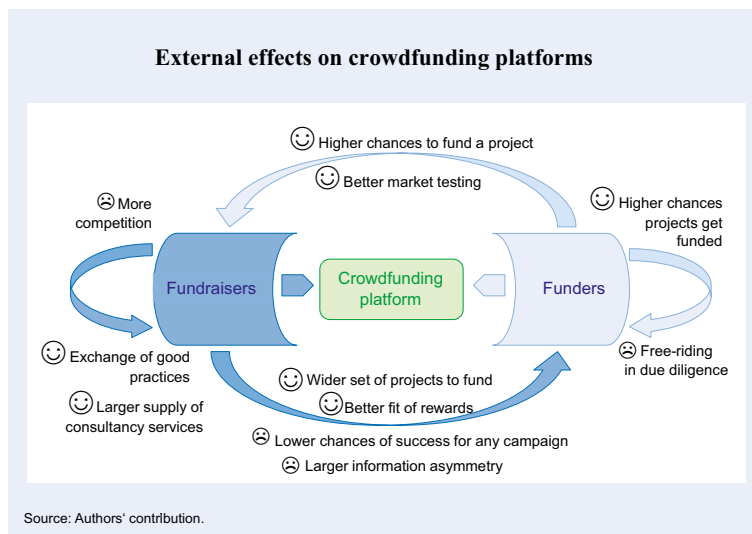
⁶ The fact that large companies, which have easy access to capital markets, use CFPs is indirect proof that crowdfunding is not just about funding. For instance, Sony has launched a CFP, First Flight, to test the popularity (rather than to finance) its own new products (McCormick 2015).

⁷ If funders differ in their informational requirements, certain CFPs may specialise and cater to the needs of particular types of funders. For instance, by setting higher prices or by providing specific services, a CFP may induce self-selection among fundraisers and attract only high quality projects, which, in turn, will attract only the more demanding funders. Damiano and Li (2008) show in a stylised setting how a platform can use prices to induce this form of segmentation.

⁸ Strictly speaking, there are positive feedback effects between fundraisers and CFP-specific providers of consulting service who constitute a third side of the platform.

⁹ For evidence of herding on crowd lending platforms, see Chen and Lin (2014), Lee and Lee (2012), Zhang and Liu (2012).

Figure 1



diligence. There is thus a ‘collective-action problem’ in that funders naturally tend to free ride on fellow funders to collect information about the fundraisers’ chances of success. Finally, another form of free-riding may create a negative external effect: in the AON model, when the financing of a project comes close to the threshold, it may become harder to induce funders to provide the remaining financing as they may rely on other funders to do it.¹⁰

Figure 1 summarises the various cross-group and within-group external effects that crowdfunding generates.

Strategies of CFPs

The presence of strong and intertwined cross-group and within-group external effects in crowdfunding limits the ability of fundraisers and funders to conduct transactions bilaterally in an efficient way. This creates business opportunities for intermediation, which CFPs try to seize by designing adequate strategies. These strategies aim at creating value for the two groups by driving agents to ‘internalise’ (i.e., to integrate into their decision-making process) the effects that their actions have across groups or within their group. Naturally, to achieve a profitable business model, CFPs must find ways to capture a sufficient share of the value that they create for their users. We consider in turn price and non-price strategies.

¹⁰ Kuppuswamy and Bayus (2013) find that additional funder support for a project on Kickstarter (a reward-based CFP) is negatively related to its initial support, which is consistent with this free-rider hypothesis.

Price strategies

Currently, most CFPs charge only one group or impose a “tax” on a successful transaction. The common practice is to charge a transaction fee to fundraisers as a percent basis for all successful campaigns (unsuccessful campaigns are generally not taxed). As for funders, they usually do not pay any explicit fee. Yet, insofar as time elapses between the moment funders contribute money and the moment that this money is either passed on to fundraisers (when the campaign is successful) or returned to the funders (if it is not), funders incur a foregone interest when investing (early) in a project, which can be seen as an implicit fee.

This reliance on transaction fees is common on two-sided platforms, especially in new markets where participants have little understanding of the value they attach to the interaction with the other group(s). The reason is that imposing subscription fees may scare participants away, which would jeopardize the launch of the platform. Pushing this logic one step further, participation may even be subsidised for some participants, especially in the early life of the platform. For instance, it is not rare that CFPs do not wait for fundraisers to join the platform, but actively look for the most interesting among them and subsequently facilitate their campaigns on the platform.

On top of the tax levied on transactions, CFPs usually have two other sources of revenues. Firstly, as explained above, they earn interest on the money pledged by funders. Secondly, they may also offer additional paying services to the two groups; for instance, CFPs may charge for handling payments, for supporting projects, or for releasing information on previous projects.

Non-price strategies

CFPs also use non-price strategies to *manage cross-group external effects*. First and foremost, CFPs have to choose a mechanism for raising funds. As described above, the choice is primarily between the ‘All-or-Nothing’ (AON) and ‘Keep-it-all’ (KIA) mechanisms.

In the AON model, fundraisers firstly have to specify a target, knowing that they will not receive any of the money that has been pledged if this target is not reached. Although this mechanism may not seem terribly attractive for fundraisers (compared to the KIA model where any money pledged can be kept), it has the advantage of protecting funders as it drives fundraisers to set realistic funding targets that match more closely the funding that they need to achieve their project. As cross-group external effects from funders to fundraisers are generally positive, choosing the AON mechanism to reassure funders is an indirect way to make the platform more attractive for fundraisers.

Another indirect advantage of the AON model for fundraisers is that it makes some funders ‘pivotal’ insofar as it is their contribution that enables total funding to reach the target. This is especially important in the context of reward-based crowdfunding, whereby funders receive the project’s product as compensation for their funding. Fundraisers are then in a position to raise their profits by charging different prices for their product to consumers/investors who are pivotal and to those who are not.¹¹

That said, fundraisers may prefer the flexibility of the KIA model (even although CFPs usually charge higher fees on funds kept by fundraisers in cases where the target is not reached). If so, choosing AON would discourage fundraisers from joining the platform and, through cross-group external effects, would discourage funders as well. An alternative is to propose both models and let fundraisers choose. One benefit of this solution is that it gives funders the option of drawing inferences from fundraisers’ choices. Indeed it is documented that by choosing AON, fundraisers credibly signal to funders that they commit not to undertake their project if they do not reach the target; funders may then see the investment in such projects as less “risky”, which allows fundraisers to increase their chances of success.¹² The choice between AON and KIA should largely be driven by the extent to which the benefit from a project depends on the funding level. If the use of funds below the threshold level is highly inefficient, AON should be the preferred funding format.

Apart from managing cross-group effects, CFPs also design specific strategies to *address asymmetric information problems* (acknowledging, as we have just seen,

that some strategies address the two issues at once). We can distinguish between two generic types of problems: hidden information problems (funders often lack the necessary information to estimate the chances of success of the proposed campaigns) and hidden action problems (funders have a hard time to control how fundraisers use the collected funds).

A first instrument in mitigating *hidden information problems* is direct screening: CFPs conduct due diligence themselves and reject projects that are deemed too risky. Alternatively (or complementarily), CFPs may provide funders with a market-based screening mechanism; for instance, some crowdlending platforms give funders access to ‘soft’ information about fundraisers (such as the maximum interest rate they are willing to pay, a textual description of their reasons for the loan application, or their picture). Studies show that funders can predict default with greater precision on the basis of such nonstandard information than with the use of more traditional screening methods based on credit score.¹³ Finally, CFPs may also bring sophisticated investors on board like institutional investors, venture capitalists, or business angels, who have much larger capacities and experience in due diligence. Their presence is thus likely to reassure funders, as more information will be made available about the chances of success of the proposed campaigns.

As for *hidden action problems* (such as moral hazard), a first immediate measure is to invest in an adequate monitoring system so as to avoid – or at least limit – severe opportunism problems from being created by fundraisers, such as outright fraud. In the same vein, CFPs can prevent fundraisers from using arriving funds before the success of a campaign is assured by taking control of making the financial transaction. Another strategy is to install a reputation system. Naturally, such a system can only work if fundraisers repeatedly use a given CFP. In such cases, the CFP can use the track record of a given fundraiser to provide funders with useful information about that fundraiser’s reliability. To enrich this reputation system, the CFP can also tap into the wealth of information available on social networks: It has indeed been documented that the number of friends that fundraisers have on Facebook can be used as a predictor of the success of their projects.¹⁴ Finally, CFPs may also find ways to

¹¹ See Belleflamme, Lambert and Schwienbacher (2014) for a stylized model examining this possibility.

¹² See Cumming, Leboeuf and Schwienbacher (2014) for an empirical analysis of this issue.

¹³ See, e.g., Berkovich (2011) or Herzenstein, Sonenshein and Dholakia (2011).

¹⁴ See, for example, Mollick (2014).

insure funders against a number of risks; for instance, some crowdlending platforms choose to partner with banks to insure against market risks.

Conclusion

Our goal in this article was to show that crowdfunding platforms are at the heart of current developments in the different forms of crowdfunding. Without the intermediation services that these platforms provide, fundraisers and funders would not be able to interact in an efficient way. To make our point, we have described the ‘why’ (i.e., the complex web of external effects that crowdfunding generates for funders and fundraisers), as well as the ‘how’ (the price and non-price strategies that platforms deploy to address these external effects).

Even if crowdfunding is still nascent and is thus bound to evolve, we believe that the framework of the analysis proposed here will remain relevant and help us understand future developments.

References

- Belleflamme, P., T. Lambert and A. Schwienbacher (2014), „Crowdfunding: Tapping the Right Crowd”, *Journal of Business Venturing* 5, 585–609.
- Belleflamme, P., N. Omrani and M. Peitz (2015), “The Economics of Crowdfunding Platforms”, *Information Economics and Policy* 33, 11-28.
- Belleflamme, P. and M. Peitz (2015), *Industrial Organization: Markets and Strategies*, Second Edition, Cambridge University Press, Cambridge.
- Berkovich, E. (2011), “Search and Herding Effects in Peer-to-Peer Lending: Evidence from Prosper.com”, *Annals of Finance* 7 (3), 389–405.
- Chen, D. and Z. Lin (2014), “Rational or Irrational Herding in Online Microloan Markets: Evidence from China”, *mimeo*.
- Cumming, D. J., G. Leboeuf and A. Schwienbacher (2014), “Crowdfunding Models: Keep-it-All vs. All-or-Nothing”, *mimeo*.
- Damiano, E. and H. Li (2008), “Competing Matchmaking”, *Journal of the European Economic Association* 6, 789–818.
- Herzenstein, M., S. Sonenshein and U. M. Dholakia (2011), “Tell Me a Good Story and I May Lend You Money: The Role of Narratives in Peer-to-Peer Lending Decisions”, *Journal of Marketing Research* 48, 138–49.
- Kuppuswamy, V. and B. L. Bayus (2013), “Crowdfunding Creative Ideas: The Dynamics of Project Backers in Kickstarter”, *UNC Kenan-Flagler Research Paper* No. 2013-15.
- Lee, E. and B. Lee (2012), “Herding Behaviour in Online P2P Lending: An Empirical Investigation”, *Electronic Commerce Research and Applications* 11, 495–503.
- Mollick, E. (2014), “The Dynamics of Crowdfunding: Determinants of Success and Failure”, *Journal of Business Venturing* 29, 1–16.
- McCormick, R. (2015), “Sony Launches Crowdfunding Platform for its Own New Products”, *The Verge*, 01 July, <http://bit.ly/1lt2VbT> (accessed 17 May 2016).
- Zhang, J. and P. Liu (2012), “Rational Herding in Microloan Markets”, *Management Science* 58, 892–912.

SECURITIES CROWDFUNDING AND INVESTOR PROTECTION

JOAN MACLEOD HEMINWAY¹

As most who have been or worked with entrepreneurs know well, there are many practical and legal constraints on financing small business entities and projects. One significant practical impediment to capital access for small ventures is the lack of a pre-existing set of established contacts from and through which funding may be sought. In other words, it can be hard for entrepreneurs and others involved in small business undertakings to find people who want to contribute their financial wherewithal to unknown (and often untested) venturers and ventures.

Yet business finance is a creative enterprise. Participants in business capital formation, large and small, are constant innovators. They are forever fashioning new financing instruments and means of offering them to address barriers to access.

In this innovative business finance environment, the internet was destined to play a more leading role. Given the success of e-commerce and social media, it was only logical that businesses and projects needing funding and those keen to fund them would find each other online. Crowdfunding, as we have come to call this web-enabled, crowdsourced financing proposition, has been hailed as the panacea for the ills of small business capital-raising. A form of business finance almost unknown ten years ago, crowdfunding has become a popular topic in entrepreneurial circles and an established term in the lexicon.

Panacea, passing fad, or otherwise categorized, crowdfunding most often enables fundraisers and funders to meet through electronic intermediation.² Participants not only do not know each other, but also cannot see

each other in person or easily verify facts about the business or project seeking funding using methods customary in other, more traditional financing transactions. Crowdfunding's use of the faceless internet to generate and consummate financing transactions between and among fundraisers and funders who may not have pre-existing relationships gives rise to concern that crowdfunding will be the source of rampant fraudulent activity – or at least frequent misunderstandings – giving rise to inherent agency costs and information asymmetries (Hazen 2012; Ibrahim 2015). Heminway and Hoffman (2011, 933) observed generally that:

Comprised of a rapidly changing set of internet business models, crowdfunding may be less transparent and more intangible to investors and regulators. Promoters of crowdfunding interests are often anonymous individuals and unknown entities. Moreover, in its prevalent current form as a small business start-up financing method, crowdfunding shares many of the overall negative attributes of small business and start-up capital formation.

Media reports have begun to catalogue public instances of fraud and suspected fraud in crowdfunding (Fredman 2015).

The application of protective regulation in this environment is to be expected. And the transaction participant most likely to need protection is the individual or entity providing the funding. The key fears are those common to funding in any context: that the fundraiser will misappropriate received funds for personal benefit or employ them unwisely.

This article addresses the responses to these concerns in the context of crowdfunding involving investment interests recognized as securities under applicable law. It begins by defining and explaining securities crowdfunding (also known as investment crowdfunding, crowdfund investing, or equity crowdfunding) conceptually and legally – firstly by further describing crowdfunding and subsequently by outlining the specific attributes and regulatory consequences of crowdfunding involving securities. The article then elucidates investor protection in the securities crowdfunding setting, focus-



¹ University of Tennessee College of Law.

² The intermediary most commonly involved in crowdfunding is referred to as a *platform* (or sometimes, a *portal*).

ing on the diverse attributes of securities crowdfunding investors and the emerging elements of investor protection regimes tailored to securities crowdfunding. The descriptions, analysis, and observations in the article are founded in and rely primarily on US legal doctrine. International or multinational references are included, however, where possible.

The nature of securities crowdfunding

In order to intelligibly define securities crowdfunding, one must first define crowdfunding. Despite the omnipresence of crowdfunding in academic and industry conversations about small business finance, a universal definition of crowdfunding has proven rather elusive. In some circles, the definition of crowdfunding is contended. In general, however, it is fair to note that there are a number of helpful contextual definitions and taxonomies of crowdfunding. “As in any emergent field, the popular and academic conceptions of crowdfunding are in a state of evolutionary flux that makes complete definitions arbitrarily limiting” (Mollick 2014, 2).

This article takes an expansive view and defines crowdfunding as a method for financing businesses or projects that involves soliciting and securing funding from a broad, disaggregated mass of potential funders, typically through the internet.³ Belleflamme, Lambert and Schwienbacher (2013, 586) summarize the nature of crowdfunding in a manner consistent with the definition proffered here.

[T]he objective is to collect money for investment, generally by using online social networks. In other words, instead of raising money from a small group of sophisticated investors, crowdfunding helps firms to obtain money from large audiences (the “crowd”), in which each individual provides a very small amount. Such investment can take the form of equity purchase, loan, donation, or pre-ordering of the product ...

Bradford (2012b, 5) takes a similar view when he defines crowdfunding as “funding from the crowd – raising small amounts of money from a large number of investors.”

³ Although this definition is broad, it is not intended to include financing in which funding is solicited or received from a restricted group or groups of funders. For example, under these definitions, internet offerings made under Rule 506(c) of Regulation D adopted by the US Securities and Exchange Commission under the Securities Act of 1933, as amended, are not considered crowdfunding (since sales can only be made to “accredited investors” – well-compensated and high net-worth individuals and entities that can bear the risk of the loss of their investment).

Definitions of crowdfunding are often accompanied or enriched by categorizations. For instance, crowdfunding may be used to solicit donations – funding for which nothing is promised in return. This form of crowdfunding is typically referred to as *donative crowdfunding*. However, crowdfunded offerings may also involve promises to funders of some specific benefit as a reward for their largess. These promises may be of a commercial or financial nature. For example, a business or project seeking funding may offer a discount on, presale of, or other preference relating to the product or service being developed or may offer another type of incentive reward (usually a promotional item related to the fundraiser’s business). Offerings in which these types of commercial promises are made are variously identified. Among the more popular descriptive labels: *presale crowdfunding* and *reward crowdfunding*. When promises of a financial nature (e.g., profit-sharing, revenue-sharing, or the provision of any other pecuniary benefit) are made to funders in a crowdfunding campaign, the resulting financial interest is commonly known as a security, and the campaign is most commonly characterized as *securities crowdfunding* or *investment crowdfunding*. With these categories in mind, Belleflamme, Lambert and Schwienbacher (2014, 588) synthesize the following salient definition of crowdfunding: “Crowdfunding involves an open call, mostly through the Internet, for the provision of financial resources either in the form of donation or in exchange for the future product or some form of reward to support initiatives for specific purposes.”

The different types of crowdfunding engage a rich and varied body of law and regulation (Heminway 2014a). Donative crowdfunding, presale crowdfunding and reward crowdfunding may be regulated through generally applicable laws governing commercial activity (e.g., those relating to contracts, torts, agency, property and trusts). In particular situations, specialized regulatory regimes also may provide prescriptions and proscriptions. For example, donative crowdfunding campaigns involving nonprofit organizations may require compliance with charitable solicitation regulations. Presale and reward crowdfunding can trigger the application of consumer protection regulations, including those governing fair trade practices.

By its very nature, securities crowdfunding engages the vast and complex body of securities regulation. Securities regulation is, like most financial regulation, territorially based (Brummer 2011). Globalization and technological advances, especially including the in-

ternet, present challenges for territorial regulatory regimes. Securities crowdfunding is no exception. In cross-border operational and enforcement settings, determining the applicable law is a nontrivial task.

There are certain general observations that can be made about securities regulation, however, that are important to the matters addressed in this article. Securities regulation typically uses three different regulatory tools: mandatory disclosure; fraud, misstatements, and omissions prohibitions; and substantive regulation of participants and processes. These tools are employed to serve a central underlying policy: the promotion of business venture capital formation. However, two important subsidiary policy considerations accompany and support that core regulatory objective, namely maintaining a fair market for securities transactions and protecting investors.

As among these policy underpinnings of securities regulation, investor protection takes a leading role. If investors do not feel secure, they will not participate in the market for capital formation. In short, without investors, there is no market. Accordingly, the generation of a sustainable securities crowdfunding market requires an understanding of the attributes of securities crowdfunding investors and an assessment of the types and levels of protection they may need to feel safe enough to contribute their funds.

Protecting those who invest in crowdfunded securities

The demographics of crowdfunding are emergent. There is no comprehensive data on securities crowdfunding investors available to date. However, the sense among those most familiar with crowdfunding is that these investors are a varied lot. Investor objectives may be multifaceted (i.e., they may encompass more than financial wealth maximization) and situational. Mollick (2014, 3) observes that “the relationship between funders and founders varies by context and the nature of the funding effort,” and further notes that “[e]ven within these contexts, the actual goals of funders are extremely heterogeneous.” Investor attributes may also vary based on the nature of applicable regulation. Hornuf and Schwienbacher (2015) indicate that the availability of an exemption from prospectus requirements may impact investor participation in securities crowdfunding campaigns.

The risks to which these crowdfunding investors are subject also vary. The securities in which they invest may be equity, debt, or a form of investment contract – the term used in US securities regulation for other financial instruments with a profit-generating potential (Schwartz 2015, 615).⁴ Each instrument carries different risks and rewards by its nature and through its individualized terms. Moreover, the type and level of information provided about the security, the manner in which the crowdfunded offering is being conducted, and the business or project seeking funding differs based on applicable regulation (if any) and industry or service provider terms or practices. Some legal rules or platform terms of use, for example, require specific disclosures, but there is no standardization.

Certain observers highlight the potential for this diverse investment environment to self-police, providing enough inherent protection through “the wisdom of crowds” (Surowiecki 2005) for investors and others to support a healthy, vibrant market (Heminway 2014b; Ibrahim 2015; Schwartz 2015). Yet a market-based solution has not been universally embraced as a means of protecting crowdfunding investors. To those who believe the market alone cannot adequately regulate crowdfunding, the varied crowdfunding landscape – comprising a range of investors, investment instruments, and offerings – suggests the need for a broad spectrum of regulation.

In a number of jurisdictions, securities regulation facilitated crowdfunding from the very start (Cumming and Johan 2013; Hornuf and Schwienbacher 2015). However, in many instances, existing regulation was not a perfect – or even comfortable – fit for crowdfunding. In some jurisdictions, the United States included, securities crowdfunding initially required compliance with an expensive, time-consuming registered offering system that – especially when taken together with other impediments under US federal securities law – discouraged all but a handful of crowdfunded securities offerings (Bradford 2012b; Heminway and Hoffman 2011).

In the past five years, a number of regulators have enacted or are in the process of enacting (or assessing the need for) specific securities crowdfunding rules (Cumming and Johan 2013; Hornuf and Schwienbacher 2015). The United States enacted securities crowdfunding legislation in 2012. That legislation, the Capital Raising Online While Deterring Fraud and Unethical

⁴ In the United States, a number of ventures unlawfully offered short-term investment contracts through crowdfunding that this author has labeled *unequity* (Heminway 2012, 360), catalyzing federal regulation.

Non-Disclosure Act (known as the “CROWDFUND Act”), Title III of the Jumpstart Our Business Startups Act, became effective in May 2016 after being tied up for several years in the rulemaking process. Italy was the first mover in Europe, with effective crowdfunding regulation in 2012. The adoption of tailored crowdfunding schemes followed in Great Britain, France, and Belgium in 2014 and in Germany in 2015 (Hornuf and Schwienbacher 2015).

Perhaps unsurprisingly, crowdfunding regulation follows the pattern of securities regulation generally by using mandatory disclosure, liability for fraud, misstatements, or omissions, or substantive regulation as investor protection tools. Substantive regulation limiting the aggregate offering amount and individual investor contributions seem to be the most popular type of rule. Mandatory disclosure rules are also employed in some jurisdictions. Tailored fraud, misstatements, and omissions liability provisions are seemingly rare, but that may be explained by the applicability of adequate pre-existing liability provisions.

The United States is an outlier. It uses all three regulatory tools in the CROWDFUND Act and Regulation CF (adopted by the SEC under the CROWDFUND Act). Specifically, US crowdfunding regulation: provides for the issuer offering disclosures and periodic reporting (including specific requirements for reviewed and audited financial statements); creates a new cause of action for issuer misstatements or omissions to state material facts; and imposes a variety of substantive constraints on issuers, investors, platforms, and the crowdfunding process generally. These constraints include (among many other things) requiring the use of a qualified, regulated intermediary, capping investor and issuer participation to specific dollar amounts over a 12-month period, and requiring issuers and platforms to comply with various requirements in conducting their operations (Bradford 2012a; Cohn 2012; Heminway 2013-2014; Hornuf and Schwienbacher 2015; Schwartz 2013). The resulting regulatory environment is complex and costly (Bradford 2012a; Cohn 2012; Heminway 2013-2014).

Other jurisdictions use a lighter touch in regulating crowdfunding. French crowdfunding regulation includes an issuer disclosure requirement and also requires platform accreditation, investor risk assessments, and a limited aggregate offering size (Hornuf and Schwienbacher 2015). Under the Italian flagship crowdfunding regime, although prospectus requirements are inapplicable, only “innovative startups” (relatively nar-

rowly defined to include certain small new firms) and certain innovative small and medium enterprises are permitted to use the rule (Hornuf and Schwienbacher 2015). Britain’s regulations restrict investor participation in offerings based on their ability to appreciate and bear the attendant investment risk, and Belgium’s and Germany’s rules governing crowdfunding limit the aggregate offering size and the amount of funding an investor can supply in specified crowdfunded offerings (Hornuf and Schwienbacher 2015).

Concluding remarks

Crowdfunding remains a bit of an unknown in business finance. Securities crowdfunding, as a subset of that financing market, is no more familiar. Diverse investors and risks make for a complex regulatory puzzle.

Investor protection regulation has begun to develop in a path-dependent manner. Although there are some core similarities in rule types (e.g., as to offering and investment limits), there is a lot of variation beyond those fundamental similarities. Whether the crowdfunding regulations adopted in various jurisdictions adequately protect investors while, at the same time, promote capital formation through crowdfunding remains to be seen. Hornuf and Schwienbacher (2015) generally find and hypothesize that the nature of regulation affects market participation in a number of ways. Bradford (2012a), Cohn (2012), and Heminway (2013-2014) express doubt that securities crowdfunding will be popular in the United States as a small business capital formation alternative, but it is too soon to tell. Experience should give regulators enough information about crowdfunding investors and their risk profiles to enable a more accurate calibration of investor protection mechanisms. If crowdfunding business practices and regulations become more consistent across jurisdictions, investor protection rules may then begin to converge.

References

- Bellefamme, P., T. Lambert and A. Schwienbacher (2014), “Crowdfunding: Tapping the Right Crowd”, *Journal of Business Venturing* 29 (5), 585–609.
- Bradford, C. S. (2012a), “The New Federal Crowdfunding Exemption: Promise Unfulfilled”, *Securities Regulation Law Journal* 40 (3), 195–249.
- Bradford, C. S. (2012b), “Crowdfunding and the Federal Securities Laws”, *Columbia Business Law Review* 2012 (1), 1–150.
- Brunner, C. (2011), “Territoriality as a Regulatory Technique: Notes from the Financial Crisis”, *University of Cincinnati Law Review* 79 (2), 499–526.

- Cohn, S. R. (2012), “The New Crowdfunding Registration Exemption: Good Idea, Bad Execution”, *Florida Law Review* 64, 1433–46.
- Cumming, D. and S. Johan (2013), “Demand-driven Securities Regulation: Evidence from Crowdfunding”, *Venture Capital* 15 (4), 361–79.
- Fredman, C. (2015), “Fund Me or Fraud Me? Crowdfunding Scams Are on the Rise”, *Consumer Reports*, 5 October, online edition, available at: <http://www.consumerreports.org/cro/money/crowdfunding-scam>.
- Hazen, T. L. (2012), “Crowdfunding or Fraudfunding? Social Networks and the Securities Laws – Why the Specially Tailored Exemption Must Be Conditioned on Meaningful Disclosure”, *North Carolina Law Review* 90, 1735–69.
- Heminway, J. M. (2012), “What is a Security in the Crowdfunding Era?”, *Ohio State Entrepreneurial Business Law Journal* 7 (2), 335–71.
- Heminway, J. M. (2013-2014), “How Congress Killed Investment Crowdfunding: A Tale of Political Pressure, Hasty Decisions, and Inexpert Judgments that Beggars for a Happy Ending”, *Kentucky Law Journal* 102, 865–89.
- Heminway, J. M. (2014a), “The Legal Aspects of Crowdfunding and U.S. Law”, in S. Dresner, ed., *Crowdfunding: A Guide to Raising Capital on the Internet*, John Wiley & Sons, Hoboken, New Jersey, 165–98.
- Heminway, J. M. (2014b), “Investor and Market Protection in the Crowdfunding Era: Disclosing to and for the ‘Crowd’”, *Vermont Law Review* 38, 827–48.
- Heminway, J. M. and S. R. Hoffman (2011), “Proceed at Your Peril: Crowdfunding and the Securities Act of 1933”, *Tennessee Law Review* 78, 879–972.
- Hornuf, L. and A. Schwienbacher (2015), “Should Securities Regulation Promote Crowdfunding?”, SSRN, available at: <http://ssrn.com/abstract=2412124>.
- Ibrahim, D. M. (2015), “Equity Crowdfunding: A Market for Lemons?”, *Minnesota Law Review* 100, 561–607.
- Mollick, E. (2014), “The Dynamics of Crowdfunding: An Exploratory Study”, *Journal of Business Venturing* 29, 1–16.
- Schwartz, A. A. (2015), “The Digital Shareholder”, *Minnesota Law Review* 100 (2), 609–85.
- Schwartz, A. A. (2013), “Crowdfunding Securities”, *Notre Dame Law Review* 88 (3), 1457–90.
- Surowiecki, J. (2005), *The Wisdom of Crowds*, Anchor Books, New York.



SUCCESS AND FAILURE IN EQUITY CROWDFUNDING

LARS HORNUF¹ AND
MATTHIAS SCHMITT²

Introduction



In recent years crowdfunding has emerged as a new channel for entrepreneurs to finance their early stage ventures. Traditionally, many of these innovative projects would not have been funded because they were too risky for banks, their returns were too small and transaction costs too high for private equity and venture capital funds, and the capital needs of the ventures were too large for family and friends to step in as investors (Klöhn and Hornuf 2012, 238). Crowdfunding might therefore fill an important gap at the pre-seed and seed stage of the funding cycle.

Crowdfunding portals come in four different categories (Bradford 2012, 14–27), depending on what backers expect in return for their contributions. Under the lending model, which is also referred to as peer-to-peer lending, investors provide money in order to fund a consumer or business loan of which the principal is always expected to be repaid. On most lending portals, investors are also promised interest on the loans they fund. Pro-social lending portals like *Kiva* neither charge nor pay interest rates on their loans. Today crowdlending is the largest crowdfunding market segment, with *Prosper* and *Lending Club* being the two leading portals worldwide. Under the reward-based model, which often resembles a pre-purchase, backers receive either some form of compensation, like a supporter T-shirt for example, or the product that the entrepreneur intends to develop. After crowdlending, this is the second largest market segment, with *Kickstarter* being the global market leader. As the name already indicates, contributions under the donation model are purely philanthropic. Finally, under the

equity crowdfunding model, investors are promised a share in the future cash flows of the start-up firm they are funding. While in most countries investors receive ordinary shares when participating in equity crowdfunding, corporate laws in some jurisdictions make transferring small company stakes practically impossible, because a costly notary has to be involved to reassign shares in a private limited liability company. In these countries equity crowdfunding is often referred to as crowdinvesting, as investments resemble some form of mezzanine financial contract that is structured in such a way that investors participate in the future cash flows of the firm, but do not have a say in fundamental corporate decisions. In these jurisdictions, frequently used equity crowdfunding instruments are profit-participating loans and silent partnership agreements. Finally, we observe that every sixth portal in Europe has implemented multiple crowdfunding models, most of them adopting two categories simultaneously (Dushnitzky et al. 2016, 65).

Over the last decade, research has mainly focused on crowdlending (Herzenstein, Dholakia and Andrews 2011a and 2011b; Lin, Prabhala and Viswanathan 2013; Lin and Viswanathan 2015) and reward-based crowdfunding (Agrawal, Catalini and Goldfarb 2015; Belleflamme, Lambert and Schwienbacher 2014; Burtch, Ghose and Wattal 2015). Equity crowdfunding has received little attention, mostly because investments by non-accredited investors were prohibited under US securities law until recently. In Europe, equity crowdfunding started with portals such as *Crowdcube* (United Kingdom) and *Seedmatch* (Germany), which launched their first successful campaigns in 2011 (Hornuf and Schwienbacher 2014). This development was supported by the favourable regulatory environment in the United Kingdom (Vulkan, Åstebro and Sierra 2016, 38), as well as far-reaching regulatory exemptions in Germany (Klöhn, Hornuf and Schilling 2016).

While equity crowdfunding expands the funding opportunities of start-up companies, which in turn can be an important driver of economic growth, some caution is warranted, as investors suffer from severe information asymmetries and the majority of start-up firms fail. In order to evaluate whether equity crowdfunding fills a gap at the lower end of the funding cycle, or whether

¹ University of Trier and Max Planck Institute for Innovation and Competition.
² Max Planck Institute for Innovation and Competition.

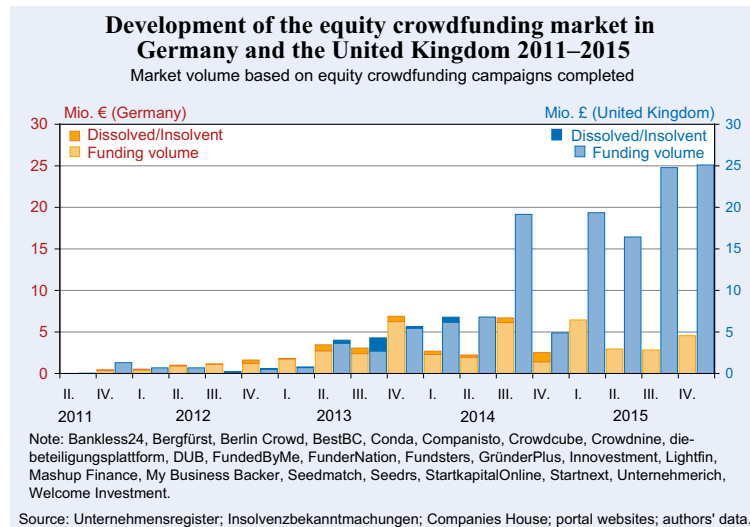
these ventures should not have received funding in the first place, we investigate start-up survival rates, as well as the occurrence of venture capital and business angel funding subsequent to an equity crowdfunding campaign. We focus on the markets in Germany and the United Kingdom, as they have proven the largest equity crowdfunding markets worldwide (Dushnitsky et al. 2016, 52).

Market developments in Germany and the United Kingdom

The equity crowdfunding markets in Germany and the United Kingdom started almost concurrently completing their first successful campaigns in autumn 2011. Over the period from 1 September 2011 until 31 December 2015 a total of 303 campaigns were started on 22 different equity crowdfunding portals in Germany. By the end of the observation period 13 of these portals had already closed down their businesses. Two portals (*Mashup Finance* and *Bankless24*) merged their operations with the Austrian portal *Conda*. Furthermore, out of the 303 equity crowdfunding campaigns started, 210 were successfully funded, 54 did not reach their funding goals and thus did not receive any capital, and for another 39 no information was publically available on the portal website. All of these 39 “dark” campaigns were running on *Deutsche Mikroinvest*, which appears to be the least transparent portal on the German market. Overall, successful campaigns in Germany received EUR 52 million. When contrasting the German market volumes with the two leading equity crowdfunding portals in the United Kingdom (*Crowdcube* and *Seedrs*), it turns out that the German market developed slightly faster until Q4 2013. From that point onwards, however, the equity crowdfunding market in the United Kingdom outpaced the German market substantially (Figure 1).

More recently, some German equity crowdfunding portals started to fund projects that do not imitate the future cash flows of a firm, but the future cash flows of real estate, environmental and movie projects. Most of these projects pay fixed interest rates and should therefore not be classified as equity crowdfunding, but rather as crowdlending. Overall, real estate, environmental

Figure 1



and movie projects reached a cumulated funding volume of EUR 33 million by the end of 2015, paying an average annual interest rate of 6.5 percent. Even if these projects are considered as part of the German equity crowdfunding market, the United Kingdom remains the uncontested market leader worldwide.

Insolvencies and liquidations

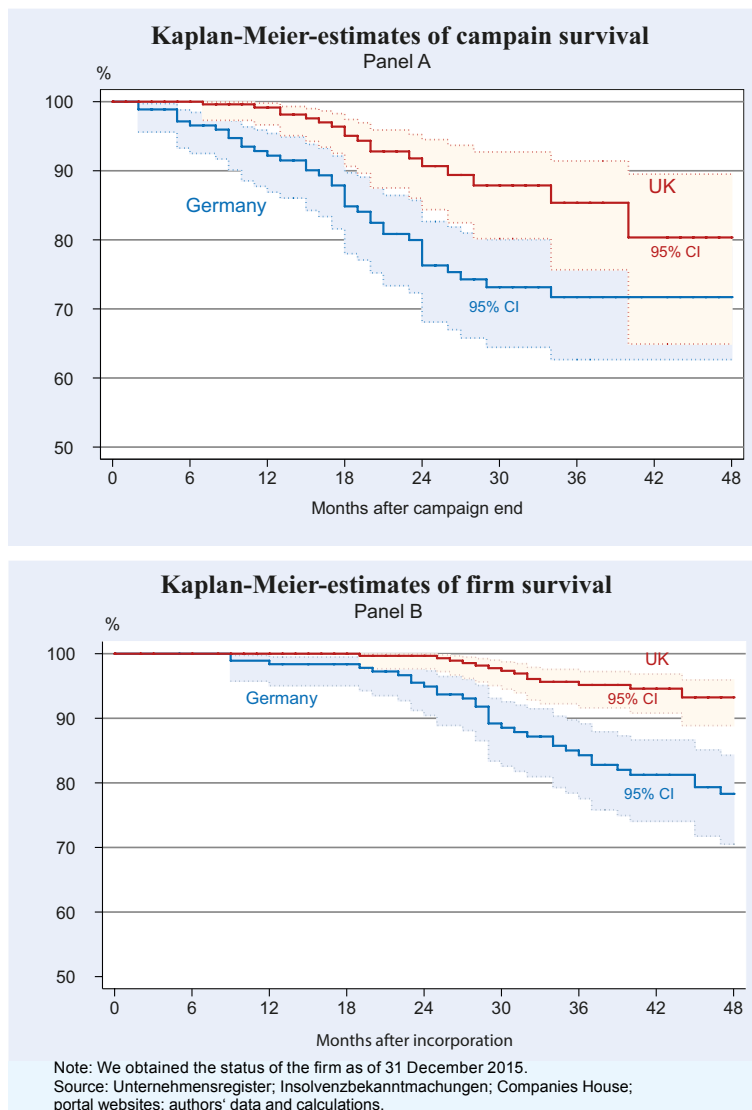
One way to identify whether equity crowdfunding closes an important funding gap is to look at insolvency rates. If they were comparatively high, that might count as evidence that these firms should not have received funding in the first place. Figure 2 shows Kaplan-Meier-estimates for the campaigns and firms funded. Panel A predicts campaign survival after the campaign was successfully funded. Panel B estimates firm survival after the date of incorporation, which we consider as proxy for the start of serious business activities. On average, firms started an equity crowdfunding campaign three years after establishing the firm. The estimates in Figure 2 reveal that equity crowd funded campaigns have somewhat higher survival rates in the United Kingdom as compared to Germany. Nevertheless, 70 percent of the German campaigns funded between 1 September 2011 and 31 December 2015 were still operating an active business four years after the campaign ended. When looking at the survival rates of firms subsequent to incorporation, we find that 85 percent of the equity crowd funded firms in Germany are still active three years after the date of incorporation. Compared to the 30 percent failure rate of German start-ups in general (KfW Research 2012, 53), equity crowdfunding ap-

parently did not develop into a lemons market (Akerlof 1970), where only the riskiest start-ups seek funding.

Adverse selection is only one problem that investors confront when making an investment. After an investment is made, entrepreneurs may change their behaviour and exercise with less effort than previously promised. In order to resolve this moral hazard problem, venture capital funds commonly strike tailor-made contracts that include covenants and staged finance provisions. The boilerplate contracts used in equity crowdfunding campaigns do not define such instruments. Although firms sometimes run two to three consecutive equity crowdfunding rounds, the rounds are not conditional to company success benchmarks. Only recently, the German portal *Companisto* introduced a particular form of staging, whereby two-thirds of the

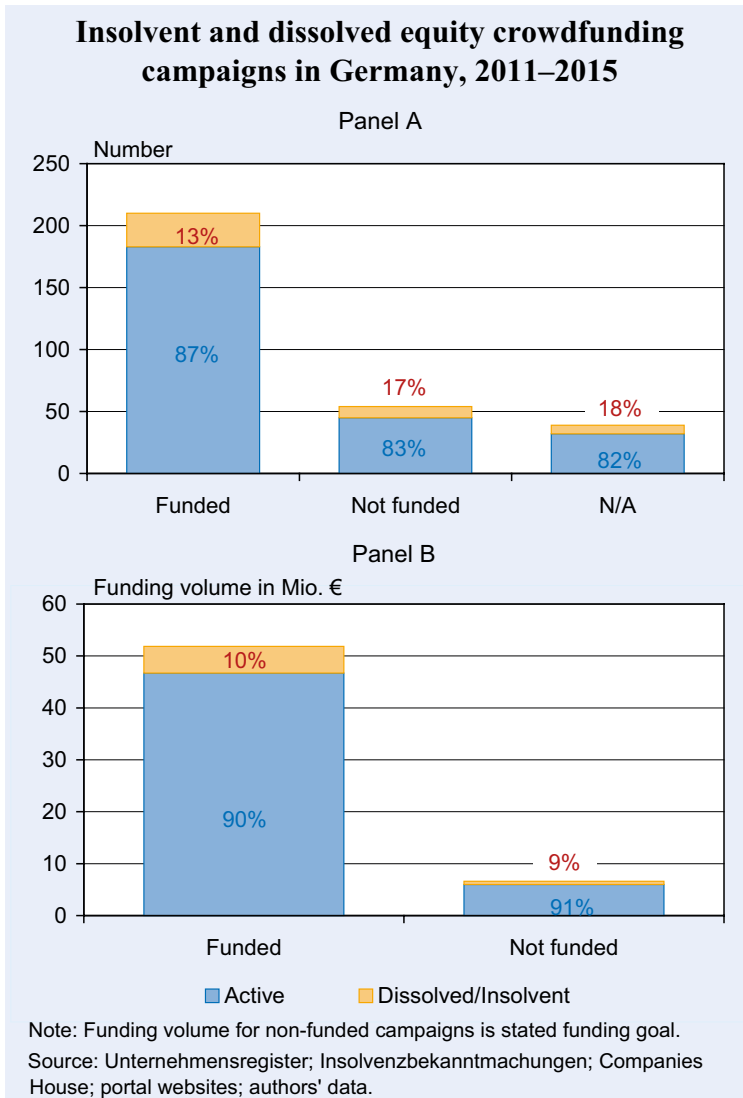
funds collected during an equity crowdfunding campaign are paid out directly to the start-up and one-third is held back over a period of up to six months. After this period the crowd votes as to whether the remaining funds should then be paid out to the start-up or paid back to the investors. This mechanism could help to reduce fraud and financial losses in cases where the start-up runs into insolvency right after the end of the campaign. The Munich based venture *Vibewrite*, for example, which sought to develop a marketable pen that spell checks handwriting, collected EUR 560,250 on 27 September 2014. In early October 2014, however, the national health insurance already filed for the company's insolvency. If such a staged finance mechanism were to have been implemented, the total loss to investors would have been reduced by EUR 186,750.

Figure 2



In the light of prompt failure, one is tempted to ask whether the crowd is capable of selecting firms with a positive net present value that should have received funding but did not, because other sources of financing were not available. The evidence indicates that firms that received no funding through an equity crowdfunding campaign, did indeed launch an insolvency proceeding or were dissolved by their founders more frequently than firms that obtained funding from the crowd (Figure 3, Panel A). This slightly higher failure rate of non-funded start-ups might, however, reflect the fact that these firms lacked the capital to run their business. Interestingly, the highest failure rate is seen for those equity crowdfunding campaigns that were least transparent. Overall, for 18 percent of these campaigns the founders had to open an insolvency proceeding, in some cases even while the equity crowdfunding campaign was still running. Finally, when looking at the volume of the campaigns funded and the capital that non-successful campaigns had requested, the actual and hypothetical failure amounts do barely differ between

Figure 3



the two groups (Figure 3, Panel B). This result is largely driven by the fact that successful campaigns have often been overfunded and therefore comparatively larger amounts failed in this group.

Venture capital and business angel funding

Venture capital funds and business angels use equity crowdfunding as a screening mechanism to identify valuable projects. By investing small amounts of money investors reveal their private information about project success. Moreover, many of the investors also constitute potential consumers, so that equity crowdfunding also uncovers information about potential future demand for the product (Strausz 2015). Venture capital funds and business angels use equity crowdfunding as a screening

tool at multiple stages of the funding cycle. For example, German *T-Ventures* decided to invest a first round in *Smarchive* (today *Gini*), a semantic document analysis start-up, only a few weeks after the founders raised capital through an equity crowdfunding campaign. In other cases, like online lotto broker *Lottohelden*, the same venture capital funds encouraged the start-up to run an equity crowdfunding campaign after providing first round funding. In the case of *Lottohelden*, equity crowdfunding served as a mechanism for learning more about product demand and the prospects of funding a second round.

Table 1 shows the number and percentage of campaigns that received venture capital or business angel backing before, during and after the start-up received funds on an equity crowdfunding portal. In the United Kingdom, more start-ups receive venture capital before an equity crowdfunding campaign than in Germany. The early support by professional investors and the additional capital might be one explanation for the higher survival rates of equity crowd funded start-ups in the United Kingdom.

In Germany, the portal *Innovestment* appears to have the largest percentage of venture capital or business angel backed firms before a campaign is placed on the portals website, which is reflected in slightly lower insolvency rates. Unlike in the United Kingdom, German start-ups barely receive venture capital funding while a campaign is active. Empirical research shows that the strategic release of information about venture capital or business angel funding has a positive effect on the number of investments by the crowd and the investment amount collected during an equity crowdfunding campaign (Block, Hornuf and Moritz 2016). German start-ups, however, are more successful in attracting venture capital and business angel support after an equity crowdfunding campaign. While German start-ups might become more profitable and attractive targets after an equity crowdfunding round, this pattern might reflect the fact that

Table 1

Percentage of equity crowdfunding campaigns that received venture capital or business angel funding before, during, and after the campaign, 2011–2015

	Before	N	During	N	After	N	Total
United Kingdom	5.2%	22	1.7%	7	1.7%	7	423
Crowdcube	6.2%	17	1.5%	4	1.5%	4	273
Seedrs	3.3%	5	2.0%	3	2.0%	3	150
Germany	3.3%	7	1.0%	2	9.5%	20	210
Companisto	4.4%	2	2.2%	1	22.2%	10	45
Innovestment	12.9%	4	0.0%	0	3.2%	1	31
Seedmatch	1.2%	1	1.2%	1	9.8%	8	82
Others	0.0%	0	0.0%	0	1.9%	1	52
Total	4.6%	29	1.4%	9	4.3%	27	633

Source: Portal websites; authors' data.

these start-ups need additional capital, as fewer of them received venture capital and business angel support before an equity crowdfunding campaign. Moreover, German venture capitalists may use equity crowdfunding more frequently as a screening tool and engage after a firm receives funding from the crowd. When comparing the three leading German portals *Companisto*, *Innovestment*, and *Seedmatch*, the former conjecture seems to be supported by the fact that firms receiving venture capital before or during the campaign need less capital thereafter. The start-ups funded on *Innovestment* received the most venture backing before the campaign and subsequently received much less, while for the other portals low venture capital funding before the campaign relates to a greater capital need after the crowdfunding campaign.

Exit opportunities

Until the end of 2015, seven German start-ups offered exit opportunities to their investors (Table 2). In all of these cases, repayment did occur not because the contractually pre-defined funding period had expired and the start-up was required to pay back its investors, but because venture capital funds or business angels became interested in buying a share in the firm or the founders decided the repay investors prematurely.

In the early years of equity crowdfunding, start-ups used the new financing channel equity crowdfunding in order to benefit from the publicity and media coverage that it generated. Even today, portals select one start-up out of 75 applicants that is later promoted on the portal website (Hornuf and Schwienbacher 2014, 25). Thus, portals are in a strong position to cherry pick the best

start-ups from the market. After venture capitalists receive a signal about the firm value from a successful equity crowdfunding campaign, they sometimes offer further funding and acquire a share in the firm. Financial contracts in the German equity crowdfunding market almost exclusively constitute profit participating loans and silent partnerships, which give the crowd no say in case of major corporate events such as a venture capital round. However, some early versions of these contracts gave investors a say in matters such as the raising of capital, changes regarding the employment contracts of their executives or modifications regarding the purpose of the business.

As a result of these rights, the corporate decision-making process became very cumbersome, as it appeared almost impossible to obtain responses from all crowd investors in case of major corporate events. Moreover, dealing with a multitude of contractual relations constituted a legal risk, which professional investors were not willing to bear. As a result, venture capital funds interested in financing another round were eager to buy out the crowd. *Smarchive*, for example, offered the crowd a 25 percent return shortly after the end of the campaign if investors accepted the offer within a two-week period. Those investors who did not accept the offer within the stated timeframe obtained a 12.5 percent return. On average, investors received a 48 percent return on the German market if they identified the start-ups that provided early exit opportunities and accepted the offers made. However, given that it often took several years for an exit opportunity to open up, the annual return was much smaller.

In reality, it is not easy for investors to identify those start-ups that will later provide an exit opportunity.

Moreover, even if investors maintain a well-diversified portfolio and select an adequate number of successful firms, these firms might not pay out sufficiently high returns to make up for the losses from insolvencies and liquidations. To evaluate the attractiveness of equity crowdfunding as a new asset class, we calculated the returns for a naïvely diversified portfolio for the entire German equity crowdfunding market from its start in 2011. We therefore assume that a hypothetical investor devoted the same amount of money in each campaign and that the recovery rates of insolvent start-ups were zero. By the end of 2015 such investors would have earned a negative return of minus 23.2 percent. Arguably, this calculation does not take potential fixed interest payments or perks offered to investors into consideration, which might for some investors constitute a considerable return on the investment. Without these extra payments, the exit returns offered in the German market could not compensate for the losses from insolvencies. This is different on British portals like *Crowdcube*, where investors could have earned an annual return of 8.8 percent (Signori and Vismara 2016, 22–23).

Concluding remarks

Until now, there have been relatively few insolvencies and liquidations in equity crowdfunding, although figures have been rising recently. On the other hand, exit opportunities and absolute returns have been meagre, particularly when compared to the earnings of venture capital funds and the average profits of a well-diversified crowdlending portfolio. Unlike under the donation or reward-based model of crowdfunding, investors in equity crowdfunding are primarily interested in turning a profit and do not want to make a philanthropic contribution to an entrepreneur. If equity crowdfunding does not yield higher returns to crowd investors in the near future, many of them will possibly switch to the lending model. This is particularly true of Germany, where investors do not hold ordinary shares in the firms they have funded and are consequently at the discretion of a venture capital fund that is interested in acquiring shares and seeks to squeeze the crowd out of a mezzanine financial contract at the lowest possible cost. As a solution to this problem, many German equity crowdfunding portals have now installed a special purpose vehicle or established pooling contracts, which encourage the coexistence of crowd investors and venture capital funds.

Table 2

Exit opportunities on the German equity crowdfunding market, 2011–2015									
Start-up	Portal	Incorporation	Campaign end	Number of investors	Month until exit	Round volume	Return	Deadline	Accepted (votes)
Smarchive	Seedmatch	27.07.11	02.12.11	144	11	100,000 €	25% / 12.5%	2 weeks	Yes
Bloomy Days	Seedmatch	28.03.12	04.06.12	175	22	100,000 €	30.00%	3 weeks	Yes
Companisto	Companisto	04.05.11	09.08.12	442	27	100,000 €	100.00%	1 month	No (Yes = 23.43%, No = 49.84%, n/a = 26.82%)
LeaseRad*	Seedmatch	16.12.08	13.08.2012 / 06.12.2012	174 / 263	35 / 31	100,000 / 220,000 €	three digits amount	n/a	Partially (around 25% accepted)
Refined Investment / Cashboard*	Seedmatch	30.05.11	15.11.2012 / 28.03.2013	136 / 339	30 / 26	100,000 / 350,000 €	48.50%	3 weeks	Partially (around 66% accepted)
5 CUPS and some sugar	Companisto	25.01.11	02.07.13	739	19	300,000 €	45.00%	2 weeks	Yes (Yes = 93.79%, No = 1.49%, n/a = 6.21%)
Lottohelden	Seedmatch	13.06.12	09.01.14	539	21	459,000 €	37.75%	n/a	n/a

* Start-ups ran two campaigns.

Source: Authors' data.

Moreover, the implementation of Title III of the *Jumpstart Our Business Startups (JOBS) Act* also made equity crowdfunding available to non-accredited investors in the United States. Americans have always had a higher affinity for investing in stocks and the US equity crowdfunding market might rapidly overtake European markets altogether. If European investors can easily invest in Silicon Valley start-ups via the internet, continental European equity crowdfunding markets might be relegated to a niche existence. The European equity crowdfunding industry should therefore consolidate and establish multilingual portals, which can act as counterweights to the emerging portals in the United States. This process has already started in the lending segment, where British *Funding Circle* recently acquired German *Zencap*. If European equity crowdfunding portals are not capable of bringing together a critical mass of investors and capital in order to fund larger projects at a faster pace, the most promising entrepreneurs might consider financing their ventures overseas.

Every attempt by equity crowdfunding portals to operate beyond the borders of their respective home jurisdictions, however, requires considerable legal work because national security laws remain fragmented and differ substantially (Dushnitsky et al. 2016, 58; Weinstein 2013, 437–449). In Europe, the total amount that can be offered without a prospectus varies between EUR 100,000 and EUR five million depending on the jurisdiction where the offer is made (Hornuf and Schwienbacher 2016). Portals that want to offer standardised contracts and run campaigns in different jurisdictions have to learn about various security laws written in several languages, which may prove an insurmountable task for a start-up company that cannot effort the services of specialised law firms. Moreover, many jurisdictions have recently changed their security laws with regard to equity crowdfunding (Hainz and Hornuf 2016), making it essential for portals to continuously keep track of the applicable legal rules. Under these circumstances it may be particularly tough for European equity crowdfunding portals to keep track of their competitors in the United States.

References

- Akerlof, G. A. (1970), "The Market for Lemons: Quality Uncertainty and the Market Mechanism", *Quarterly Journal of Economics* 84 (3), 488–500.
- Agrawal, A., C. Catalini and A. Goldfarb (2015), "Crowdfunding: Geography, Social Networks, and the Timing of Investment Decisions", *Journal of Economics & Management Strategy* 24 (2), 253–74.
- Belleflamme, P., T. Lambert and A. Schwienbacher (2014), "Crowdfunding: Tapping the Right Crowd", *Journal of Business Venturing* 29 (5), 585–609.
- Block, J., L. Hornuf and A. Moritz (2016), "Which Updates during a Crowdfunding Campaign Increase Crowd Participation?", SSRN Workingpaper, <http://ssrn.com/abstract=2781715> (accessed 19 June 2016).
- Bradford, S. C. (2012), "Crowdfunding and the Federal Securities Laws", *Columbia Business Law Review* 2012 (1), 1–150.
- Burtch, G., A. Ghose and S. Wattal (2015), "The Hidden Cost of Accommodating Crowdfunder Privacy Preferences: A Randomized Field Experiment", *Management Science* 61 (5), 949–62.
- Dushnitsky, G., M. Guerini, E. Piva and C. Rossi-Lamastra (2016), "Crowdfunding in Europe: Determinants of Platform Creation across Countries", *California Management Review* 58 (2), 44–71.
- Hainz, C. and L. Hornuf (2016), "Crowdfunding", *CESifo DICE Report* 14 (1), 67–69.
- Herzenstein, M., U. M. Dholakia and R. Andrews (2011a), "Tell Me a Good Story and I May Lend You Money: The Role of Narratives in Peer-to-Peer Lending Decisions", *Journal of Marketing Research* 48 (1), 138–49.
- Herzenstein, M., U. M. Dholakia and R. Andrews (2011b), "Strategic Herding Behaviors in Peer-to-Peer Loan Auctions", *Journal of Interactive Marketing* 25 (1), 27–36.
- Hornuf, L. and A. Schwienbacher (2014), "The Emergence of Crowdfunding in Europe", *Munich Discussion Paper* no. 2014-43.
- Hornuf, L. and A. Schwienbacher (2016), "Should Securities Regulation Promote Crowdfunding?", *Small Business Economics*, in press.
- Jumpstart Our Business Startups (JOBS) Act (2012), Public Law No: 112-106 (04/05/2012).
- KfW Research (2012), *KfW-Gründungsmonitor 2012: Boom auf dem Arbeitsmarkt dämpft Gründungsaktivitäten. Jährliche Analyse von Struktur und Dynamik des Gründungsgeschehens in Deutschland*, KfW Bankengruppe, Frankfurt am Main.
- Klöhn, L. and L. Hornuf (2012), "Crowdfunding in Deutschland – Markt, Rechtslage und Regulierungsperspektiven", *Journal of Banking Law and Banking* 24 (4), 237–66.
- Klöhn, L., L. Hornuf and T. Schilling (2016), "The Regulation of Crowdfunding in the German Small Investor Protection Act: Content, Consequences, Critique, Suggestions", *European Company Law*, 13 (2), 56–66.
- Lin, M. and S. Viswanathan (2015), "Home Bias in Online Investments: An Empirical Study of an Online Crowdfunding Market", *Management Science* 62 (5), 1393–414.
- Lin, M., A. R. Prabhala and S. Viswanathan (2013), "Judging Borrowers by the Company They Keep: Friendship Networks and Information Asymmetry in Online Peer to Peer Lending", *Management Science* 59 (1), 17–35.
- Signori, A. and S. Vismara (2016), "Returns on Investments in Equity Crowdfunding", *SSRN Workingpaper*, <http://ssrn.com/abstract=2765488> (accessed 17 May 2016).
- Strausz, R. (2015), "Crowdfunding, Demand Uncertainty, and Moral Hazard - A Mechanism Design Approach", *SFB 649 Discussion Paper* 2015-036.
- Vulkan, N., T. Åstebro and M. F. Sierra (2016), "Equity Crowdfunding: A New Phenomena", *Journal of Business Venturing Insights* 5, 37–49.
- Weinstein, R. (2013), "Crowdfunding in the U.S. and Abroad: What to Expect When You're Expecting", *Cornell International Law Journal* 46, 427–53.

A CASE OF REGULATORY EVOLUTION – A REVIEW OF THE UK FINANCIAL CONDUCT AUTHORITY’S APPROACH TO CROWDFUNDING

ROBERT WARDROP AND
TANIA ZIEGLER¹

Introduction

Across Europe, crowdfunding is quickly moving from a fringe funding instrument to becoming a mainstream finance channel, connecting “crowds” to fund businesses, projects and individuals. In its recently published *Report on Crowdfunding in the EU Capital Markets Union*, the European Commission details the importance of crowdfunding as “an important source of non-bank financing in support of job creation, economic growth and competitiveness” (European Commission 2016). While there remains no harmonised regulatory framework applicable to crowdfunding across Europe, individual member states have adopted national regulatory approaches to supervise crowdfunding activities – “tailoring their regulatory frameworks to the characteristics and needs of local markets and investors, which results in differences on how the rules are designed and implemented” (European Commission 2016, 4-5). This article will focus on the regulatory regime in the United Kingdom that regulates and supervises online alternative finance activities that fall under the crowdfunding umbrella.

The United Kingdom is the leader in online alternative finance in the European market, accounting for just under 75 percent of all transaction volumes in Europe (Wardrop et al. 2015). In 2015, online alternative finance in the United Kingdom grew to GBP 3.2 billion, increasing by 84 percent from GBP 1.74 billion in 2014 (Zhang et al. 2016). Sizeable growth in 2015 coincided with

¹ Cambridge Centre for Alternative Finance (CCAF) and Cambridge Judge Business School (both).

successful integration of sector regulation, alongside continued government support for alternative finance. While many member states have opted for a “wait and see” approach to crowdfunding regulation, the United Kingdom was of the first nations to create bespoke regulation for crowdfunding activities. As the regulating body that monitors and supervises crowdfunding activities in the UK is the Financial Conduct Authority (FCA)², this article will centre on the regulatory regime that it has adopted.

The FCA defines crowdfunding as an umbrella term to capture various “categories” of activity, some of which are regulated whilst others are not. The general definition of crowdfunding, according to the FCA is “an internet-based business model [...] in which people and businesses (including start-ups) can try to raise money from the public, to support a business, project, campaign or individual” (FCA 2016a). This broad term includes four sub-categories:

- **Donation-based crowdfunding:** people give money to enterprises or organisations whose activities they want to support.
- **Pre-payment or rewards-based crowdfunding:** people give money in return for a reward, service or product (such as concert tickets, an innovative product, or a computer game).
- **Loan-based crowdfunding:** also known as “peer-to-peer lending”, this is where consumers lend money in return for interest payments and a repayment of capital over time.
- **Investment-based crowdfunding:** consumers invest directly or indirectly in new or established businesses by buying investments such as shares or debentures (FCA 2016a).

The first two categories are exempt from regulatory oversight from the FCA, as the party providing funds does so for altruistic purposes or to receive a “reward”, rather than to profit financially. As such, these two cat-

² It should be noted that the financial regulation of crowdfunding often involves several other government bodies or agencies, including HM Treasury, the Prudential Regulation Authority, etc. Although other agencies and bodies have impacted the way in which crowdfunding has developed in the UK, this article will only review the regulatory regime put in place by the FCA, as the FCA serves as the key regulator and supervisor of crowdfunding activity in the UK. Discussion of policy or regulation that overlaps with additional government agencies will only be discussed in the context of how activity is supervised by the FCA.

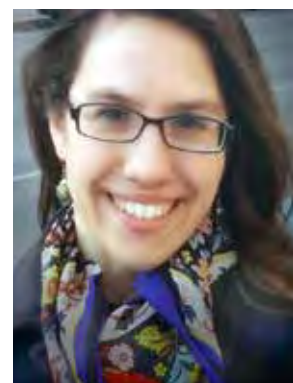


Table 1

Alternative finance models		
Model name	FCA Crowdfunding Category	Definition
Peer-to-Peer Business Lending	Loan-based Crowdfunding	Secured and unsecured debt-based transactions between individuals/institutions and businesses with trading history; most of which are SMEs.
Peer-to-Peer Business Lending (Real Estate)	Loan-based Crowdfunding	Property-based debt transactions between individuals/institutions to businesses; most of which are property developers.
Peer-to-Peer Consumer Lending	Loan-based Crowdfunding	Debt-based transactions between individuals/institutions to an individual; most are unsecured personal loans.
Invoice Trading	Loan-based Crowdfunding	Businesses sell their invoices or receivables to a pool of primarily high net worth individuals or institutional investors.
Equity-based Crowdfunding	Investment-based Crowdfunding	Sale of registered securities, by mostly early stage firms, to both retail, sophisticated and institutional investors.
Equity-based Crowdfunding (Real Estate)	Investment-based Crowdfunding	Direct investment into a property by individuals, usually through the sale of a registered security in a special purpose vehicle (SPV).
Debt-based securities	Investment-based Crowdfunding	Individuals purchase debt-based securities (typically a bond or debenture) at a fixed interest rate. Lenders receive full repayment plus interest paid at full maturity.
Reward-based Crowdfunding	Pre-payment or rewards-based Crowdfunding	Donors have an expectation that fund recipients will provide a tangible but non-financial reward or product in exchange for their contributions. This model falls outside of FCA purview.
Donation-based Crowdfunding	Donation-based Crowdfunding	Non-investment model in which no legally binding financial obligation is incurred by fund recipients to donors; no financial or material returns are expected by the donor. This model falls outside of FCA purview.

Source: Zhang et al. 2016.

egories fall outside of the FCA remit and are exempt from requiring FCA authorisation in order to operate. The second two categories are monitored and supervised by the FCA, as these categories are transactional activities where financial profit is possible for the individual funder. Given the broad definition employed by the FCA, Table 1 indicates the category under which key alternative finance models fall within. These model definitions are based upon the working industry taxonomy created by the Cambridge Centre for Alternative Finance and its research partners (Zhang et al. 2016).

In February 2015, the FCA published its review on the state of crowdfunding since the sector fell under its auspices in April 2014, pending a transition period for key activities (FCA 2015a). Examining the implementation of the new crowdfunding rules, the review discussed the efficacy of the newly-formed regulatory regime. The review raised several key concerns around promotions to retail clients, and pre-empted the FCA's plan to publish additional guidance around consumer communication relating to promotion and advice. While additional rules and guidance around "segregation of client money",

"social promotion" and "P2P Advice" were set forth in 2016, this review document serves as the most comprehensive analysis of the authorisation process for investment-based and loan-based crowdfunding.

Investment-based crowdfunding

Investment-based crowdfunding, as noted above, relates to activities in which individuals invest in unlisted shares or debt securities issued by a business. At the time of the February 2015 review, the FCA publicly acknowledged the full authorisation of ten firms as of 1 April 2014, with an additional four platforms receiving authorisation by the end of 2014. The document noted an additional ten applications in review at the start of 2015. The ten firms that were authorised on or before 1 April had until 1 October 2014 to become fully compliant with the new rules, whilst any platform that began the authorisation process after 1 April 2014 had to comply with all the new rules from their date of authorisation. While the FCA has yet to release a 2016 crowdfunding review, our assessment is that as of March 2016, a to-

tal of 24 crowdfunding platforms have permission to function as an investment-based crowdfunding business in the UK. Additionally, a closer examination of the FCA's registry indicates that at least 12 platforms are operating an investment-based crowdfunding business as an appointed representative (see Appendix).

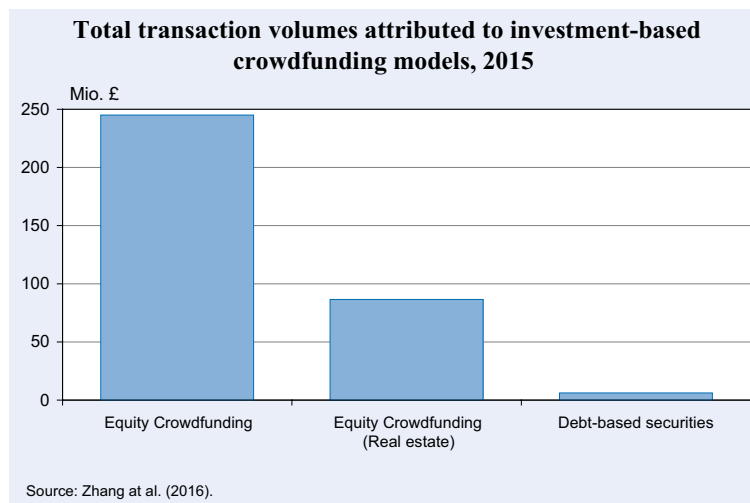
The size of investment-based crowdfunding

As noted in Table 1, investment-based crowdfunding is an umbrella term which captures the activities of a number of online alternative finance models including equity-based crowdfunding, real estate equity-based crowdfunding and debt-based securities, such as mini-bonds and debentures. At the end of 2015, these models raised GBP 337.8 million.

As Figure 1 indicates, the dominant share of volume came from the equity crowdfunding model. Yet a significant proportion of investment-based crowdfunding volumes came from the relatively new model, equity crowdfunding in real estate. As noted in the *Pushing Boundaries* report, this model enables investors to acquire ownership of a property asset via the purchase of property shares. Upon analysis of the investor profile breakdown, the study found that this model principally caters to sophisticated and high net-worth investors, with 77 percent of funders identifying as such.³ Ten percent of those participating in deals across this model were identified as ordinary retail investors, leaving only three percent of funders from institutional backgrounds (Zhang et al. 2016, 42). The emphasis of retail money in this model is important, as this model is relatively new and has yet to incur additional specific requirements beyond those outlined and required for investment-based crowdfunding. It is likely that 2016 will bring additional guidance and/or requirements for firms dealing with property-assets, given their distinct nature compared to other typical non-readily realisable asset-classes.

³ The FCA defines a Sophisticated Investor as an individual with extensive investment experience, who is "better able to understand and evaluate the risks and potential rewards of unusual, complex and/or illiquid investments." A High net-worth individual is defined as an individual with an "annual income over GBP 100,000 or having investable net assets of more than GBP 250,000." Finally, an Ordinary Retail Investor is defined as an "investor of ordinary means and experience [...] such investors face difficulty understanding the terms and features of complex financial products."

Figure 1



Application of new rules

The FCA defines the instruments traded on investment-based crowdfunding as "non-readily realisable securities" that are not listed on regulated stock markets, and are distributed and sold over the internet. Given this definition, the key activities performed by investment-based crowdfunding, especially those in the equity crowdfunding space, already fell under the FCA's regulatory purview. As such, requirements around disclosure, client monies, and promotion were already in place for platforms in the space. New rules pertaining to investment-based crowdfunding related primarily to marketing restrictions, in the form of consumer protection rules, which dictate how firms can make direct offers to retail clients, and how said retail clients are defined.

Based upon their ability to meet certain criteria, the FCA divides retail consumers into three categories: the high-net worth individual, the sophisticated investor and the ordinary retail investor. Depending upon the categorisation of the individual investor, a platform may only direct offer promotions to retail consumers that meet the following criteria:

- Certified high net-worth or sophisticated investors;
- Ordinary retail investors who receive regulated advice;
- Ordinary retail investors who invest less than ten percent of net assets. In this instance, firms are required to check consumer understanding of risks if not receiving regulated advice.

Platforms operating in the investment-based crowdfunding space must also verify that the retail investor is aware of the risks associated with their activity.

In addition to the base-line rules enacted in April 2014, the FCA released finalised guidance in March 2015 to further define rules around social media and customer communications (FCA 2015b). These rules also apply to loan-based crowdfunding platforms. While strict requirements around “fair, clear and not misleading” promotions were included in the original rules, the FCA provided additional guidance to how the FCA would approach defining the use of social media for financial promotion, and how the FCA would supervise said social promotions.⁴ The core of the FCA’s supervisory approach is the notion that “any and all communication that can be deemed as a promotion be reflective not only of any benefits to a consumer, but must also address any relevant risk associated with the use of the product being promoted.” To put this into context, the key purpose of this guidance is to address and define the parameters in which platforms might use social media platforms, especially where character limitations may prevent sufficient and appropriate risk warnings. Although most (77 percent) operational platforms in the UK view the FCA’s approach to social media as “adequate and appropriate”, 21 percent of platforms view guidance social media promotions as “excessive and strict” for their crowdfunding activity (Zhang et al. 2016, 31).

Potential areas of risk

In addition to use of social media for financial promotion, equity crowdfunding platforms must also navigate potential additional supervision of the “online forums” typical for most crowdfunding campaigns. While the existing guidance does not specifically discuss how online forums should be supervised, this is probably an area that will attract attention in the future. Since communication to potential investors, even if originated by the fundraising party, may be viewed as financial promotion, constructing compliant communication rules on online forums remains a potential challenge for platforms.

Another potential area of risk may relate to the required due-diligence that platforms must undertake before

⁴ Within the context of the FCA, a social promotion is defined as “any form of communication (including through social media) [which can constitute] a financial promotion, depending on whether it includes an invitation or inducement to engage in financial activity” (FCA 2015b, Section 1.9-Finalised Guidance).

allowing businesses to raise equity on their platform. In a recent report by CrowdRating, a study found that investors in crowdfunding deals “will recognise if a campaign has a really strong management team in place and equally if it doesn’t have a great product or service. However, [investors] are largely indifferent to valuation or the anticipated financial performance of a company that is fundraising (Rees-Mogg and Harris 2016). The study concluded that entrepreneurs were incentivised to set a high, often overly-inflated valuation, as the crowd investor was, wilfully or otherwise, insufficiently reviewing the financials of the propositions they funded. Effectively, these findings challenge the concept that platforms are sufficiently “provid[ing] appropriate information about designated investments, so that the client is reasonably able to understand the nature and risks and to take investment decisions on an informed basis” (FCA 2016b). This report, alongside an array of headlines pointing to over-valuation of crowd-driven campaigns, may compel the FCA to implement rules relating to upfront due-diligence procedures, thus altering the platform’s role, which will evolve away from being purely an intermediary.

In 2015, equity-based crowdfunding experienced 295 percent growth compared to the previous year (Zhang et al. 2016, 41). An important development within equity-based crowdfunding was continued innovation in the products offered by platforms, which introduced a blend of debt-products, including mini-bonds, convertible notes, real-estate investment trusts, to name just a few of them. The influx of new products, while certainly positive for the development of the crowdfunding sector, may raise issues in terms of how the FCA supervises activities. At present, there is no specific additional guidance, but platforms may need to apply for additional permissions depending upon their activity.

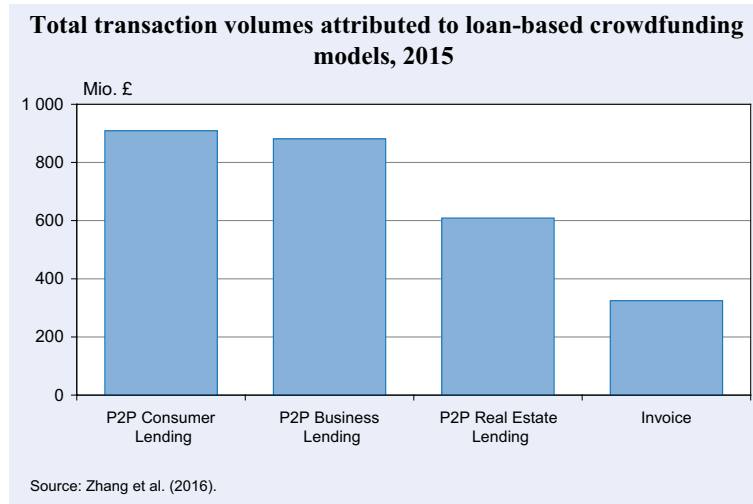
Loan-based crowdfunding

Unlike the investment-based crowdfunding model, loan-based crowdfunding refers to a class of consumer credit activities that previously fell under the auspices of the Office of Fair Trade (OFT). With the introduction of crowdfunding rules in April 2014, the oversight of consumer credit activities, including the newly-defined loan-based crowdfunding, transitioned to FCA supervision. In preparation for this transition, the 2014 rules included certain transitional arrangements applicable to firms holding OFT licenses. Any firm that had an OFT license before 1 April 2014 was granted interim per-

missions, which allows firms to adhere to top-level FCA rules and requirements, whilst still being fully operational and preparing their application or awaiting full authorisation. Any firm entering the marketplace after 1 April 2014 was subject to all FCA rules at once and could not enjoy the benefits of interim permissions (FCA 2015a).

At the time of its publication, the FCA’s crowdfunding review indicated that only one firm had been fully authorised, with an additional eight pending applications. The FCA also indicated that 56 firms were operating within the marketplace, or seeking to enter the space, at the end of 2014. Platforms operating in the market did so either with interim permissions or by becoming an appointed representative to an authorised firm. In March 2016, the FCA indicated that a total of eight firms (only an additional seven in the course of a year) had received full authorisation to operate as a P2P platform, with a further 86 firms awaiting a decision.⁵ Of these 86 platforms, only 44 have interim permissions related to their previously held OFT license (FCA 2016c). With respect to the remaining 42 applicant platforms, a number are operating as an appointed representative. While the breakdown remains unclear, (as the FCA does not explicitly publish the authorisation status of specific platforms), close inspection of the FCA registry indicates that at least five of these platforms are operating as an Appointed Representative (see Appendix). Interestingly, it seems as though one particular firm, Resolution Capital (FCA 2016d), is “currently attached to” approximately 25 businesses, including several firms operating in the P2P lending space. As such, it seems like a considerable number of appointed representative firms are using the Resolution Capital license. For the remaining businesses that are not appointed representatives, they are unable to operate within the marketplace. The FCA has noted that a delay in authorising additional firms stems from “recent changes to legislation which clarifies how operating a P2P platform fits with other regulated activities” (FCA 2016c). Namely, changes to rules regarding the segregation of client money and

Figure 2



rules related to advice came into effect March and April respectively.

The size of loan-based crowdfunding

In the simplest of terms, the FCA outlines loan-based crowdfunding activities as an activity that “facilitates loans between individual [lenders] and individuals and business [borrowers]” (FCA 2015a) and is defined as a “firms that operate[s] electronic systems in relation to lending” (FCA 2015a). As noted previously, loan-based crowdfunding captures the activities of a number of online alternative finance models, including peer-to-peer (P2P) lending models that include P2P Business Lending, P2P Business Lending for Real Estate, and P2P Consumer Lending, and invoice trading. A total of GBP 2.7 billion was facilitated by these online alternative finance models in 2015. As indicated by Figure 2, P2P Consumer Lending and P2P Business Lending contributed the most significant proportions of lending in 2015. The very same year, however, proved to be a watershed for the relative newcomer, P2P Real Estate Lending. In the *Pushing Boundaries* report, this segment of P2P Lending is associated with P2P Business Lending, as only businesses may participate as borrowers at present.⁶

⁵ The Financial Times indicated that the eight firms that received full authorisation to function as a P2P lending firm include: EdAid, Go2Partners, Formax Credit, Crowdstacker, Resolution Compliance, Clasp Investments, Crowd2Fund, and Gracombex (Williams 2016).

⁶ It is likely that the “restriction” on business borrowers in Real-Estate P2P Lending relates to rules set out by the Financial Services and Markets Act, which dictates the conditions that must be satisfied between the borrower and lender. According to the regulated activity order summarised, certain stipulations must be satisfied depending upon an individual borrower, or a business or partnership entity borrower.

Application of new rules

As noted above, it was only on 1 April 2014 that regulation of the consumer credit marketplace, and thus firms in the loan-based crowdfunding space, fell under the auspices of the FCA. Key changes to loan-based platform activity dealt with the application of core consumer protections by the regulator, including guidance and supervision relating to promotions, anti-money laundering, etc. In particular, the FCA implemented prudential requirements (FCA 2015a), which reflect the standardised capital reserves that a platform must comply with. As this was not a previous requirement, the FCA is phasing in capital requirements to give firms time to adjust to their new obligations. A key component of the implementation of prudential requirements relates to the reporting requirements imposed upon platforms once they are fully authorised. Utilising the GABRIEL portal, platforms are expected to report to the FCA on a quarterly basis, with monthly reporting of any information relating to the holding of client monies (FCA 2016e). Although prudential rules are not easy to generalise, as they are based upon the individual permissions and activities of each platform, P2P lending firms do have a base capital requirement of GBP 50k, with a GBP 20k requirement during the transition period. At present, firms are obliged to meet minimum capital requirements only upon authorisation, with a transitional period until April 2017 (FCA 2015a). A platform operating in the P2P space is also required to notify the FCA should the value of their loans outstanding increase by 15 percent or more, thus necessitating a recalculation of any prudential requirements. In addition to financial reporting, platforms are required to report any disputes between consumers and the platform.

In addition to capital requirements, platforms are obliged to conform to Client Money Rules, as outlined in the FCA Handbook in the section relating to their Client Asset Sourcebook rules (or CASS) related to “adequate protection” – i.e. no co-mingling of client monies, clear and transparent holding of client monies, etc. (FCA 2016f). Rules related to client money were further modified in 2016, following the Consultation Paper entitled: “Loan-based Crowdfunding Platforms and Segregation of Client Money”. The issue that this consultation paper aimed to rectify related to how firms dealt with investor money (from the regulated P2P agreement) alongside monies from unregulated Business to Business lending (B2B) agreements (FCA 2016g). Effectively, this consultation paper proposed a less onerous process for dealing with monies generated by a P2P agreement (i.e.

funds from an individual) versus those of B2B funds (i.e. funds from an institutional investor, and falling outside of the consumer credit regulation purview). The FCA suggested (and ultimately implemented) a revised policy that would allow firms to elect to hold money from both regulated and unregulated client money together, as long as all client money was separate from the firm’s own funds. The new rules are covered in CASS 7.13, which refers specifically to how Client Money ought to be separated, as well as guidelines on how to submit client money and asset return statements (FCA 2016f, CASS 7.13).

The implication of the client money rule change is timely and necessary, as institutional investment in the P2P lending space continues to grow rapidly. In 2015, 32 percent of P2P Consumer Lending was derived from institutional lenders. Illustrating the trend that institutional involvement is on the rise, P2P Consumer Lending saw levels of institutional lending increase dramatically over the span of the year, recording only 17 percent of lending from institutions in Q1 of 2015, and rising to 38 percent by Q3 and Q4 of the same year. P2P business lending also saw considerable levels of institutional lending, with 26 percent of total funding in 2015 attributed to institutional investors (Zhang et al. 2016, 27). Institutional lending is expected to continue to grow in 2016, the ability to hold both regulated and unregulated client money should provide loan-based crowdfunding firms with greater flexibility when dealing with the treatment of client money.

Loan-based crowdfunding platforms must comply with disclosure requirements, where all communications are “fair, clear and not misleading”. There is a minimum set of information points that a firm must share with consumers, including but not limited to information on the performance of products, comparative information, and relevant transaction information. In light of the introduction of the Innovate Finance Individual Savings Account (IFISA) on 6 April 2016, the FCA published a second consultation paper to address potential changes in regulated advising on peer-to-peer agreements (FCA 2016h) and to allow for loan-based crowdfunding investments (under Article 36H agreements in the Regulated Activities Order (RAO)) to be included in Individual Savings Accounts (ISA’s). This consultation document makes heavy reference to the recently amended FCA and HM Treasury Financial Advice Market Review (FAMR) recommendations, which came into effect in January 2016. The purpose of the recommendations was to improve consumers’ access to advice, narrowing the

definition of regulated advice to contain “personal recommendation” (HM Treasury 2015). Thanks to the narrow definition of advice adopted, platforms that provide risk ratings, guidance services or research into potential investments were effectively able to do so without these services being considered “advice”. As such, the FCA’s consultation recommends that, given the narrowing of scope, certain peer-to-peer agreements may not require regulation vis-à-vis advice.

In the final rules issued by the FCA’s policy statement, “PS16/8: FCA Handbook changes regarding the segregation of client money on loan-based crowdfunding platforms, the Innovative Finance ISA, and the regulated activity of advising on peer-to-peer agreements” (FCA 2016i) the recommendations from the previously discussed consultation documents were implemented as official policy. To coincide with the introduction of the IFISA in April 2016, the FCA has issued new rules that align “advice” on P2P agreements with regulation on advising specified investments. Specifically, “the FCA will apply the suitability requirements contained in chapter 9 of the Conduct of Business Sourcebook (COBS) and the rule on inducements found in COBS 2.3.1R to firms that make personal recommendations in relation to P2P agreements” (Lexology 2016). At its core, this shift in the regulation of advice allows platforms to provide more “decision-making” information on a given P2P agreement, and only obliges “personal recommendations” of rules on advice.

This policy statement also amends the FCA handbook by setting out guidance and clarification on the type of information that firms must provide their consumers with in relation to ISAs. Specifically, the FCA requires that firms disclose any potential tax disadvantages related to repayment failure or firm failure, the procedure and potential consequences of liquidating a P2P loan help within the IFISA Wrapper, and the procedure and potential tax disadvantage of transferring P2P loan help within the wrapper from one ISA manager to another (Lexology 2016). Ultimately, this policy statement and subsequent guidance expand upon existing rules on financial promotion and disclosure and provide clear guidelines for P2P Lending platforms that wish to manage an IFISA.

Potential risks

In the *Pushing Boundaries* report, P2P Lending platforms indicated that the introduction of the IFISA

would constitute significant growth. P2P Consumer and Business Lending platforms indicated an anticipated annual growth in volume of approximately 27 percent to their respective models, while P2P Real-Estate Lenders expect 52 percent growth in their transaction volume (Zhang et al. 2016, 32). Given the high hopes of the industry, it is curious to note that none of the major P2P Lending platforms may currently use an IFISA, as only P2P loans on fully authorised platforms are eligible investments for the IFISA. The significant back-log of FCA applications for authorisation has left many wondering if the impact of the ISA will be delayed into the second half of the year.

As far as the authorisation process is concerned, one additional potential risk is that of industry consolidation within the next year, with the merger of P2P lending platforms with each other or to another type of intermediary. When a firm applies for authorisation, a key component of the application is the platform ownership structure. Any change in ownership requires pre-approval and subsequent re-authorisation. The levels of concern over the merging of consumer data, client monies, etc. remain an unknown quantity, and such merging would probably cause considerable upheaval at a procedural level.

Closing thoughts

The FCA’s approach to crowdfunding is often lauded as the “gold-standard” for crowdfunding regulation. With regulation now having been in place for over a year, it is interesting to note the high levels of satisfaction registered by crowdfunding platforms. In the *Pushing Boundaries* UK industry report, the platforms surveyed were asked to indicate their levels of satisfaction with the existing regulatory framework, and to gauge their perceptions of prospective regulatory changes.

Of the P2P Lending (loan-based crowdfunding) platforms surveyed, 91 percent regarded the current regulatory regime as “adequate and appropriate” to their activities, with only 5.66 percent suggesting that “tighter or stricter” regulation need to be implemented. A mere 3.77 percent viewed regulation as “excessive and too strict” (Zhang et al. 2016, 31). Similarly, equity-based crowdfunding registered high levels of satisfaction with the FCA’s regulatory approach, with 89 percent of platforms viewing the regulatory regime as “adequate and appropriate”. Just under eight percent of the equity-based platforms surveyed advocated a tighter and

stricter regulatory approach, while only three percent of platforms regarded the current FCA regulation as too “excessive and strict” (Zhang et al. 2016).

Given the positive industry sentiment towards its regulator, and an evolving framework to address concerns or potential growth-barriers as they arise, the FCA’s approach to crowdfunding has proven a resounding success to date.

Appendix

A non-exhaustive list of operational platform authorisation status*

Platform name	Primary activity **	Authorisation status
A Piece of London	Equity-based Crowdfunding	Appointed Rep
Ablrate	P2P Lending	Interim permission
Abundance	Debt-based Securities	Authorised
Amplifi Capital	P2P Lending	Interim permission
Angels Den	Equity-based Crowdfunding	Authorised
ArchOver	P2P Lending	Interim permission
AssetMatch	Alternative Equity Market	Authorised
Assetz Capital	P2P Lending	Interim permission
BankToTheFuture.com	Hybridised Crowdfunding (With mixed models)	Appointed Representative
Business Loan Network t/a ThinCats	P2P Lending	Interim permission
Capital Stackers	P2P Lending	Interim permission
Clifton Asset Management Plc	Pension-led Funding	Appointed Representative
CoFunder (NI) Ltd	P2P Lending	Interim permission
Cogress	Equity-based Crowdfunding	Authorised
Commuter Club	P2P Lending	Interim permission
Crowd Estates	P2P Lending	Interim permission
Crowd for Angels (UK) Limited	Equity-based Crowdfunding	Authorised
Crowd Lords	Equity-based Crowdfunding	Appointed Representative
Crowd Property	P2P Lending	Interim permission
Crowd Racing	Profit-Share (Crowdfunding of Horse)	Exemption
Crowd2Fund	Hybridised Crowdfunding (including P2P Lending)	Authorised
Crowdhouse	Equity-based Crowdfunding	Appointed Representative
CrowdBnk	Equity-based Crowdfunding	Authorised
Crowdcube	Hybridised Crowdfunding (With mixed models)	Authorised
CrowdInvest	Equity-based Crowdfunding	Appointed Representative
Crowdshed	Mixed model	Interim permission
Crowdstacker	P2P Lending	Authorised
EdAid	P2P Lending	Authorised
Emerging Crowd	Equity-based Crowdfunding	Appointed Rep (Resolution Compliance)
eMoney Union	P2P Lending	Interim permission
Ethex	Debt-based Securities	Exemption
Ezbob	P2P Lending	Authorised
F6s	Equity-based Crowdfunding	Authorised
Fireflock.com Ltd	Equity-based Crowdfunding	Appointed Representative
Fleximize	P2P Lending	Interim permission (lapsed)
Folk2Folk	P2P Lending	Interim permission
Formax Credit	P2P Lending	Authorised
Fruitful	P2P Lending	Interim permission
Funding Circle	P2P Lending	Interim permission
Funding Empire	P2P Lending	Interim permission
Funding Tree	P2P Lending	Authorised
FundingKnight	P2P Lending	Appointed Representative
Fundingsecure	P2P Lending	Interim permission
GamCrowd	Hybridised Crowdfunding (With mixed models)	Authorised
Go2 Business Loans (Go2 Partners)	P2P Lending	Authorised
GrowthDeck	Equity-based Crowdfunding	Appointed Representative
GrowthFunders	Equity-based Crowdfunding	Authorised
GrowthStreet	P2P Lending	Appointed Representative

IceDragons.co.uk	Equity-based Crowdfunding	Authorised
Invest & Fund	P2P Lending	Interim permission
Invest Den (Clasp Investments)	Equity-based Crowdfunding/Debt-based Securities	Authorised
InvestingZone	Equity-based Crowdfunding	Appointed Representative
investUP	Mixed Model	Authorised
Karadoo	Equity-based Crowdfunding	Appointed Representative
Landbay	P2P Lending	Interim permission
Lendable	P2P Lending	Interim permission
Lending Works Limited	P2P Lending	Interim permission
LendingCrowd	P2P Lending	Interim permission
LendInvest	P2P Lending	Interim permission
Madiston LendLoanInvest	P2P Lending	Interim permission
Madiston plc	P2P Lending	Interim permission
MarketInvoice	Invoice Trading	Authorised
Money Thing	P2P Lending	Interim permission
Money&Co.	P2P Lending	Interim permission
Neyber	P2P Lending/Profit-Share	Interim permission
Platform Black	Invoice Trading	Appointed Representative
Portfolio Ventures	Equity-based Crowdfunding	Appointed Representative
Primary Bid	Equity-based Crowdfunding (AIM Businesses Only)	Authorised
Prodigy Finance	P2P Lending	Interim permission
Property Moose	Equity-based Crowdfunding	Appointed Rep (Resolution Compliance)
Property Partner	Equity-based Crowdfunding	Authorised
Proplend	P2P Lending	Interim permission
Propnology	Equity-based Crowdfunding	Authorised
QuidCycle	P2P Lending	Interim permission
RateSetter	P2P Lending	Interim permission
Rebuilding Society	P2P Lending	Interim permission
Relendex	P2P Lending	Interim permission
Resolution Compliance	Appointed Representative/Tied Agent	Authorised
Saving Stream/ Lendy Ltd	P2P Lending	Interim permission
Seedrs	Equity-based Crowdfunding	Authorised
ShareIn Ltd	Equity-based Crowdfunding	Authorised
Simple Backing	P2P Lending	Interim permission
SyndicateRoom	Equity-based Crowdfunding	Authorised
The Bridge Crowd	Equity-based Crowdfunding	Authorised
The House Crowd	Equity-based Crowdfunding	Appointed Representative
The Money Platform (Gracombex)	P2P Lending	Authorised
Trillion Fund	P2P Lending	Interim permission
UK Bond Network	Debt-based Securities	Appointed Representative
Unbolted	P2P Lending	Interim permission
VentureFounders	Equity-based Crowdfunding	Authorised
Wellesley & Co	P2P Lending	Interim permission
WiseAlpha	P2P Lending	Appointed Representative
YesGrowth	P2P Lending	Appointed Representative
Zopa	P2P Lending	Interim permission

*This list was compiled inputting publically available registration numbers from platform websites onto the Financial Services Register;
 **Primary activities were assessed by reviewing platform websites, listed and/or indicated permissions and/or by news articles.

References

European Commission (2016), Crowdfunding in the EU Capital Markets Union, *Commission Staff Working Document 154*, Brussels.

Financial Conduct Authority (FCA) (2015a), A Review of the Regulatory Regime for Crowdfunding and the Promotion of Non-readily Realisable Securities by Other Media, <http://www.fca.org.uk/static/documents/crowdfunding-review.pdf> (accessed 14 June 2016).

Financial Conduct Authority (FCA) (2015b), Finalised Guidance: Social Media and Customer Communications: The FCA's Supervisory Approach to Financial Promotions in Social Media, <https://www.fca.org.uk/your-fca/documents/finalised-guidance/fg15-04> (accessed 14 June 2016).

Financial Conduct Authority (FCA) (2016a), Crowdfunding, <http://www.fca.org.uk/consumers/financial-services-products/investments/types-of-investment/crowdfunding> (accessed 14 June 2016).

Financial Conduct Authority (FCA) (2016b), FCA Handbook. Conduct of Business Sourcebook (COBS): Chapter 2 Conduct of Business Obligations COBS 2, <https://www.handbook.fca.org.uk/handbook/COBS/2/?view=chapter> (accessed 14 June 2016).

Financial Conduct Authority (FCA) (2016c), Statement on Peer-to-Peer Applications for Full Authorisation Financial Conduct, <http://www.fca.org.uk/news/peer-to-peer-applications-for-full-authorisation> (accessed 14 June 2016).

Financial Conduct Authority (FCA) (2016d), Financial Services Registry Firm Details: Resolution Compliance Limited, https://register.fca.org.uk/ShPo_FirmDetailsPage?id=001b000000NMecyAAD (accessed 14 June 2016).

Financial Conduct Authority (FCA) (2016e), Consumer Credit Reporting, https://www.the-fca.org.uk/firms/regulatory-reporting/consumer-credit-reporting?field_fcasf_sector=226&field_fcasf_page_category=unset (accessed 14 June 2016).

Financial Conduct Authority (FCA) (2016f), FCA Handbook. Client Assets Sourcebook (CASS): Chapter 7 Client money rules CASS 7, <https://www.handbook.fca.org.uk/handbook/CASS/7/10.html> (accessed 14 June 2016).

Financial Conduct Authority (FCA) (2016g), CP16/4: Loan-Based Crowdfunding Platforms and Segregation of Client Money, <https://www.fca.org.uk/your-fca/documents/consultation-papers/cp16-4> (accessed 14 June 2016).

Financial Conduct Authority (FCA) (2016h), CP16/5: Handbook Changes to Reflect the Introduction of the Innovative Finance ISA and the Regulated Activity of Advising on Peer-to-Peer Agreements, <https://www.fca.org.uk/your-fca/documents/consultation-papers/cp16-5-handbook-changes-to-reflect-the-introduction-of-the-innovative-finance-isa-and-the-regulated-activity-of-advising-on-peer-to-peer-agreements-> (accessed 14 June 2016).

Financial Conduct Authority (FCA) (2016i), PS16/8: FCA Handbook Changes Regarding the Segregation of Client Money on Loan-Based Crowdfunding Platforms, the Innovative Finance ISA, and the Regulated Activity of Advising on Peer-to-Peer Agreements, <https://www.fca.org.uk/your-fca/documents/policy-statements/ps16-08> (accessed 14 June 2016).

HM Treasury (2015), Financial Services and Markets Act 2015 no. 2061, http://www.legislation.gov.uk/ukxi/2015/2061/pdfs/ukxi_20152061_en.pdf (accessed 14 June 2016).

Lexology (2016), FCA Issues Policy Statement on Client Money Rule Changes for Crowdfunding Platform Operators, the IFISA and New P2P Advice Regulated Activity, <http://www.lexology.com/library/detail.aspx?g=ff9ba673-34ad-4aea-b468-a0b40427f21f> (accessed 14 June 2016).

Rees-Mogg, M. and O. Harris (2016), *Is the Crowd Indifferent to Financials? Observations on 2015 Crowdfunding Campaigns*, Wheatfromchaff Limited, Somerset. Available online: <http://crowdrating.co.uk/uploads/CrowdRating%20Report%20-%20Is%20the%20crowd%20indifferent%20to%20financials%20-%20Feb2016.pdf>.

Wardrop, R., B. Zhang, R. Rau and M. Gray (2015), *Moving Mainstream. The European Alternative Finance Benchmarking Report*, Cambridge Judge Business School. The Cambridge Centre for Alternative Finance, Cambridge. Available online: <http://www.jbs.cam.ac.uk/index.php?id=6481#V3FC1WgrLb0>.

Williams, A. (2016), "Big Peer-to-Peer Lender Still Awaiting ISA Approval", Financial Times, 1 April 2016, online edition, <http://www.ft.com/intl/cms/s/0/fa0148b4-f75f-11e5-803c-d27c7117d132.html#axzz4ARr5Ye8V> (accessed 14 June 2016).

Zhang, B., P. Baek, T. Ziegler, J. Bone and K. Garvey (2016), *Pushing Boundaries. The 2015 UK Alternative Finance Industry Report*, The Cambridge Centre for Alternative Finance, Cambridge. Available online: <http://www.jbs.cam.ac.uk/faculty-research/centres/alternative-finance/publications/pushing-boundaries/#V3FC62grLb0>.

CROWDFUNDING AND THE ‘ALTERNATIVFINANZIERUNGSGESETZ’ IN AUSTRIA

ARMIN SCHWIENBACHER¹

Introduction

Crowdfunding has grown significantly in the past few years, and governments have become aware of the opportunities and risks involved in this new type of entrepreneurial funding. In particular, securities-based crowdfunding (also called ‘crowdinvesting’), which involves the issuance of securities such as shares, (convertible) bonds and participating notes, offers opportunities for the general public (the ‘crowd’) to invest direct or indirectly in entrepreneurial, innovative start-ups. However, although prior regulation has enabled securities-based crowdfunding restrictively, many European countries have recently adapted their national regulation to facilitate and broaden, but also frame, these activities. This also applies to Austria, which enacted changes in July 2013 and, more recently, in August 2015 through a regulation that specifically targets securities-based crowdfunding — namely, the ‘Alternativfinanzierungsgesetz’.

Austria, with its under-developed business angels and venture capital market, stands to benefit greatly from promoting its securities-based crowdfunding market, as it could help fill the gap in early equity financing (Hornuf and Schwiembacher 2015). Currently, the Austrian securities-based crowdfunding market remains relatively small compared with other European countries. Wardrop et al. (2015) provide statistics on annual market volumes of alternative finance transactions done by country in 2014. These statistics indicate that the total volume of transactions in Austria amounted to EUR 3.6 million in 2014. In per capita terms, this figure amounts to EUR 0.40 in Austria, versus EUR 36.00 in the United Kingdom, EUR 10.90 in Sweden, and EUR 1.70 in

Germany. Austria ranked 16th in Europe in terms of the volume of alternative finance transactions per capita in 2014. Although these statistics still suggest that the market is poorly-developed in Austria compared with other European countries, several securities-based crowdfunding platforms are now active in Austria. The first to enter the market was *1000x1000.at*² on which the crowd can start investing with as little as EUR 100 per project in the form of profit-sharing certificates (*Genussrechte*) in a financial vehicle that invests in the selected start-up. Other active platforms include *Conda*, *Crowd Capital*, *Green Rocket* and *Regional Funding*³.

Facilitating the development of a larger securities-based crowdfunding market must go hand in hand with the development of proper regulation that enables platforms to grow, start-ups to raise the funds that they need and investors to obtain a minimum level of investor protection. Finding the right balance between these conditions is a difficult task, especially in the fast-evolving environment in which crowdfunding is developing and the large range of business models currently in use. In addition, securities-based crowdfunding transactions resemble deals done by business angels in many respects, although there are also obvious differences (Hornuf and Schwiembacher 2016). This means that professional investors typically deal with many types of risk through monitoring and contracting, both of which are difficult to implement with a large crowd. At the same time, given the significant costs involved in issuing securities under existing regulation, offering the same level of investor protection as provided by large-scale issuance by established companies is probably unfeasible. Most securities-based crowdfunding campaigns can only run under a lighter regulation that involves lower costs.

From a broad perspective, Austria’s approach was similar to that of many other European countries, in that the initial regulation did not allow much securities-based crowdfunding to develop. Offers were limited to EUR 100,000 in Austria, unless a formal prospectus was prepared and validated by the national regulator. However, regulation was gradually changed to broaden the scope



¹ Université Lille 2 and SKEMA Business School (France).

² See: <https://1000x1000.at>.

³ See: <https://www.conda.at>, <https://www.crowdcapital.at>, <https://www.greenrocket.com> and <https://www.regionalfunding.at>.

of funding and thereby allow this market to develop. This approach contrasts with that seen in Germany and the Netherlands, where this type of crowdfunding has developed quickly, but is subject to far less regulation. Start-ups in Germany, for example, could raise several millions of euros using some form of participating notes (*partiarische Nachrangdarlehen*), a type of security that may not be the most appropriate for many innovative, high-growth start-ups. These notes largely replicate equity-type payoffs, but offer no voting rights. Notes also have a maturity date, which requires repayment or refinancing at maturity. In the Netherlands, up to EUR 2.5 million can be raised without a formal prospect. These countries have, however, recently put in place more specific rules with regard to securities-based crowdfunding.

This article reviews the new regulation ‘Alternativfinanzierungsgesetz’ implemented in Austria in 2015. While the regulation features many more details than can be discussed in this article, I would like to focus on the most important parts from the perspective of investors and entrepreneurs. The next section presents the new regulation while the last section offers some conclusions.

The new regulation

Companies that wish to issue securities to the general public are required to comply with capital market regulation, whose main objectives are to protect investors and ensure proper information disclosure, including during the securities issuance phase. The main regulatory framework for securities issuances is the Prospectus Directive (the EU Directive 2003/71/EC of 4 November 2003, later amended by the EU Directive 2010/73/EU of 24 November 2010), which harmonises prospectus requirements for offers larger than EUR 5 million at the European Union level that are offered to the general public (i.e., ‘non-qualified’ investors). Before any offer, the prospectus must be validated by the national regulator in the country where the offer is made. The Directive further specifies the required content of the prospectus and managerial responsibilities in the case of misreporting. However, the Directive states several exemptions from the prospectus requirement (Hornuf and Schwiendbacher 2015): if the offer is made to qualified investors only, or to fewer than 150 non-qualified investors per member state (in addition to qualified investors); if investors are required to invest at least EUR 100,000 (because either the price of a unit of security or the minimum investment required to participate in the

issuance is at least EUR 100,000); or if the total amount of the offer over a 12-month period does not exceed EUR 100,000. The last exemption is often referred to as the ‘small offer exemption’. If the offer fits into one of these exemptions, no prospectus is required to solicit the general public.

The Prospectus Directive is deliberately silent on the topic of funding ranging between EUR 100,000 and EUR five million. Thus, national regulators have some freedom to set their own rules within this range. While some member states impose a prospectus for any offer in that range (which was the case with Austria in the past), others use this freedom to increase the prospectus exemption on ‘small offers’ (e.g., the Netherlands to EUR 2.5 million and the United Kingdom to EUR five million).

As a first step to promote securities-based crowdfunding, in July 2013, the Austrian legislator increased the small offer exemption threshold from EUR 100,000 initially to EUR 250,000, such that no prospectus is required for an issuance below that value. This change in the national securities law (*Kapitalmarktgesetz*) enabled platforms and start-ups to raise somewhat larger amounts without a costly prospectus that would otherwise make crowdfunding unattractive for issuers⁴. It further enabled start-ups at a more developed stage of development to use securities-based crowdfunding as a viable means of financing.

More importantly, however, Austria has recently adopted a new regulation on ‘alternative financing’, the so-called *Alternativfinanzierungsgesetz* (AltFG 114, of 14 August 2015), which offers more opportunities for securities-based crowdfunding initiatives in Austria to take place. The new law regulates how and which alternative finance instruments can be used. Other forms of crowdfunding are not considered. The first article deals with the use of alternative financing instruments, and the second article deals with changes in capital market regulations due to the first article of the AltFG Decree (*Verordnung*) 242, called *Alternativfinanzierungs-Informationsverordnung* (AltFG-InfoV), which complements the AltFG by specifying the type of information that issuers need to provide to potential investors and in which form.

⁴ The Austrian Chamber of Commerce estimates the costs of drafting and seeking approval of the prospectus from the national regulator as ranging between EUR 30,000 and EUR 50,000 for the type of start-ups that use securities-based crowdfunding. Larger companies are likely to incur much higher costs due to their increased complexity (Wirtschaftskammer Österreich 2015).

Different conditions must be met cumulatively for the applicability of the AltFG (Art. 1, § 2), to ensure that only specific issuances benefit from this regulation. One important condition is that the issuer needs to be a small or medium-sized enterprise, which is primarily defined as fewer than 250 employees (following the EU definition in the Commission Recommendation 2003/361/EC of 6 May 2003 ‘concerning the definition of micro, small and medium-sized enterprises’). Another condition involves the type of securities. However, this list is rather comprehensive, so most securities are included, including shares, bonds and other securities commonly used by existing platforms. Other important conditions pertain to the absence of unconditional redemption rights (*unbedingter Rückzahlungsanspruch*) and the fact that the investor must be a natural or legal person. Finally, further conditions relate to the internet platform and its operator, and the proper use of a permanent, electronic data support (*dauerhafter Datenträger*). Unsurprisingly, these conditions of applicability are primarily meant to offer solutions and frame crowdfunding campaigns on internet platforms, though the regulation uses the term ‘alternative finance’.

Art. 1, § 4 of the AltFG specifies the type of documentation that issuers need to provide, depending on the issuance offer amount made in the European Union (i.e., not just in Austria). For offers below EUR 100,000, there is no requirement, in line with the Prospectus EU Directive 2010/73/EU⁵. For offers between EUR 100,000 and below EUR 1.5 million, issuers need to provide light documentation (Information Sheet) in line with the AltF-InfoV (see subsequently). From EUR 1.5 million to below EUR five million, a simplified prospectus is required (so-called *Schema F* under the *Kapitalmarktgesetz*). For shares and bonds, a simplified prospectus is already required for an offer of EUR 250,000, so the Information Sheet only applies to shares and bonds that range between EUR 100,000 and EUR 250,000. Finally, for any securities offer of EUR 5 million or more, a formal capital market prospectus must be provided. In this case, issuers must comply with Prospectus EU Directive 2010/73/EU.

Following Art. 1, § 4 of the AltFG, the AltF-InfoV of 31 August 2015 offers more details on the necessary content and structure of the documentation to be prepared and distributed to potential investors in the event of issuance of financial instruments (securities). A template

is proposed and must be fully completed before any solicitation. While this Information Sheet does not need to be validated by the financial market regulator, it needs to be reviewed (in German: *geprüft*) by a lawyer, a trustee, a notary, or a specific business or finance adviser (see Art. 1, § 4(9) of the AltFG). These individuals should not have any conflict of interest with the proposed issue, and reference to potential investment risks must be clearly made (see Art. 1, § 4(4) of the AltFG).

The AltFG further restricts the amount that investors can invest (Art. 1, § 3(3)). Investors are limited in how much they can invest within a 12-month period on securities-based crowdfunding platforms. The baseline limit is EUR 5,000 per issuance. However, wealthy investors may invest more, up to 10 percent of their investable wealth or twice their average monthly net income (this average is calculated on a yearly basis). These limits are meant to protect unqualified investors (the crowd) by limiting their potential losses, as they may be less protected under the AltFG as a result of no formal prospectus being issued. Whether investors are sufficiently ‘wealthy’ to meet one of these last two conditions depends on self-reporting by investors themselves.

Another mechanism protecting investors is the right of withdrawal (*Rücktrittsrecht*). Art. 1, § 4(7) of the AltFG grants investors the right to revoke the signed investment contract within two weeks of being informed of their right of withdrawal (which is generally at the time the offer was made to the investors, unless the investors were subsequently informed about their right of withdrawal). This mechanism is consistent with the need for consumer protection, which allows consumers (here, consumers of financial products) to revoke earlier decisions within a reasonable amount of time. An open question, however, is the ultimate impact on closing campaigns. Most campaigns operate according to an ‘all-or-nothing’ mechanism in which the issuer receives the fund only if a minimum threshold is achieved. In this case, the right of withdrawal generates some uncertainty beyond the campaign about its success, should the withdrawal of committed funds be massive and compromise the fundraising campaign once the campaign is closed. Moreover, it may deter the use of some securities allocation mechanisms such as auctions, in which the impact of the right of withdrawal may lead to significant difficulties in implementation.

Securities-based crowdfunding platforms operating in Austria are partially regulated by Art. 1, § 5 of the AltFG. However, many aspects are regulated by the

⁵ Cooperatives issuing ownership certificates are not required to issue any documentation up to EUR 750,000.

*Kapitalmarktgesetz*⁶. In general, platform operators are required to check the offers made, ensure that required information is provided by issuers and recommend that investors spread risk through diversification (*Risikostreuung*). Moreover, the operator of the platform needs to disclose information on the platform itself, including the names of all owners with an ownership stake of at least 25 percent and annual financial statements of the firm operating the platform.

Concluding remarks

The “Alternativfinanzierungsgesetz” is an important step towards promoting securities-based crowdfunding in Austria, but it will probably not be the last. Recent market trends will challenge regulation in the future, and may call for new changes to ensure a sound and sufficiently well-functioning crowdfunding market in Austria, and in the European Union more generally. One of these trends is the emergence of pan-European platforms that will eventually result in a market consolidation in Europe and more globally (similar to the consolidation trend in reward-based crowdfunding, with large, global platforms such as *Kickstarter* and *Indiegogo*). Some securities-based platforms already operate cross-border. Given that platforms are regulated and supervised very differently across countries, national regulators concerned with the lack of supervision and license requirements in other countries may raise concerns about these emerging cross-border activities, and European Union-level regulatory harmonisation may be necessary. Another trend is the increase in cross-border offers of a same issuer and even issuances being entirely done in a different jurisdiction. Start-ups may choose whether to run their campaigns on a domestic or foreign platform, and some start-ups have already chosen the latter. This choice may be motivated by regulatory arbitrage incentives when regulation in the foreign jurisdiction is more appealing to issuers than that in the home jurisdiction. Taken together, these two trends indicate the need for a European Union-wide regulatory harmonisation as a way of creating a level playing field in Europe.

References

- European Union (EU) (2003a), “Directive 2003/71/EC of the European Parliament and of the Council of 4 November 2003 on the Prospectus to be Published When Securities are Offered to the Public or Admitted to Trading and Amending Directive 2001/34/EC”, *Official Journal of the European Union*, L 345, 64–89.
- European Union (EU) (2003b), “Commission Recommendation of 6 May 2003 Concerning the Definition of Micro, Small and Medium-Sized Enterprises”, *Official Journal of the European Union*, L 124, 36–41.
- European Union (EU) (2010), “Directive 2010/73/EU of the European Parliament and of the Council of 24 November 2010 Amending Directives 2003/71/EC on the Prospectus to be Published when Securities are Offered to the Public or Admitted to Trading and 2004/109/EC on the Harmonisation of Transparency Requirements in Relation to Information About Issuers Whose Securities are Admitted to Trading on a Regulated Market”, *Official Journal of the European Union*, L 327, 1–12.
- Hornuf, L. and A. Schwienbacher (2015), “Should Securities Regulation Promote Crowdfunding?”, *SSRN Working Paper*, <http://ssrn.com/abstract=2412124> (accessed 17 May 2016).
- Hornuf, L. and A. Schwienbacher (2016), “Crowdfunding – Angel Investing for the Masses?”, in C. Mason and H. Landström, eds., *Handbook of Research on Venture Capital: Volume 3, Business Angels*, Edward Elgar, Chichester, UK, forthcoming, <http://ssrn.com/abstract=2401515> (accessed 17 May 2016).
- Republic of Austria (1991), 625 Bundesgesetz: Kapitalmarktgesetz – KMG, *Bundesgesetzblatt für die Republik Österreich*, Ausgegeben am 6. Dezember 1991, 226. Stück.
- Republic of Austria (2015a), 114. Bundesgesetz: Alternativfinanzierungsgesetz – AltFG sowie Änderung des Kapitalmarktgesetzes, *Bundesgesetzblatt für die Republik Österreich* Jahrgang 2015, Ausgegeben am 14. August 2015, Teil I.
- Republic of Austria (2015b), 242. Verordnung: Alternativfinanzierungs- Informationsverordnung – AltF-InfoV, *Bundesgesetzblatt für die Republik Österreich*, Ausgegeben am 31. August 2015, Teil II.
- Wardrop, R., B. Zhang, R. Rau and M. Gray (2015), “Moving Mainstream - The European Alternative Finance Benchmarking Report”, University of Cambridge and EY, Cambridge.
- Wirtschaftskammer Österreich (2015), Alternativfinanzierungsgesetz und Crowdfunding-Plattformen, https://www.wko.at/Content.Node/branchen/oe/sparte_iuc/Finanzdienstleister/Rechtsartikel/Artikel-Crowd-Plattform.pdf (accessed 17 May 2016).

⁶ For a more detailed presentation, see Wirtschaftskammer Österreich (2015, 9–12).

EXPOSURE TO FEMALE COLLEAGUES BREAKS THE GLASS CEILING – A SUMMARY OF THE FINDINGS FROM A LAB EXPERIMENT IN THE FIELD¹

HENNING FINSERAAS², ÅSHILD A. JOHNSEN³,
ANDREAS KOTSADAM⁴ AND GAUTE TORSVIK⁵

Introduction

Women are under-represented at higher levels of the corporate ladder across the world. Is this because the majority group (males) who hire leaders base their decisions on sexist stereotypes about how suitable women are as leaders? If so, to what extent are these beliefs malleable? Will, for example, men's exposure to female colleagues change their perception and evaluation of female leaders? These are important questions, but they are hard to answer; both detecting discrimination and how exposure affects discrimination requires a careful research design.

Discrimination occurs if employers treat workers, or job applicants, with the same individual productivity characteristics differently (less favourably) because

¹ This paper is an abridged (and slightly rewritten) version of a paper entitled: "Exposure to Female Colleagues Breaks the Glass Ceiling – Evidence from a Combined Vignette and Field Experiment" that is forthcoming in the *European Economic Review*. Any reference to the findings in our study should cite the *EER* version of the paper; Finseraas et al. (2016). Thanks go to The Norwegian Defense Research Establishment (FFI), in particular to Frank Steder and Torbjørn Hanson. This study could not have been conducted without the help of FFI and their project "Research on Cohorts". The paper has benefited from comments from Sara Cools, Raquel Fernandez, Magnus Johannesson, Arnfinn H. Midtbøen, and Øyvind Skorge, as well as seminar participants at the University of Bergen, University of Oslo, University of Stavanger, Norwegian Social Research, Linnaeus University, and NOVA. We thank Ada Fuglset, Eirik Strömland, and Wiktoria Szczesna for excellent research assistance. Thanks also to the soldiers and staff at the North Brigade. The project is part of the research activities at the Centre for the Study of Equality, Social Organization, and Performance (ESOP) at the Department of Economics, University of Oslo. ESOP is supported by the Research Council of Norway.

² Institute for Social Research, Oslo.

³ Institute for Social Research, Oslo.

⁴ University of Oslo.

⁵ University of Oslo.

they belong to a specific group (gender or ethnicity). The problem with using observational data to measure discrimination is that those who hire and promote within firms typically observe productivity clues that are hidden for the researchers, and these unobserved characteristics may be correlated with gender. We used a vignette experiment to circumvent this problem. In vignette experiments or in correspondence studies more generally, "job applicants" are given (by the researchers) the same productivity characteristics, except for gender or ethnicity. In our experiment participants read the résumé of a person applying for a low-end leader position. We randomly varied the gender of the applicant.

For exposure it can also be misleading to use data on self-reported or observed contact with minority groups to estimate how exposure impacts discrimination. In non-experimental data there will typically be non-random variation in exposure, it is for example very likely that those who have intensive contact with minority groups are – at the outset – more positively disposed towards the minority group (reversed causality). We avoid this selection problem by also having an experimental design for exposure. With a research design that features random variation in gender of the applicant and in exposure, we can shed light on how majority-minority contact affects discrimination.

The experiment was conducted on recruits in the Norwegian army. At the end of a two-month boot camp the soldiers were asked to evaluate the résumé of an applicant for a squad leader position. We had two versions of the résumé, a short and a long résumé. The latter included more information about the candidate. Varying information in this way can help us understand whether the discrimination is statistical or taste-based; if male candidates are valued higher than females; and the bias does not decrease when adding information, this is an indication that the discrimination is taste-based.

Variation in relevant exposure comes from the fact that in the boot camp, men and women live in mixed rooms. Around ten percent of the soldiers are women. There is a rule that there should be – if possible – always at least two women in a room (there are between four and eight persons in a room). Given this condition, we instructed



those in charge of allocating soldiers to rooms to randomly place women in different rooms. A room is an important unit during this period. Apart from living together, roommates solve a number of tasks together, and operate often as a team within the platoon. This then means that the male soldiers in our data have by construction been differently exposed to and interacted with, female soldiers in an environment that is highly relevant for the squad leader application that they evaluated in the vignette.

There is an extensive body of literature on applying vignette studies, correspondence studies, and audit tests to study discrimination (Azmat and Petrongolo 2014; Guryan and Charles 2013; Midtbøen 2014; Pager 2007; Riach and Rich 2002 and Rich 2014 provide extensive surveys of the literature). The method of varying the information contained in the correspondence in order to separate taste-based discrimination from statistical discrimination, has also been used before (Guryan and Charles 2013). To our knowledge, however, we are the first to have a credible test for how peer exposure to female colleagues reduces discrimination against female applicants for a leadership position.

Exposure and discrimination

A priori it is not obvious how exposure to a minority group should affect an initial bias, if there is one. The effect is likely to depend on the type of exposure, and the setting in which contact takes place. If exposure takes place in a competitive environment, bias is more likely to increase (e.g. Semyonov et al. 2006). The so-called inter-group contact theory (Allport 1954; Pettigrew 1998) argues that prejudice and the negative stereotyping of minorities may decline with contact with out-group members if those in contact have equal status in the particular context, if they share common goals, if they are in a cooperative context, and if the contact takes place under some form of authority (Pettigrew 1998). Hence, in our setting we should expect contact to reduce bias. Soldiers of private rank have equal social status within the army, they share the common goals of the unit, they need to cooperate to solve their tasks, and contact takes place in a context with an explicit, enforcing authority. In fact, the army explicitly promotes views of unity and equality among soldiers of the same rank.

There are different reasons why exposure could reduce discrimination in the setting of our experiment. The most straightforward mechanism is that exposure leads

to experiences that make men update their beliefs about the suitability of female leaders (as suggested by Carrell et al. 2015 to be the reason for why interracial exposure reduces bias). Other reasons may be linked to identity, homosociality, and critical mass. Norms about gender differences are salient in leadership perceptions in male-dominated settings (Ridgeway and Correll 2004), and as people tend to favour leaders that are similar to themselves, a self-fulfilling process of homosocial reproduction may occur (Kanter 1977a, b). A qualitative field study of gender-mixed rooms (including the camps of the soldiers in our sample) was conducted after the boot-camp period. This study concludes that mixed rooms reduces gender essentialist notions, and increases feelings of sameness among the soldiers (Hellum 2015).⁶ Hence, it is possible that intense exposure makes male soldiers perceive themselves as more similar to female soldiers and therefore less sceptical to having them as leaders.

A handful of studies have found that exposure to peers with other characteristics reduces biased perceptions. Boisjoly et al. (2006) find that white students who were randomly assigned to live with an African-American in college were more positive towards African-Americans and towards affirmative action, than white students who had white roommates. Carrell et al. (2015) find that white freshman cadets at the US Air Force Academy become more positive towards blacks if randomly assigned to squadrons with black students, and Van Laar et al. (2005) find improved inter-group attitudes among college students using randomized exposure.

The experiments

The field experiment

Our sample includes all incoming soldiers in the August 2014 contingent to the The Second Battalion of the North Brigade of the Norwegian Armed Forces. The soldiers met on their first day of service at a military camp close to Oslo. They were tested for medical and psychological fitness, and flown to Northern Norway if they passed the tests. The soldiers attended a session with a questionnaire during this day, which included questions on motivation, intentions to complete higher education, as well as a set of background characteristics. The soldiers were not told the purpose of the study. The instructor stressed

⁶ Yet another qualitative study claims to find that mixed rooms have positive effects (Lilleaas 2014). Unfortunately, the study lacks randomization and in combination with the low number of observations, it is ill-suited to draw conclusions about the effects of mixed rooms.

Table 1

From the instructions					
<p>SQUAD LEADER The unit is choosing new squad leaders. The squad leader is the link between officers and soldiers. For some, this position can be very physically and mentally demanding. The position requires high skills. As squad leader, one is responsible not just for oneself, but also for the team.</p> <p>A potential candidate</p> <p>Name: Ida Johansen/Martin Hansen</p> <ul style="list-style-type: none"> • Grades from high school: 4.1 (average). • Career plans: Does not wish to continue in the armed forces, plans to pursue higher education in the field of economics and administration. • Family background: Has a sister, dad is an engineer, and mother is a teacher. Comes from a middle-sized city in the eastern part of Norway. • Motivation: Thinks that serving in the armed forces is both meaningful and important. • Physical capacity: Among the top 20 percent in his/ her cohort (armed forces). Exercise regularly. • Leadership experience: Was the leader of a youth organization. <p>Ida Johansen/ Martin Hansen would very much like to become a squad leader, indicate how well suited you think he/ she is for the job: (1=very badly, 6=very well) - put a circle around your choice.</p> <p>1 2 3 4 5 6</p>					
Source: The authors.					

that the survey results were of research purposes only, and anonymous for all representatives of the armed forces. At the point of testing, the soldiers had never met before, and they did not know with whom they were going to share rooms with until they arrived in Northern Norway. Hence, the first survey constitutes the baseline data for the field experiment.

In Northern Norway the soldiers were immediately assigned to the rooms where they were to stay during the whole recruitment period (the boot camp). The key feature of our experiment was that we randomized the composition of the rooms. Concretely, officers were instructed to use a randomizer in terms of a template Excel spread sheet for each platoon. The allocation was completely random within the platoons, except for a decision rule which assigned at least two women to the same room if possible. The “two-if-possible” decision rule was a requirement on the part of the Armed Forces.⁷

The boot camp was a period of intense training, and soldiers spent a great deal of time with their roommates.

⁷ There were rooms with only one woman, despite this rule. There were several reasons for this: i) that there was only one woman in the platoon, ii) that the number of women was uneven and they did not want too many women in one room, or iii) that some women left the army during the first few weeks (albeit not to a stronger degree than the male soldiers, since we find that attrition is unrelated to treatment status and gender).

They performed various tasks together, such as cleaning the room for inspection each morning. They also served in the same platoon, and constituted a squad within the platoon. There were strict rules for what soldiers could and could not do during the boot camp – they had to wear uniforms at all times, and were not allowed to sleep outside of the base.

After eight weeks we surveyed the soldiers a second time, and linked their answers to the first round using an anonymous reference number for each soldier. At this time we conducted the vignette experiment to see whether eight weeks of exposure had affected the soldiers’ perceptions about female leaders.

The vignette experiment

To detect discrimination, we presented to the soldiers a hypothetical (but realistic) case description of a candidate applying for a position as squad leader. We chose a position in the military, as all of the soldiers could relate to this position.

The soldiers were asked to rate the fictional candidate on a scale from one to six based on a short text, presented in Table 1. The experiment consists of four between-sub-

Table 2

Descriptive statistics across assigned cases								
	(1) Ida basic		(2) Martin basic		(3) Ida more		(4) Martin more	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<i>Dependent variable</i>								
Score on the candidate (1=very bad, 6=very good)	3.771	(1.004)	4.145	(0.926)	4.376	(0.893)	4.720	(0.817)
<i>Background</i>								
Mother has high education	0.763	(0.428)	0.620	(0.488)	0.707	(0.458)	0.685	(0.467)
Father has high education	0.882	(0.325)	0.797	(0.404)	0.837	(0.371)	0.815	(0.390)
Mother works	0.855	(0.354)	0.886	(0.320)	0.868	(0.340)	0.902	(0.299)
Father works	0.947	(0.225)	0.962	(0.192)	0.989	(0.105)	0.978	(0.147)
Parents are divorced	0.276	(0.450)	0.253	(0.438)	0.366	(0.484)	0.253	(0.437)
Plan higher education	0.750	(0.436)	0.633	(0.485)	0.774	(0.420)	0.750	(0.435)
IQ	5.795	(1.488)	5.602	(1.306)	5.810	(1.555)	5.687	(1.353)
<i>N</i> (on dependent variable)	83		83		101		100	

Source: The authors.

ject treatments. The treatments differ with respect to the gender of the candidate, and in how much information the soldiers receive about the candidate. In the first treatment (“Ida basic”), the soldiers were provided with basic information about the female *Ida Johansen*: they were given information about her high school grades, career plans, family background, and motivation. The second treatment (“Ida more”) provided more information about the candidate: in addition to the basic information, the soldiers received information about her physical capacity and her leadership experience (in bold text). We provided information on physical strength and leadership experience because these characteristics of the candidates are relevant for the position. Although one might argue that this framing could prime the subjects to discriminate, our aim was not to study discrimination per se, but to examine whether exposure to female soldiers affect this type of discrimination.

The other two treatments were identical to “Ida basic” and “Ida more”, with the exception that the female name *Ida Johansen* was replaced by the male name *Martin Hansen*. The forenames are gender specific, and to avoid any name effects, we chose, as in Carlsson and Eriksson (2014), the most common names of the soldiers’ age group. These are the most common surnames in Norway (Statistics Norway 2014). We ran the experiment on 26 September 2014, and in total 413 people participated in eight sessions. Session sizes varied depending on the size of the room where we conducted the experiment, and on when the soldiers were available for participation, see Table 2. The experiment was conducted on a military base, and soldiers used pen and paper in the vignette experiment.

Results

Evidence for discrimination

Table 2 depicts the mean score for the different resumes. We can see that the female candidate with basic information receives the lowest score, while the male candidate with more information receives the highest score. It is reassuring that the background characteristics for the candidate are balanced across the treatments, as they should be given a random variation in gender and added information.

To test formally if there was discrimination against the female candidates, we regressed the score on the gender of the candidate. Column 1 of Table 3 shows that the female candidate was perceived as less suited to be a squad leader. Hence, there was discrimination against the female candidate by the male soldiers in our sample. The coefficient for female candidate in column 1 captures the combined effect across the cases with more and less information. In column 2, we add baseline controls, and the results are similar.

When adding positive information about the candidates, we test if discrimination is statistical based on the added information. Column 3 shows the difference-in-difference results where we separate the cases with and without information. We find that information improves the evaluation of both our male and female candidates, but it does not reduce the degree of discrimination. The interaction term is negative, implying that if anything, information helps the male candidate more, but the coefficient is not statistically significant.

Adding baseline controls (column 4) yields similar results.

Exposure reduces discrimination

When we test whether random variation in exposure to female soldiers reduces discrimination, the analysis is restricted to men, and the female peers merely inform the treatment status. In total we had 89 rooms, with four to eight persons in each room. Eight percent

of the soldiers were women and between zero and four women lived in the rooms. The share of women in the rooms ranged from 0–0.67 with a mean of 0.07 and a standard deviation of 0.15. In total, 21 percent of the men were treated, i.e. they shared a room with at least one woman. The share of exposure for those treated varied from 17 to 67 percent. When we test for differences between the treatment and the control group we find small and not statistically significant differences. Most importantly, the small F-value in the joint test of whether all variables together predict treatment sta-

Table 3

Gender discrimination: Dependent variable is score of the candidate				
	(1)	(2)	(3)	(4)
	Pooled		Less and more information	
Female candidate	-0.326*** (0.108)	-0.365*** (0.103)	-0.275* (0.140)	-0.318** (0.143)
Information added			0.551*** (0.134)	0.456*** (0.135)
Female candidate*Information			-0.109 (0.166)	-0.096 (0.176)
Mean of dependent variable	4.281	4.266	4.281	4.266
Observations	367	335	367	335
R-squared	0.128	0.191	0.190	0.232
Platoon and Session FE	Yes	Yes	Yes	Yes
Baseline controls	No	Yes	No	Yes

Notes: The sample only includes male respondents. Standard errors clustered at the room level in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Source: The authors.

Table 4

Exposure and discrimination: Dependent variable is score of the candidate				
	(1)	(2)	(3)	(4)
	Treatment		Information and Treatment	
Female candidate	-0.430*** (0.124)	-0.438*** (0.119)	-0.277 (0.170)	-0.305* (0.179)
Information added			0.657*** (0.153)	0.550*** (0.162)
Female*Information			-0.254 (0.186)	-0.232 (0.203)
Treated	-0.230 (0.145)	-0.201 (0.141)	0.085 (0.221)	0.062 (0.226)
Treated*Female candidate	0.513** (0.204)	0.358* (0.213)	0.111 (0.277)	0.005 (0.281)
Treated*Information			-0.493* (0.250)	-0.437* (0.257)
Treated*Female candidate*Information			0.635 (0.396)	0.637 (0.433)
Mean of dependent variable	4.281	4.266	4.281	4.266
Observations	367	335	367	335
R-squared	0.139	0.196	0.204	0.242
Platoon and Session FE	Yes	Yes	Yes	Yes
Baseline controls	No	Yes	No	Yes

Notes: Standard errors clustered at the room level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Source: The authors.

tus allows us to conclude that the randomization was successful.

In column 1 of Table 4, we present results based on regressing the score of the candidate on the gender of the candidate, a treatment dummy equal to one if sharing a room with a female soldier, and treatment interacted with gender of the candidate. There was discrimination among men sharing a room with only men (as shown by the negative and statistically significant coefficient for the female candidate not interacted with treatment). Men sharing a room with women discriminated significantly less against women (as shown by the positive and statistically significant interaction term). These results show that the random intense, and relevant, exposure to women that comes from sharing room and being part of the same squad not only reduces discrimination, but actually eliminates it. The results are similar when we add baseline controls in column 2, although the interaction term is only statistically significant at the ten percent level. In column 3, we interact treatment with adding information and the results indicate that exposure reduces discrimination more strongly in combination with added information. Unfortunately, we do not have enough power to estimate the effects separately. Adding baseline controls yields similar results as seen in column 4.⁸

Conclusion

Fewer women than men reach higher levels of leadership, even in gender-equal societies like Norway (Bertrand et al. 2014), and especially in the military (Teigen 2014). Such differences can be explained by supply side factors, such as differences in preferences and differences in competitiveness across the sexes (Croson and Gneezy 2009). The differences may, however, also stem from demand-side discrimination, i.e., that men are valued more highly than women with identical qualities and aspirations. Discrimination may be statistical, in the sense that it is based on unbiased statistical inference, or it may be preference based, so that it is driven by negative attitudes or biased perceptions of women's abilities. This paper aims to shed light on three important questions related to gender discrimination. Firstly, to what

extent are women seeking leadership positions in a male dominant environment discriminated against?⁹ Secondly, if women are discriminated against when two candidates are equally qualified for a job, does it help to add more information? Thirdly, does working together with women in a male dominant environment induce men to discriminate less against women aspiring to leadership roles?

What stands out in this study is that a random sample of male soldiers was allocated to share rooms with female soldiers. By sharing rooms, they also shared the responsibility for many different tasks and formed a team within the platoon. We find that discrimination disappears if we expose male soldiers to female peers in an environment that is relevant for the leadership position.

By combining a vignette experiment with a randomized field experiment, our results have strong internal validity. Previous literature finds discrimination against women in male-dominated spheres (Azmat and Petrongolo 2014), and we believe that our results can be generalized to such settings. One should be careful in generalising the results to settings where males dominate to a lesser extent, as dynamics are likely to be different in such cases. It is plausible that direct personal contact matters less in such settings than in their male-dominated counterparts. The particular selection of men and especially of women in our setting is similar to other male-dominated settings. Limits to the external validity may arise, however, from other peculiarities of the military setting. The advantage of our context, in addition to the ability to establish causality, is that we can derive the clear theoretical prediction that bias should be reduced. If our findings extend beyond the army setting, they have important policy implications. We have shown that the glass ceiling that prevents female candidates from obtaining leadership positions in a masculine context can be broken by exposure.

⁸ In columns 3–4 we find that the treatment group reacts less strongly to the information treatment. One explanation for this finding might be that men are valued higher than women for some positions due to an undervaluation of women's capacities and an overvaluation of men's capacities. It is possible that both these factors are affected by being treated. It is perhaps no longer seen as very important for the leadership position to be a very strong man once you have been exposed to other types of people that are equally fit to be leaders without such masculine characteristics.

⁹ We do not directly examine whether women are seeking leadership positions since we have no such outcomes. Our results show how direct personal contact can reduce discrimination. Less discrimination can reduce the costs/increase the expected outcome from seeking such positions for female candidates. In the event that female leader candidates pursue leadership positions to a lesser extent than men due to discrimination, reduced discrimination can hence affect female leader candidates' behaviour.

References

- Allport, G. W. (1954), *The Nature of Prejudice*, Addison-Wesley, Cambridge, MA.
- Azmat, G. and B. Petrongolo (2014), "Gender and the Labor Market: What Have We Learned from Field and Lab Experiments?", *Labour Economics* 30, 32–40.
- Bertrand, M., S. Black, S. Jensen and A. Lleras-Muney (2014), *Breaking the Glass Ceiling? The Effect of Board Quotas on Female Labor Market Outcomes in Norway*, Technical Report, National Bureau of Economic Research.
- Boisjoly, J., G. J. Duncan, M. Kremer, D. M. Levy and J. Eccles (2006), "Empathy or Antipathy? The Impact of Diversity", *American Economic Review* 96(5), 1890–905.
- Carlsson, M. and S. Eriksson (2014), "Discrimination in the Rental Market for Apartments", *Journal of Housing Economics* 23, 41–54.
- Carrell, S. E., M. Hoekstra and J. E. West (2015), *The Impact of Intergroup Contact on Racial Attitudes and Revealed Preferences*, Technical Report, National Bureau of Economic Research.
- Crosen, R. and U. Gneezy (2009), "Gender Differences in Preferences", *Journal of Economic Literature* 47(2), 448–74.
- Finseraas, H., Å. A. Johnsen, A. Kotsadam and G. Torsvik (2016), "Exposure to Female Colleagues Breaks the Glass Ceiling – Evidence from a Combined Vignette and Field Experiment", *European Economic Review*, in press.
- Guryan, J. and K. K. Charles (2013), "Taste-based or Statistical Discrimination: The Economics of Discrimination Returns to its Roots", *The Economic Journal* 123(572), F417–F432.
- Hellum, N. (2015), *Sminkedritt over hele vasken – en kvalitativ feltstudie av kjønnsblandede rom og maskulinitetskultur i Forsvaret*, Technical Report 2156, FFI.
- Kanter, R. M. (1977a), *Men and Women of the Corporation*, vol. 5049, New York, Basic Books.
- Kanter, R. M. (1977b), "Some Effects of Proportions on Group Life: Skewed Sex Ratios and Responses to Token Women", *American Journal of Sociology*, 965–90.
- Lilleaas, U.-B. and D. Ellingsen (2014), *Likestilling i Forsvaret. Fortropp, baktropp og kamparena*, Cappelen Damm Akademisk.
- Midtbøen, A. (2014), "Segregering og diskriminering", in L. Reisel and M. Teigen, eds., *Kjønnsdeling og etniske skiller på arbeidsmarkedet*, Gyldendal Akademisk, Oslo.
- Pager, D. (2007), "The Use of Field Experiments for Studies of Employment Discrimination: Contributions, Critiques, and Directions for the Future", *The Annals of the American Academy of Political and Social Science* 609(1), 104–33.
- Pettigrew, T. F. (1998), "Intergroup Contact Theory", *Annual Review of Psychology* 49(1), 65–85.
- Riach, P. A. and J. Rich (2002), "Field Experiments of Discrimination in the Market Place", *Economic Journal* 112(483), F480–F518.
- Rich, J. (2014), "What Do Field Experiments of Discrimination in Markets Tell Us? A Meta Analysis of Studies Conducted since 2000", *IZA Discussion Papers* 8584.
- Ridgeway, C. L. and S. J. Correll (2004), "Unpacking the Gender System: A Theoretical Perspective on Gender Beliefs and Social Relations", *Gender & Society* 18(4), 510–31.
- Semyonov, M., R. Raijman and A. Gorodzeisky (2006), "The Rise of Anti-Foreigner Sentiment in European Societies 1988–2000", *American Sociological Review* 71(3), 426–49.
- Statistics Norway (2014), Names 2014, <https://www.ssb.no/en/befolkning/statistikker/navn/> (accessed 26 April 2016).
- Teigen, M. (2014), "Kjønnsdeling på langs", in L. Reisel and M. Teigen, eds., *Kjønnsdeling og etniske skiller på arbeidsmarkedet*, Gyldendal Akademisk, Oslo.
- Van Laar, C., S. Levin, S. Sinclair and J. Sidanius (2005), "The Effect of University Roommate Contact on Ethnic Attitudes and Behavior", *Journal of Experimental Social Psychology* 41(4), 329–45.

REGULATORY POLICY ADJUSTMENTS IN GERMANY'S EXPORT PROMOTION INSTRUMENTS IN LIGHT OF CROSS-BORDER PRODUCTION CHAINS¹

ALEXANDER SANDKAMP AND ERDAL YALCIN²



The German export sector has been a central pillar of Germany's economic development for decades. Over the last ten years exports as a share of annual gross domestic product (GDP) have risen from 30 percent to over 40 percent. However, private banks and financial intermediaries are not always in a position to provide adequate financing for projects with large volumes and of long duration. In this context, state export credit guarantees (Hermes guarantees in Germany) play an important role. They cover potential payment default risks in return for a risk premium paid by the exporter which makes it easier for German companies to finance their exports.

In a previous study (Felbermayr, Yalcin and Heiland 2013; 2014) the Ifo Institute has demonstrated that Hermes guarantees promote German exports by mitigating a partial failure of the capital market. Moreover, employment effects were quantified for the first time with the help of a causal analysis. Against a background of increasingly international supply chains and an accompanying decline in domestic production as a share of German exports, this new analysis explores the extent to which employment effects of Hermes guarantees are changed within an industry if the share of foreign added value varies. With the help of these insights it is possible to analyse whether an increase in the share of foreign added value permitted under Hermes guarantees helps to secure jobs. The study also explores the related em

¹ This article is based on: Sandkamp and Yalcin (2015), „Nettobeschäftigungseffekt einer Regelungsänderung bei den Hermesdeckungen“, ifo Schnelldienst 68 (13), 27-37; see also: Felbermayr et al. (2015), Beschäftigungseffekte der Exportkreditgarantien des Bundes und globale Wertschöpfungsketten, ifo Forschungsberichte 68, ifo Institut.

² Ifo Institute (both).

ployment effects abroad. The results aim to promote the further development of this government instrument, with a focus on how the shares of foreign added value in exports covered by Hermes guarantees can be sensibly regulated.

In order to take advantage of Hermes guarantees for export business, companies need to prove that a minimum share of their production consists of value added in Germany, although a measure of discretion is exercised. A three-tier model was set up in 2008, which stipulates that foreign supplies and services can be used representing up to 30 percent of the order's value without any special justification and can still be covered by a Hermes guarantee (tier 1). In tier 2 exports with a foreign added value share of between 30 percent and 49 percent can be taken into consideration insofar as an economic necessity can be proven (e.g. specialised inputs or price) and/or other criteria are fulfilled. This involves higher administrative costs for the companies involved. Tier 3 provides for a rule decided on a case by case basis, whereby exports with foreign added value shares of over 49 percent can be covered by a Hermes guarantee. For such export business the necessity of foreign purchases must be explained in detail. On the basis of this explanation an Inter-ministerial Committee subsequently decides

Figure 1

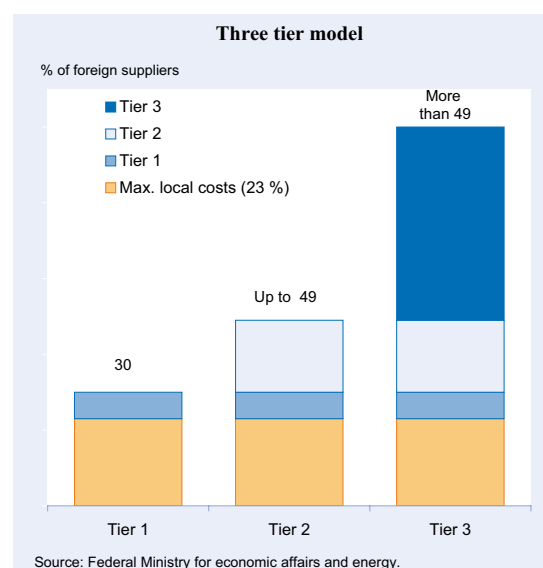
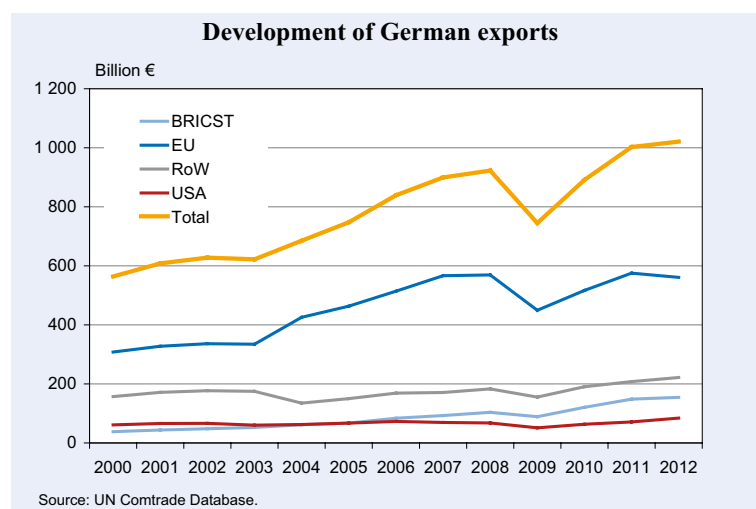


Figure 2



whether to grant Hermes coverage. Across all tiers, it is possible to receive coverage for local (destination country) costs of up to 23 percent (counting towards the total allowance of foreign added value). The three-tier model is shown in Figure 1.

Development of German exports, international industrial linkages and Hermes guarantees

Between 2000 and 2012 German exports rose by around 83 percent. This amounts to an average growth rate of 5.2 percent per year. Figure 2 shows that total German export volumes experienced a sharp increase up to 2008, the year the financial crisis started. German exports subsequently fell by 19 percent between 2008 and 2009, but managed to stage a quick recovery, returning to a higher level than in 2008 as early as 2010.

again considerably in recent years.

Hermes guarantees can be divided into individual guarantees (IND), whole-sale guarantees (WSG) and revolving guarantees (REV). These three kinds of guarantees differ significantly in their development. The volume of the revolving guarantees halved from around EUR one billion per year in 2000 to below EUR 500 million in 2012 (Figure 3). Individual guarantees and whole-sale guarantees developed very similarly up until 2004 (around EUR eight billion in volume). As of 2004, however, the volume of individual guarantees soared compared to that of whole-sale guarantees. Prior to 2010 a divergence can be seen between the usage volumes of both of these types of coverage. Developments in 2011 and 2012, however, show a fall in this divergence, with the coverage volume of whole-sale guarantees rising and the volume of individual guarantees declining. This was partly due to the fact that the German federal gov-

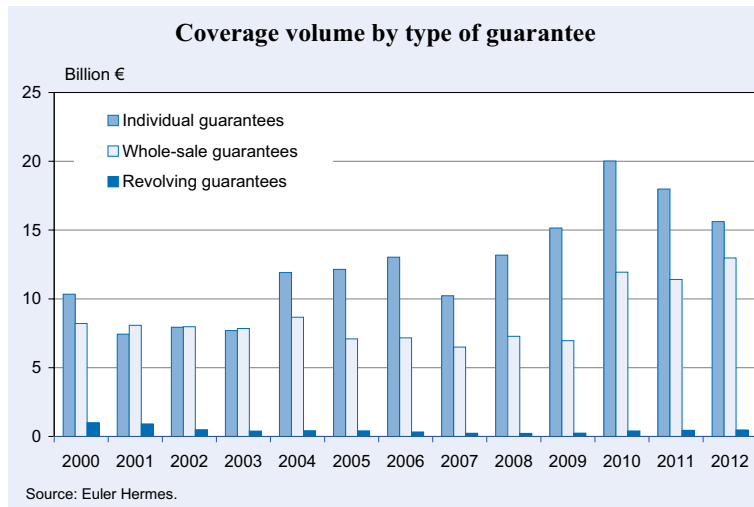
Table 1

Development of exports and coverage ratio

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports (in bn EUR)	597.44	638.27	651.32	664.45	731.54	786.27	893.04	965.24	984.14	803.31	951.96	1061.23	1095.77
Year on Year change in %	17.1%	6.8%	2.0%	2.0%	10.1%	7.5%	13.6%	8.1%	2.0%	-18.4%	18.5%	11.5%	3.3%
Exports / GDP	29.2%	30.4%	30.5%	30.9%	33.3%	35.3%	38.6%	39.7%	39.8%	33.8%	38.2%	40.7%	41.1%
Year on Year change in %	3.7%	1.2%	0.2%	0.4%	2.4%	2.0%	3.2%	1.2%	0.0%	-5.9%	4.3%	2.5%	0.4%
Coverage ratio	3.3%	2.6%	2.5%	2.4%	2.9%	2.5%	2.3%	1.8%	2.1%	2.8%	3.4%	2.8%	2.7%

Source: UN Comtrade Database and Euler Hermes.

Figure 3



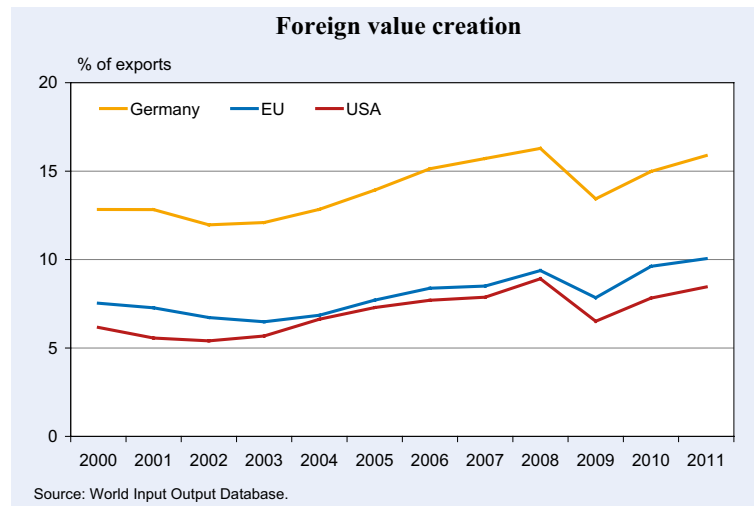
cent have also increased in recent years. On average individual guarantees in sectors with strong exporters display foreign added value shares of between 10 percent and 22 percent, whereby Hermes covered exports into high-growth emerging economies like China tend to have the highest shares of foreign added value.

The importance of exports, Hermes cover and foreign added value shares for employment from the perspective of German companies

In order to assess the importance of Hermes guarantees, a survey of 1,368 firms was carried out. In addition, detailed interviews were conducted with selected representatives of the four companies Linde AG, Siemens Financial Services GmbH, SMS Siemag AG and Voith GmbH. While the business survey provided a cross section of all company sizes, expert interviews spotlighted the position of large companies.

As already shown by the aggregated export data, export business is essential for German companies. Exports as a share of total revenue clearly rose between 2007

Figure 4



ernment successfully expanded the circle of countries in which whole-sale guarantees can be offered during the financial crisis.

As shown in Figure 4, the average share of foreign added value has increased steadily. Compared to the USA and the EU, foreign added value as a share of exports is almost twice as high in Germany. Especially in sectors with strong exporters, such as the automotive sector, the share of foreign added value has already reached a level of over 30 percent. The data available do not point to any slowdown in these trends.

Exports with a Hermes guarantee and a foreign added value share of over 20 percent, 30 percent and 40 per-

and 2013. At the same time, as seen in Figure 5, jobs depending on exports also increased between 2007 and 2013. In 2013 over 60 percent of employees were directly (in production) or indirectly (via supplying) dependent on exports at 45 percent of the companies surveyed. Along with globalisation, the share of foreign added value has risen for many companies. The survey respondents named cost aspects, specialised products, partners abroad as well as local content requirements as reasons for relying on foreign inputs (Figure 6).

An important question regards the development of foreign and German supplies as a share of total production and of companies' exports. As shown by the corporate survey, foreign supplies are increasingly important for

export-oriented companies. 71 percent of companies rely on foreign purchases to remain competitive. German companies mainly obtain foreign intermediate goods from EU producers, although emerging economies are increasingly gaining importance.

However, emerging economies contain higher economic risk compared to industrialised economies. When accessing new markets in particular, assessing the risks present is often only possible on a limited basis, meaning that private financing options may not be available. Higher financing costs arise in these countries due to the higher country risks that accompany a lower development status. These risks have to be taken into account in a company's long term planning.

As a consequence of these imperfections, 90 percent of companies surveyed use Hermes guarantees to protect themselves against default risks. Small and medium-sized companies in particular would not be able to carry out their underlying exports without Hermes guarantees. Further motivations are an insufficient ability to finance risky exports internally (39 percent), as well as a lack of insurance products offered by the market (35 percent).

As a result, 32 percent of firms stated that they could not have done the export business in question without Hermes guarantees. Two thirds of companies would have done half of the exports in question at most. For 50 percent of companies this resulted in securing existing employment, while for 12 percent Hermes guarantees even created additional jobs in Germany (Figure. 7).

As explained above, the share of foreign added value in the production of export goods plays a key role in the successful qualification for Hermes guarantees. It is therefore unsurprising that two thirds of companies reported a share of foreign added value below 30 per-

Figure 5

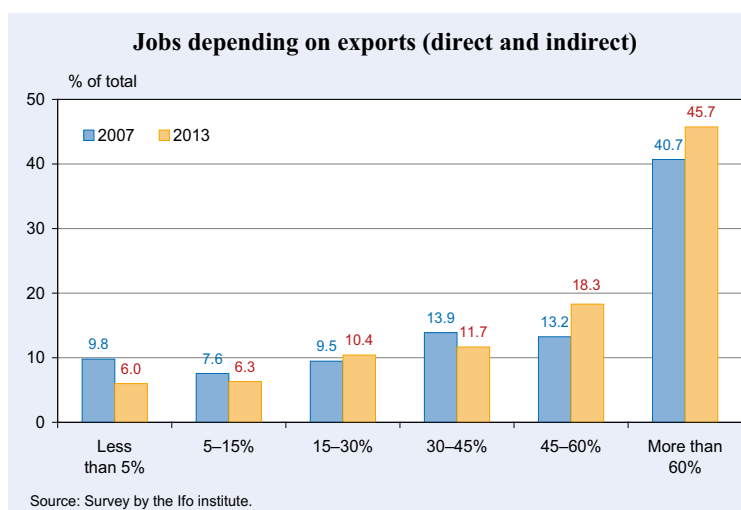
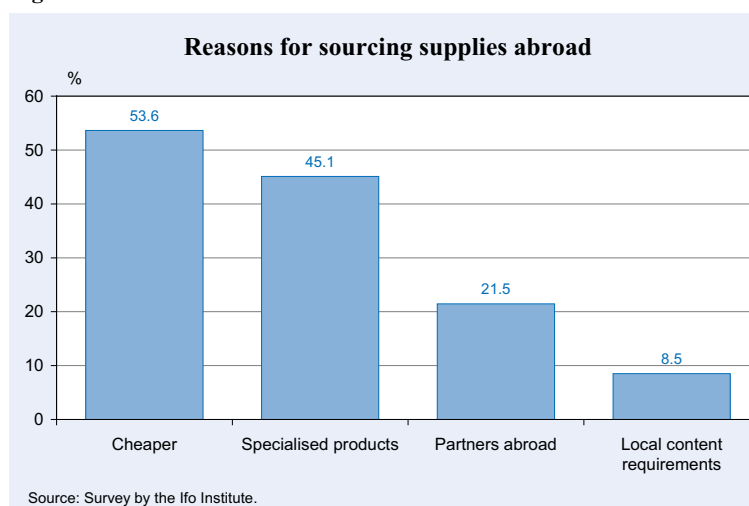


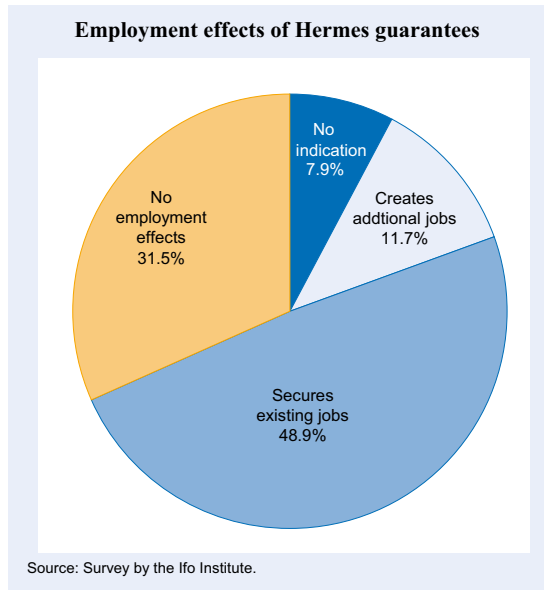
Figure 6



cent in Hermes guaranteed exports. Only seven percent of companies reported exports with a share of foreign added value above 50 percent. In general, however, the share of foreign added value is greater for companies with higher export ratios. Large companies in particular expect foreign added value for exports to increase.

The present coverage policy is sufficiently flexible for 46 percent of companies. For 13 percent of companies the existing three-tier model is not flexible enough. It is mainly large companies that are not satisfied with the current rules on foreign added value shares permitted under Hermes coverage. 16 percent of companies would like to see no limitations on the share of foreign added value. With the present three-tier model, 25 percent

Figure 7



of companies expect settlement problems with export business. Two thirds of companies would not explicitly transfer jobs abroad if the foreign added value shares permitted under Hermes coverage were raised, while a further 15 percent cannot yet assess the impact of such a measure.

The *expert interviews* confirmed that, in the field of large projects and plant construction, it is in many cases impossible to do export business in high-growth international markets without Hermes guarantees. This makes the state instrument very important, especially for accessing new markets. The use of foreign intermediate goods is indispensable to help companies remain competitive. A significant increase in the use of foreign intermediate goods in export business has been observed in recent years, driven by fiercer competition.

Moreover, German plant manufacturers can often only successfully win large contracts if a large share of the project is carried out by local companies in the destination countries. High shares of foreign added value thus provide a competitive advantage. Moreover, German large plant manufacturers first and foremost provide technology and knowhow. This results in low shares of domestic added value in

these export deals. For large projects in particular companies cannot perform any major processing procedure at the end of the value chain in Germany. As a result, no certificate of origin can be issued, which would have allowed for more generous allowances. In this respect large projects are at a disadvantage.

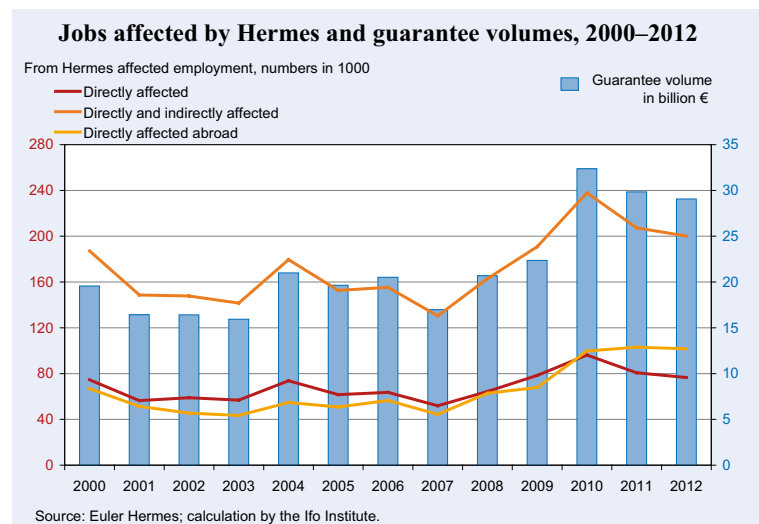
The existing three-tier model therefore doesn't satisfy the demands of the companies surveyed. Although tier 3 offers the opportunity to use Hermes guarantees for exports with a high share of foreign added value, the administrative efforts required are too great. The case-by-case rule by the Inter-ministerial Committee leads to planning uncertainty and endangers export business.

Calculation of the employment effects of Hermes guarantees using an input-output analysis

Establishing the potential employment effects that may accompany a change in coverage policy in Hermes guarantees calls for a precise quantification of the direct and indirect employment effects. Studies to date have neglected the dynamic development of national and international interconnections between sectors in their input-output analyses. To conduct a reliable simulation of possible reforms, the potential employment effects must be calculated taking into account the changing input-output tables. Building on these dynamic results, the employment effects arising from Hermes guarantees can be estimated more accurately.

To start the analysis, an upper ceiling to the employment effect is identified. This corresponds to the num-

Figure 8



ber of employees who are involved in the production of Hermes-guaranteed goods either directly (employed by guarantee recipients) or indirectly (employed by suppliers or their suppliers). It is calculated using input-output tables from the national accounts. Based on the assumption that every euro of guarantees leads to a production increase of one euro for the guarantee recipient (maximum effectiveness), the number of employees affected by Hermes would equal the number of jobs created by Hermes. Moreover, it has to be assumed that any increase in production is 100 percent due to the recruitment of additional workers and not through higher utilisation of existing capacity or automation.

Figure 8 shows developments in guarantee volumes, as well as the employment related to it for the years 2000 - 2012. The analysis shows that in the period under observation around 172,000 jobs in Germany were affected by Hermes guarantees with an average guarantee volume of EUR 21.6 billion. 65,000 jobs abroad, of which 62 percent are in the EU, need to be added to this figure. The most important sectors are machine building (36 percent of all jobs), the chemicals sector (26 percent), as well as the automotive sector (including cars 20 percent). Around 96 percent of directly affected jobs are in

companies headquartered in West Germany. Around 70 percent of directly affected jobs are at large companies.

Econometric analysis

The export generating impact of export credit guarantees is estimated using a gravity model. Since both exports and Hermes guarantees vary according to the three dimensions of sector, destination country and year, it is possible to use destination country-sector dummies v_z^s , destination country-year dummies v_{zj}^s ³ and sector-year dummies v_j^s . The estimation equation is therefore:

$$\ln \text{EXP}_{z,j}^s = \beta_0 \text{HERMES}_{z,j}^s + v_z^s + v_{z,j}^s + v_j^s + \varepsilon_{z,j}^s$$

In this instance the Hermes variable $\text{HERMES}_{z,j}^s$ either stands for a dummy, if guarantees were available in a certain year for a specific destination country, for the logarithmic volume of guarantees or for the coverage ratio:

$$\text{COVERAGE RATIO}_{z,j}^s = \text{SUM OF GUARANTEES}_{z,j}^s / \text{EXP}_{z,j}^s$$

³ Some specifications do not include destination country-year dummies. In these specifications, further controls varying across time and country are included. These are the logarithms of gross domestic product, population and capital formation as well as a customs union dummy, an economic zone dummy (regional or free trade agreement) as well as an indicator for country risk.

Table 2

Average effects of individual guarantees, sectoral data									
Hermesvariable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Hermes (0,1)			ln guarantees			Coverage ratio		
Hermes	0.178*** (0.025)	0.161*** (0.025)	0.163*** (0.025)	0.014*** (0.002)	0.013*** (0.002)	0.013*** (0.002)	0.656*** (0.102)	0.618*** (0.104)	0.653*** (0.103)
ln GDP	0.669*** (0.030)			0.669*** (0.030)			0.671*** (0.030)		
ln POP	-0.113 (0.092)			-0.114 (0.092)			-0.116 (0.093)		
Customs union (0,1)	0.101*** (0.039)			0.101*** (0.039)			0.097** (0.039)		
Economic zone (0,1)	0.036 (0.038)			0.036 (0.038)			0.035 (0.038)		
Country risk (0-7)	- (0.010)			- (0.010)			- (0.010)		
ln capital formation	0.078*** (0.026)			0.078*** (0.026)			0.079*** (0.026)		
Fixed effects									
Country-sector	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-sector	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-country		Yes	Yes		Yes	Yes		Yes	Yes
N	65579	65579	83408	65579	65579	83408	65579	65579	83408
N_G	6120	6120	7853	6120	6120	7853	6120	6120	7853
R2	0.119	0.173	0.167	0.119	0.173	0.167	0.119	0.173	0.167

***, ** and * correspond to significance at the 1, 5 and 10% level. Robust standard errors are adjusted for serial correlation.

Source: Calculation by the Ifo Institute.

Table 3

Average employment effects of Hermes							
Hermesvariable	Coefficient	Standard error	IND ¹⁾ incidence	Export creation	Export dependent employment	Employment created by IND	Employment created by Hermes ²⁾
Hermes (0.1)	0.163	0.025	0.025	0.41%	9,823,768	40,719	70,269
ln guarantees	0.013	0.002	0.390	0.51%	9,823,768	49,833	85,997
Coverage ratio	0.653	0.103	0.003	0.22%	9,823,768	21,142	36,485

¹⁾ Individual guarantees ; ²⁾ Extrapolation based on average shares of WSG and REV in total coverage volume.

Source: Calculation by the Ifo Institute.

Of interest here is the coverage coefficient β_0 , which stipulates how sensitive bilateral exports in a specific sector react to the availability of Hermes guarantees. This effect is identified via the variation in guarantees and exports over time in individual export markets (destination country-sector combination). If the coverage coefficient is, as expected, positive, this means that export growth in export markets covered by Hermes is higher than in markets that are not covered by Hermes, or covered to a lesser degree.

Table 2 summarises the results of the regression described with the logarithm of the destination country-sector-year specific exports as a dependent variable. Columns (4) to (6) analyse the effect of the log of the total guarantees, which were guaranteed in a given year in a sector in a specific destination country. The coefficient can thus be interpreted as an elasticity.

Column (4) already takes into account destination country-sector fixed effects, meaning that it is no longer necessary to control for variables such as distance or

comparative advantage in individual sectors that do not change over time. The same applies to year-sector fixed effects as the introduction of new products in a sector. This already reduces potential distortions through unobserved and thus omitted variables, which have simultaneous impacts on exports and Hermes guarantees. Moreover, it raises the number of observations that can be considered, since information for certain year-sector and/or destination country-sector specific variables may not be available for all countries and/or sectors. All of the variables that vary by year and destination country must continue to be included. Columns (5) and (6) also feature year-destination country fixed effects, so that variables varying by year and destination country drop out there. Moreover, column (6) takes into account observations for which no information on GDP, population, customs union etc. is available.

As column (6) shows, a one percent increase in the coverage volume (sum of guarantees) within a destination country-sector cell in a specific year leads to a 0.013 percent increase in that cell. Multiplied by the share of

guarantees in total exports (per sector) this gives an average export-generating effect of 0.51 percent, which means that 0.51 percent of all German exports are only realised thanks to Hermes guarantees (Table 3). Multiplying this figure with the total number of jobs depending on exports gives the number of jobs created by individual guarantees. If one assumes that whole-sale and revolving export guarantees operate in a similar way to individual guarantees, the overall effect of export credit guarantees can be extrapolated. Under the assumptions made regarding employment structure, Hermes guarantees re-

Figure 9

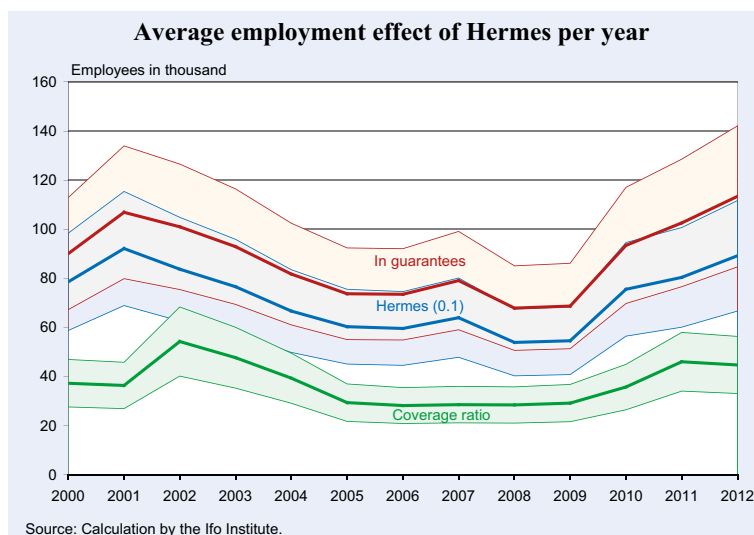


Table 4

Average employment effect of Hermes abroad					
Hermesvariable	Export creation	Export dependent employment abroad	Employment abroad created by Hermes*	Employment in the EU created by Hermes*	Employment outside of the EU created by Hermes*
Hermes (0.1)	0.41%	2,802,147	20,044	12,242	7,802
ln guarantess	0.51%	2,802,147	24,530	14,982	9,548
Coverage ratio	0.22%	2,802,147	10,407	6,356	4,051

* Extrapolation based on average shares of WSG and REV in total coverage volume.

Source: Calculation by the Ifo Institute.

sult in up to 86,000 additional jobs on average according to this estimate. This figure was as high as 113,000 in 2012.

Export credit guarantees therefore increase German exports. This result is robust across all three methods used

to measure Hermes guarantees (binary dummy (1) – (3), logarithmic coverage sum, as well as coverage rate (7) – (9)). The development of employment effects (including 90 percent confidence intervals) over time is presented in Figure 9.

Figure 10

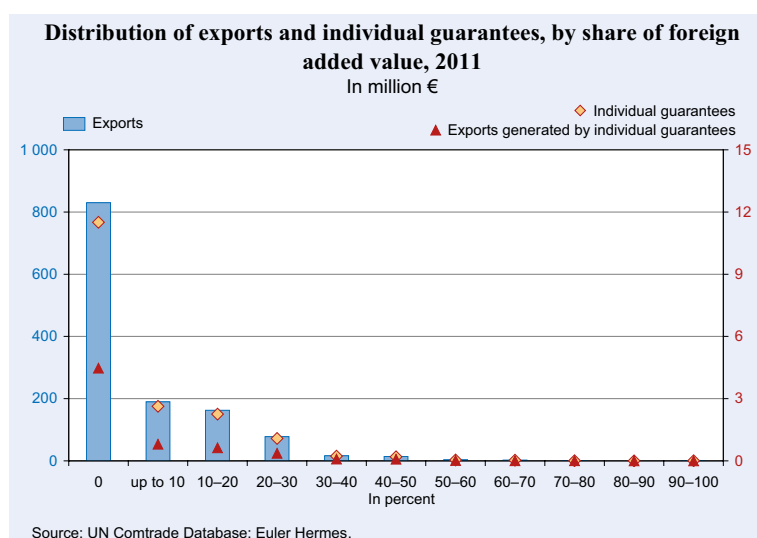
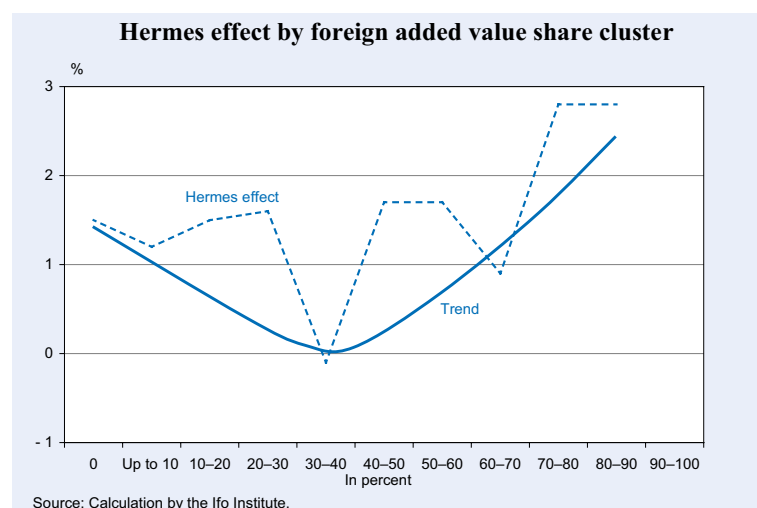


Figure 11



Parallel to the development of the rising share of foreign added value as a percentage of German exports, a steady increase in Hermes-related employment abroad can also be observed (Table 4), mainly in Europe, where up to 12,000 jobs benefited from the instrument in 2012. A sectoral breakdown shows that with over 48,000 jobs dependent on Hermes in Germany (around 11,000 abroad) the machine building industry is responsible for by far the greatest employment effect. It is followed by aircraft and spacecraft construction with 24,000 employees in Germany (17,000 abroad).

The development of foreign added value and its importance to Hermes guarantees

To analyse the impact of a rising share of foreign added value on the exports and jobs generated by Hermes guarantees, the current distribution of individual guarantees and exports over eleven clusters with different shares of foreign added value is presented and the export generating impact on individual clusters is estimated

(Figure 10). The analysis is limited to individual guarantees, since whole-sale guarantees and revolving guarantees are hard to assign to individual sectors.

With the help of data provided by Euler Hermes, it is possible to estimate the export-generating effect of each of the foreign added value clusters. Figure 11 presents the Hermes effects for the various foreign added value clusters. These represent econometrically estimated partial effects over all of the years in question. The Hermes effect arising on the clusters considered is not linear.

The estimates indicate that Hermes effects for exports with a small share of foreign added value have a positive effect of 1.4 percent on average. As the share of foreign value rises this figure initially falls, before almost doubling to a positive figure of over two percent for foreign added value shares of over 50 percent.

To estimate the employment effects that may accompany a more flexible three-tier rule, three channels of impact need to be taken into account: higher shares of foreign added value lead *ceteris paribus* to a) more foreign added value and consequently to a partial transfer of jobs abroad, b) the protection of export business that would otherwise be lost, and thus to the preservation of jobs in Germany, and c) to higher exports generated by Hermes due to higher Hermes effects in higher foreign added value clusters. Relatively more exports are therefore created per euro of guarantees.

Table 5 shows the results of a simulation for different scenarios. Based on the calculated average increase in foreign added value shares of eight percent, scenarios

I to III show an upwards shift in export volumes per foreign added value cluster by one cluster. Scenario I assumes that 20 percent of all exports generated by Hermes fall into a higher foreign added value cluster. In scenario II (III) 40 percent (80 percent) of all exporting companies increase their foreign added value so that they fall into a higher cluster. Scenarios IV.a to IV.c suppose the same increase in foreign added value shares, but additionally presume annual export growth of two percent.

The mid-term increase in the share of foreign added value in German exports will lead to a transfer in the jobs created by individual guarantees from Germany abroad (6,000–7,000 jobs). This development, however, is necessary both to protect existing export business and to promote growth in exports. Rising exports thus produce net employment growth of 10,000 to 67,000 jobs created via individual guarantees.

Should the integration of value chains continue to grow, German companies will see a growing volume of exports with a high share of parts supplied by foreign subcontractors in the medium and long-term. A guarantee policy that lacks flexibility could endanger jobs in Germany. On average up to 7.4 percent of employees dependent on individual guarantees will be involved in the production of exports that will be negatively affected by the current coverage policy, since they have a foreign added value share of over 30 percent. This corresponds to around 5,000 jobs. 1.4 percent of the jobs dependent on individual guarantees are even seriously endangered due to a foreign added value share of over 50 percent. These figures represent average values. Our interviews with experts revealed that individual firms already have

Table 5

Jobs created by Hermes guarantees by share of foreign added value							
Foreign added value	Hermes induced employment						
	2011	Scenario I	Scenario II	Scenario III	Scenario IV.a	Scenario IV.b	Scenario IV.c
Affected by increase		20%	40%	80%	20%	40%	80%
0	39,656	27,927	20,945	6,982	37,506	28,129	9,376
Up to 10%	7,138	12,009	17,734	29,184	16,128	23,816	39,194
10% to 20%	5,581	5,187	5,461	6,009	6,966	7,334	8,071
20% to 30%	3,209	3,243	3,660	4,495	4,355	4,916	6,037
30% to 40%	744	1,089	1,523	2,391	1,462	2,045	3,211
40% to 50%	686	614	624	645	825	838	866
50% to 60%	150	226	321	509	304	431	684
60% to 70%	32	49	70	111	65	93	150
70% to 80%	44	37	34	30	49	46	40
80% to 90%	0	8	16	31	11	21	42
90% to 100%	-	0	0	0	0	0	0
> 30% share	2.9%	4.0%	5.1%	7.4%	4.0%	5.1%	7.4%

Source: Calculation by the Ifo Institute.

far higher foreign added value shares and are therefore more strongly affected.

If coverage policy is made more flexible, this will create more jobs abroad. However, a potential liberalisation of coverage policy should not be seen as the root cause of this job relocation, but as a prerequisite for German firms to remain competitive. An adjustment of the coverage policy of Hermes guarantees – via increasing the ceilings for tiers 2 and 3, for example – would therefore secure jobs in Germany in the medium term, which may otherwise be lost. A liberalisation of 10 percentage points alone would be sufficient to secure 4.7 percent of jobs dependent on individual guarantees (transfer from tier 2 to tier 1) and transfer one percent of acutely endangered jobs from tier three to the more secure tier two. This corresponds to 75 percent of all jobs currently under threat.

International production linkages, Hermes guarantees and reinsurance

The steady increase in the share of foreign added value in exports is not merely a German phenomenon, but represents a worldwide structural development resulting from the growing cross-border integration of industries and companies. Companies ignoring this structural development risk being overtaken by their international competitors. Against this background, Germany will have to accept a rising volume of foreign added value in German exports covered by Hermes guarantees if German firms are not to be disadvantaged in terms of their international competitiveness.

While a growing cross-border fragmentation of production has been taking place for years in terms of the real economy, similar developments cannot be identified on the financing side of the exports in question. In the years ahead, the German federal government thus faces two key challenges related to the further development of Hermes guarantees. On the one hand, greater flexibility in coverage policy is essential to help German exporters compete internationally. On the other hand, the growing concentration of financing risks that would accompany rising coverage of higher shares of foreign added value has to be avoided. As a consequence the German government would have to pass on default risks to partner countries whose companies participate in and benefit from Hermes guaranteed export business to a greater extent than it does at the moment.

In principal the German government could already pass on the financing risks taken on via Hermes guarantees to the countries in which companies also benefit from export projects secured by such coverage. This kind of risk diversification is technically possible via so called reinsurance agreements with partner countries. Germany already has reinsurance agreements with public export credit insurers, especially in the EU and other OECD member states. However, relatively little use is made of such agreements compared to the Hermes guarantees provided. Since reinsurance represents sensible complementary support to Hermes guarantees for risky export business, and at the same time constitutes an instrument for transferring risks to other countries, simplifying and standardising reinsurance mechanisms and extending reinsurance contracts should be a key goal of reforms of this instrument.

Conclusion

The growing integration of international production is boosting imports of foreign intermediate goods, independent of Hermes guarantees. Foreign suppliers to Germany benefit from German firms with high exports. It is these very suppliers, in turn, that contribute to the success of German exports. The data presented in this study indicate that cross-border integration can be expected to continue. Germany will therefore have to take into account higher shares of foreign added value in its Hermes guarantees in the years ahead, if German firms are not to suffer a competitive disadvantage.

A key aspect of a more flexible coverage policy is the question of the extent to which Germany should solely accept financing risks for exports, while a growing number of companies from different countries are participating in and thus benefitting from German exports. To provide a sustainable, self-supporting funding instrument in the future, the German federal government will have to introduce processes based on reinsurance and other financial instruments that will enable it to adequately pass on default risks to countries whose companies benefit from Hermes-guaranteed exports.

References

Felbermayr, G., E. Yalcin and I. Heiland (2013), *Beschäftigungseffekte der Exportkreditgarantien der Bundesrepublik Deutschland (Hermesdeckungen)*, ifo Forschungsberichte 63, Ifo Institute, Munich.

Felbermayr, G., E. Yalcin and I. Heiland (2014), "The Role of State Export Credit Guarantees for German Firms", *CESifo Forum* 15 (3), 52–55.

Felbermayr, G., E. Yalcin, A. Sandkamp and P. Lang (2015), *Beschäftigungseffekte der Exportkreditgarantien des Bundes und globale Wertschöpfungsketten*, ifo Forschungsberichte 68, Ifo Institute, Munich.

Sandkamp, A. and E. Yalcin (2015), „Nettobeschäftigungseffekt einer Regelungsänderung bei den Hermesdeckungen“, *ifo Schnelldienst* 68 (13), 27–37.

TAXATION AND FEMALE LABOR SUPPLY IN OECD COUNTRIES

Female labor force participation rates

Labor force participation rates for women have increased in recent years, but are still substantially lower than those of men in many OECD countries (OECD 2016). Table 1 shows female labor force participation in 2014 for selected countries and for the OECD average according to calculations by the International Labour Organization (ILO 2016). On average, 50.9% of women participated in the labor force in the OECD member countries, while the corresponding rate for men was 79.7% (OECD 2016; ILO 2016). However, there is substantial heterogeneity across countries: the Nordic countries, pioneers in gender equality (UNDP 2011), exhibit high female labor force participation rates of 70.3% in Iceland, 61.2% in Norway, 60.2% in Sweden and 58.7% in Denmark. Female labor force participation is intermediate in other major OECD economies, like the US (56.3%), the UK (55.8%), Germany (53.7%) and France (50.6%). Lower rates are reported for the Southern European countries of Greece (41.1%), Italy (39.7%) and Malta (37.8%). With a rate of 29.3%, the labor force participation of women is lowest among the countries listed in Table 1 in Turkey.

In many countries, policymakers aim to provide equal employment opportunities for men and women and target higher female labor force participation rates. In particular, major goals are to reduce the gender pay gap and to make combining family and career plans easier for parents (Jaumotte 2003). This is even more important as many OECD countries face demographic challenges and fostering female labor force participation can help to overcome expected shortages in labor supply. Moreover, some ageing societies are experiencing increasing pressure on their pay-as-you-go pension systems, which could be mitigated if labor market participation were to become more attractive for women (Braun et al. 2015). Government policies related to this, however, vary largely (The Economist 2016). One measure that may generate barriers and distortions suppressing female labor force participation is income taxation.

Second earner income taxation

Labor income taxes discourage work. Garibaldi and Wasmer (2004) show that the female labor supply is highly responsive to variations in tax rates, especially when market activities are easily substituted by home production. In the presence of gains from specialisation in household economies, many partners pool their incomes and decide jointly on labor supply, depending on household taxation. Hence, labor supply decisions and the distorting impact of taxes should be considered at the household- and not only at the individual level. From the perspective of an income maximizing household, many countries' tax systems implicitly treat secondary earners in couples differently to single individuals

Table 1

Female labor force participation rates in selected countries	
	Female labor force participation rate, 2014
Austria	54.7
Belgium	47.6
Czech Republic	51.3
Denmark	58.7
Estonia	56.3
Finland	55.4
France	50.6
Germany	53.7
Greece	44.1
Hungary	44.9
Ireland	53.1
Italy	39.7
Luxembourg	50.6
Netherlands	58.3
Poland	48.9
Portugal	54.9
Slovak Republic	51.2
Slovenia	52.2
Spain	52.5
Sweden	60.2
United Kingdom	55.8
Iceland	70.3
Norway	61.2
Switzerland	61.8
Turkey	29.3
Australia	58.7
Canada	61.4
Japan	48.7
Korea	50.1
New Zealand	61.9
United States	56.3
OECD Average	50.9

Source: ILO 2016.

(Triest 1990; Smith et al. 2003). This potentially affects the labor supply of secondary earners, which is often the female partner (OECD 2012).

In a recent report, the OECD (2016) calculated average tax rates (ATR) for secondary earners taking into account household composition and overall household tax

burden. The secondary earner ATR is defined as the ratio between the increase in income tax plus employee social security contributions (SSC) and the additional gross household income as a result of the secondary earner entering the labor force:

$$ATR = \frac{\text{Increase in income tax, employee SSC (net of cash benefits)}}{\text{Increase in family gross income}} \\ \text{(as a result of secondary earner entering the workforce)}$$

Table 2

Average tax rates for singles and calculated average tax rates for secondary earners

	Net personal average tax rates on second earners at 67% of average earnings, no children	Net personal average tax rates on second earners at 67% of average earnings, 2 children	Net personal average tax rates, single persons at 67% of average earnings, no children	Secondary earner relative tax rates, no children (column 1/column 3)
Austria	28.7	31	28.8	1.0
Belgium	49.1	49.1	35.9	1.4
Czech Republic	31.1	31.1	19.1	1.6
Denmark	39.6	39.6	33.1	1.2
Estonia	22.6	22.6	18.2	1.2
Finland	23.8	23.8	23.9	1.0
France	35.2	31.1	26.7	1.3
Germany	46.0	46.0	34.5	1.3
Greece	21.2	23.3	19.2	1.1
Hungary	34.5	34.5	34.5	1.0
Ireland	20.9	28.9	13.6	1.5
Italy	27.3	30.5	23.8	1.1
Luxembourg	32.9	32.9	22	1.5
Netherlands	29.2	22.8	24.7	1.2
Poland	25.8	25.8	22.1	1.2
Portugal	30.9	34.7	19.5	1.6
Slovak Republic	29.9	29.9	19.5	1.5
Slovenia	43.2	34.2	28.7	1.5
Spain	24.3	24.3	18.5	1.3
Sweden	21.8	21.8	21.8	1.0
United Kingdom	19.6	19.6	19.5	1.0
Iceland	36.9	43.6	23.9	1.5
Norway	27.0	27.0	25.2	1.1
Switzerland	21.8	20.7	14.4	1.5
Turkey	25.8	25.8	24.5	1.1
Australia	17.8	33.9	17.7	1.0
Canada	25.3	32.1	17.8	1.4
Japan	22.4	22.4	20.2	1.1
Korea	11.3	11.3	10.1	1.1
New Zealand	13.4	35	13.4	1.0
United States	29.3	29.3	22.9	1.3

Notes: Marginal rates expressed as a percentage of gross wage earnings. Average tax rates for second earners 67% of average earnings, primary earner 100% of average earnings without children (column 1), with children (column 2). Average tax rates for singles 67% of average earnings (column 3). Relative tax rate as ratio between second earner and single ATR (without children) (column 4=column 1/ column 3).

Source: OECD 2016.

In most countries this measure differs from the ATR of singles earning the same income for several reasons. First, some countries allow joint tax filing for married or registered partners. In Germany, for example, it is possible for couples to apply for so-called income splitting: A couple's joint income can be divided and taxed at each partner's marginal tax rate. While similar tax schemes for couples were common in many OECD countries at the beginning of the 1970s, today most countries tax partners' incomes individually (OECD 2016). However, even countries where partners are taxed separately often offer provisions for depending spouses, which are fully or partially lost in dual earner households. For example, in Slovenia a dependent family member allowance exists and in Canada a single earner family has a spouse tax credit (OECD 2016). Most OECD countries additionally provide support for families with children, which often depends on overall family income and, thus, also affects secondary earner ATR.

Table 2 presents ATRs for secondary earner income at 67% of the average gross wage earnings in the country. The primary earner earns 100% of average gross labor income in this scenario. The numbers account for changes in family tax payments, which are due to the secondary earner entering the labor force conditional to the fixed labor supply of the primary earner. Secondary earner ATRs are presented for families without children (column 1) and with two children (column 2). Additionally, column 3 shows ATRs for single individuals earning 67% of average gross earnings. Column 4 presents the tax rates of secondary earners without children relative to those of singles (column 1/column 3). All numbers refer to data from 2014.

Table 2 shows that, due to the above mentioned family allowances, the secondary earners' ATRs in the majority of countries are higher than the rates for singles at 67% of average earnings. According to the calculations presented, secondary earners and singles are only taxed equally in Hungary. In many countries, ATRs for secondary earners are even higher than those for single earners with 100% of average earnings (OECD 2016). On the one hand, this goes against the fundamental idea of progressive tax systems to tax lower incomes at lower rates; and it potentially reduces incentives for the second earner to enter the labor force. On the other hand, however, it can be argued that family allowances and joint taxation schemes treat different family models for the division of labor more equally from the household income perspective if the taxable unit is considered to be the household as a whole.

For families without children, ATRs for secondary earners are highest and above 40% in Belgium (49.1%), Germany (46.0%) and Slovenia (43.2%). Among the European countries the values are lowest for the UK (19.6%), Ireland (20.9%), Greece (21.2%), Sweden (21.8%) and Switzerland (21.8%). In some countries, secondary earners' ATRs change considerably for families with children under otherwise same assumptions. For New Zealand and Australia, for example, the measure increases by 21.6 and 16.1 percentage points respectively. On the other hand, it decreases the most for Slovenia (-9.0 percentage points) and the Netherlands (-6.4 percentage points). These mixed effects are due to differences in the design of child benefits: for countries in which these benefits are based on overall family income, the calculated second earner tax penalty becomes larger. Other countries provide special tax allowances or tax credits for families with children, which tends to reduce the second earner tax penalty compared to households without children. In the majority of countries, however, the presence of children does not have a large effect on the calculated secondary earner ATRs, as can be seen in Table 2.

Comparing columns 1 and 2 of Table 2 with Table 1 shows that female labor force participation is low in several countries with high second earner ATR (e.g. for Belgium), and in other countries where second earners are taxed comparatively little in the international context it is relatively high, e.g. in Switzerland, Sweden and the UK. However, in some countries income taxes are generally higher. This reduces family income and might provide additional incentives for the second earner to enter the labor force. To account for this fact, column 4 calculates the relative tax rate for secondary earners without children relative to singles, as presented in columns 1 and 3.

Calculations reveal relatively low ATRs for secondary earners in the Scandinavian countries Finland (1.0), Sweden (1.0) and Norway (1.1) with high female labor force participation rates (Table 1). The calculated ratios are also relatively low for the Netherlands (0.9), the UK (1.0), New Zealand (1.0) and Australia (1.0) and are accompanied by high female labor force participation rates in these countries. Higher relative secondary earner tax rates in the Czech Republic (1.6), the Slovak Republic (1.5), Slovenia (1.5), Luxembourg (1.5) and Belgium (1.4), for example, are correlated with a lower female labor force participation rate according to Table 1. These numbers provide some indicative evidence of the link between taxes for secondary earners and female labor

force participation. Using older data Jaumotte (2003) presents a more comprehensive econometric analysis of the issue conditional to several other economic and demographic characteristics of the countries. The patterns described above are generally in line with the findings of that study.

However, comparing Tables 1 and 2 shows that despite the comparatively low absolute or relative secondary earners ATR, female labor force participation rates are low in several countries (e.g. Greece, Japan and Turkey). On the other hand, some countries with high secondary earner ATR nevertheless have relatively high female labor force participation rates (e.g. Canada, Germany, Iceland, and Portugal).

Policy context

Beyond taxation, other factors determine female labor force participation rates in an economy including the institutional environment in a country, like the public provision and quality of daycare services (Berger and Black 1992). Moreover, non-institutional factors are likely to play an important role, too. Fernández and Fogli (2009) argue that different preferences related to cultural background have a strong impact on female labor force participation. They show that female labor force participation rates in immigrant sending countries correlate strongly with the participation rates of immigrants' descendants in the US, where all groups are exposed to the same institutional environment. Moreover, Jaumotte (2003) argues that industry and occupational structures have an impact on the (reported) labor force participation rates of women in different countries. Part-time employment opportunities and incentives also play a major role in this context.

Nevertheless, as described above, a household level perspective on the effects of income taxation is important to understanding the labor supply decisions of couples. This is essential for evaluating tax policies in the light of many governments' goals to foster the labor force participation of women.

Till Nikolka

References

- Berger, M. C. and D. A. Black (1992), "Child Care Subsidies, Quality of Care, and the Labor Supply of Low-Income, Single Mothers", *Review of Economics and Statistics* 74 (4), 635–42.
- Braun, S., J. Coglianese, J. Furman, B. Stevenson and J. Stock (2014), "Understanding the Decline in the Labour Force Participation Rate in the United States", <http://voxeu.org/article/decline-labour-force-participation-us> (accessed 17 May 2016).
- Fernández, R. and A. Fogli (2009), "Culture: An Empirical Investigation of Beliefs, Work, and Fertility", *American Economic Journal: Macroeconomics* 1 (1): 146–77.
- Garibaldi, P. and E. Wasmer (2004), "Raising Female Employment: Reflections and Policy Tools", *Journal of the European Economic Association* 2 (2-3), 320–30.
- ILO (2016), Female Labor Force Participation Rates, <https://www.ilo.org/ilostat> (accessed 17 May 2016).
- Jaumotte, F. (2003), "Female Labour Force Participation: Past Trends and Main Determinants in OECD Countries", *OECD Economics Department Working Paper* no. 376.
- OECD (2012), *Employment Outlook*, OECD Publishing, Paris.
- OECD (2016), *Taxing Wages*, OECD Publishing, Paris.
- Smith, N., S. Dex, J. D. Vlasblom and T. Callan (2003), "The Effects of Taxation on Married Women's Labour Supply across Four Countries", *Oxford Economic Papers* 55 (3), 417–39.
- The Economist (2016), "The Best – and Worst – Places to Be a Working Woman", 5 March 2016.
- Triest, R. K. (1990), "The Effect of Income Taxation on Labour Supply in the United States", *Journal of Human Resources* 25 (3), 491–516.
- UNDP (2011), *Human Development Report, Sustainability and Equity: A Better Future for All*, UNDP-HDRO Human Development Reports, New York.

THE EXTENSION OF COLLECTIVE AGREEMENTS IN EUROPE

Collective agreements and their functions

Collective bargaining plays a key role in industrial relations in the EU, which is underlined by the Charter of Fundamental Rights of the European Union: “Workers and employers, or their respective organisations, have, in accordance with Community law and national laws and practices, the right to negotiate and conclude collective agreements at the appropriate levels and, in cases of conflicts of interest, to take collective action to defend their interests, including strike action” (Charter of Fundamental Rights of the European Union of December 2000, Article 28). In this context, collective agreements are agreements concluded between single employers or their organisations on the one hand, and organisations of workers such as trade unions on the other. These agreements establish the content of individual contracts of employment and regulate relationships between the parties (Eurofound 2013). In general, these agreements establish a large number of working conditions including wage levels or minimum wages but also many other issues such as working time, fringe benefits, training, health and safety, promotions, contract types, severance pay, bonuses, grievances, etc. (Martins 2014). Usually collective agreements are concluded at company or at industry level. At industry level collective agreements establish common working conditions among the participating companies and may also be called multi-employer agreements.¹

Different functions are connected with collective agreements (Traxler 1998) that differ between the involved parties - the employees and employers:

For employees

- Protective function: to protect the employee against more powerful employers and to ensure decent working conditions
- Voice function: to allow the expression of grievances and aspirations by the employees towards the employer

- Distributive function: to provide a share in the economic progress for the employees

For employers

- Peace function: to maintain social peace and to ensure the legitimacy of managerial control².

Moreover multi-employer bargaining gives employers so called cartelising effects, as wages are taken out of the competition among the involved companies. Multi-employer bargaining may also reduce transaction costs in comparison to negotiations on the individual firm level (Traxler 1998; Haucap, Pauly and Wey 2001). Additionally, collective agreements can have effects on the state as well: free collective bargaining and therefore a strategy of non-interference in the collective bargaining process by the state may relieve the state from the burden of intervening in a policy area with high conflict potential (Traxler 1998).

Two principles of collective agreements are important to mention. Firstly, in multi-employer or industry agreements, only the companies involved in the bargaining process or organised in employers’ associations are covered by the agreed collective agreement. However, and secondly, all employees in the covered companies are affected and not only those who are members of a union. This principle is a legal *erga omnes* provision that most European countries have imbedded in their national law or in countries that do not have *erga omnes* provisions (Germany, Bulgaria, Lithuania, Sweden and United Kingdom) agreement provisions are generally applicable to all employees within the workplaces covered (Schulten 2012; Eurofund 2015a). Hence, according the first principle, there are mechanisms in most European countries that enable the state to extend the impact of collective agreements to all companies within one industry. These mechanisms are called the “Extension of collective agreements”.

The extension of collective agreements in Europe

In many countries, wage levels and working conditions set in collective bargaining contracts negotiated by a limited set of employers and unions are subsequently extended to all the employees and employers in an industry by the state. As a result, these agreements also

¹ For an overview of collective bargaining systems, frameworks and practices in the EU please see: Eurofound (2015a).

² In Germany for example, the peace function means that strikes are not allowed during a valid collective agreement contract.

Table 1 Mechanisms for extending collective agreements by the state

Country	Extension mechanism	Frequency of use
Austria	The legislator has provided for an official procedure called an extension order, whereby a collective agreement can be extended to include employment relationships of essentially the same nature, which are not covered by an agreement. But in Austria it is compulsory for companies to be member of employers' associations, which can be seen as a functional equivalent, resulting in high collective bargaining coverage.	Uncommon but functional equivalent in place
Belgium	The obligatory nature of a sectoral collective agreement can be extended by Royal Decree. In this case, the agreement will be binding for all employers covered by the bipartite structure within which the deal has been concluded, and contrary provisions cannot be made in individual employment contracts. This procedure is initiated at the request of the sectoral joint committee or by an organisation represented in the committee.	Very widespread
Bulgaria	The Labour Code provides for the extension of collective agreements by ministerial decree. According to the Labour Code, 'when the collective agreement at sectoral or branch level is concluded between all the representative organisations of workers and employers in the sector or industry, at their joint request the Minister of Labour and Social Policy may extend the application of the contract or of its individual clauses in all enterprises of the sector or industry'.	Uncommon
Croatia	Extension of the application of a collective agreement is stipulated in the Labour Act. The Minister may, at the request of all parties to a collective agreement, extend the application of a collective agreement concluded with an employer's association or a higher-level employers' association, to an employer who is not a member of the employer's association or higher-level employers' association that is a signatory of this collective agreement. The Minister will agree if there is a public interest for extension of a collective agreement and if the collective agreement was concluded by trade unions which have the highest number of members and an employer's association which has the highest number of workers, at the level for which it is extended.	Uncommon
Cyprus	Collective agreements apply to signatory parties' members only, whereas in Cyprus there is neither legal provision for mandatory extension of the collective agreements, nor is there a functional equivalent. In relation to wage indexation that applies to the outcomes of collective bargaining, all employees are covered, regardless of whether they are a member of a trade union.	No extension mechanisms
Czech Republic	The extension of a collective agreement to another employer is possible under certain conditions. The Ministry of Labour and Social Affairs possesses the relevant powers to ensure agreements are extended, based on a proposal made by both contractual parties to the agreement, provided that the conditions determined by law are met. There are no voluntary mechanisms of extension.	Uncommon
Denmark	There are no extension mechanisms in Denmark regarding collective agreements.	No extension mechanisms
Estonia	It is possible to conclude extended collective agreements that extend to the other parties who are not a signatory to the collective agreement (the scope of the enlargement is determined by a collective agreement). Such extended contracts may be the subject of pay, work and vacation conditions, and concluded by the association or federation of employers' and workers' union or federation, or employers' and workers' confederation.	Uncommon
Finland	According to the principle of general applicability, which has been in force since the 1970s, sectoral level collective agreements are generally binding and thus also apply to unorganised employers and employees in the sector. In 2001, the so-called confirmation procedure for universally binding collective agreements came into force. A special commission under the Ministry of Social Affairs and Health confirms the general applicability of the agreements. A sector-level agreement is generally applicable if it can be considered representative of the field in question.	Very widespread
France	Extension mechanisms are used extensively. This practice means declaring the terms of a collective agreement, negotiated between the representative organisations within a subsector, compulsory for all the employees and employers in that subsector. In order to extend a collective agreement, social partners have to ask the Labour Ministry to make a ministerial order.	Very widespread
Germany	Collective agreements can be extended either under the Collective Agreements Act or under the Posted Workers Act. Under the former, the federal as well as the regional labour ministers may extend an agreement if the extension is approved by a bipartite wage committee. Under the Posted Workers Act, the federal labour minister may react to a plea by the collective bargaining partners and extend a sectoral agreement to the national level. The number of extensions strongly decreased over the 2000s. Sectoral agreements can be extended if the extension is 'in the public interest'; previously, they had to cover at least 50% of the sectoral employees to be eligible for extension.	Uncommon
Greece	There is no longer any extension mechanism for collective agreements. An extension mechanism existed until 2011. The collective agreements are now binding only for the members of the signatory parties.	No extension mechanisms
Hungary	Collective agreements concluded at sectoral level can be extended by resolution of the minister responsible for employment policy. The Sectoral Dialogue Committees as well as the signatory sectoral social partners can initiate the binding extension. An extension is an administrative procedure after due consultation with national social partner confederations and the relevant line minister, as stipulated by Act, and the resolution of the minister can be challenged at the Labour and administrative courts.	Uncommon
Ireland	There is no existing extension mechanism in place. Joint Labour Committees, which form employment regulation orders, could, potentially, put an extension mechanism into effect.	Uncommon
Italy	Collective agreements cannot be extended by legislation. The constitutional obligation of employers to pay a 'fair wage' has been a strong functional equivalent of a legal extension mechanism, because judicial practice has traditionally identified minimum collectively agreed wages as a reference for assessing the fairness of wages.	No extension mechanisms but functional equivalent in place
Latvia	In compliance with Latvian law, a general agreement entered into by an organisation of employers or an association of organisations of employers is binding for members of the organisation or the association of organisations. If the organisation concluding an agreement employs over 50% of the employees or generates over 60% of the turnover in a sector, a general agreement is binding for all employers of the relevant sector and applies to all of their employees.	Uncommon
Lithuania	Lithuania's Labour Code provides for the possibility to broaden the scope of application of sectoral collective agreements. In general, a sectoral collective agreement applies only to the members of the employer organisation that has signed the agreement, or to those companies that have joined the employer organisation after an agreement has been signed. However, if the provisions of an agreement are important for the sector or occupational groups in the sector, the Minister of Social Security and Labour may extend its application to the entire sector, occupational groups or particular services in the sector. A sectoral agreement's provisions will only be extended if a request has been submitted by one or more of the trade unions or employer organisations that have negotiated the agreement.	Uncommon
Luxembourg	Sectoral collective agreements initially cover only those companies that belong to the employers' associations which have signed the agreement. However, social partners can ask the government to extend them to the entire sector. The large majority of collective agreements is negotiated at company level.	Very widespread
Malta	There are no extension mechanisms relating to collective agreements in the Maltese system.	No extension mechanisms
Netherlands	Sectoral collective agreements may be declared generally binding for a maximum of two years, or five years if they regulate joint funds (pensions or training). Only certain types of provision may be made generally binding. A distinction is made between 'normative' (or substantive) clauses and 'obligation' (or procedural) clauses in collective agreements. Normative clauses regulate issues such as pay, working hours and other terms and conditions of employment, and may be extended by the minister to cover all employers and employees in the sector concerned, whether or not they are members of one of the signatory parties. Obligation clauses, on the other hand, set out the mutual rights and obligations of the contracting parties in relation to the implementation of the agreement and may not be made generally binding: an example is a 'peace obligation' clause. Some companies voluntarily follow sector agreements, without being bound by those agreements.	Very widespread

Source: Eurofound (2011), Eurofound (2015a) and Eurofound (2015b). (See also the DICE Database table: <http://www.ifo.de/w/LHGzu4qC>)

apply to employees and employers who were not represented by the social partners signing the agreement (Eurofound 2011). Those extensions ensure common working conditions within the whole industry, and not only among the participating companies. In the majority of EU member states, mechanisms exist to make collective bargaining agreements legally binding in a certain sector or in the entire country. But the mechanisms differ concerning the conditions that apply and the frequency of usage. Hence, there are also countries with no extension mechanisms. Table 1 offers an overview of the extension mechanisms in Europe and the frequency of their use.

The legal extension mechanisms mainly vary by three factors: who takes the initiative, whether there are minimum requirements, and how frequently they are used (Eurofound 2011). For the EU member states where it is possible to extend collective agreements, such extensions are normally implemented by the Ministry of Labour. In some countries, this happens quasi-automatically; for others, it is done at the request of one or both social partners. Usually, there are specific conditions that must be met before a collective agreement can be extended. For those mechanisms where minimum requirements are provided, these are mostly thresholds of representativeness for the contracting parties. Such preconditions for extension are provided in Latvia, Portugal and Slovenia and until 2014 in Germany as well, for example. In some countries, extension mechanisms are widespread; in others, they are used only occasionally or very limited. In Belgium, Finland, France, Luxembourg, Netherlands and Spain the extension mechanisms are very frequently used. In the case of Spain, the extension is automatic and laid down in the Labour Code without the need of an extending act by the state. In Greece, this practice was also widely spread until 2011, and then legislation was changed so that no extension mechanism by the state exists anymore. In the case of Portugal, collective agreements can now be extended by a decree issued by the Ministry of Labour.

Until the crisis, this was a common practice in many industries. A restrictive change in the regulation of extension decrees in 2012 following the Memorandum of Understanding between the Portuguese government and the Troika (the EU, the International Monetary Fund and the European Central Bank) reduced extensions to a very low number (Eurofound 2015a). For Portugal, the OECD even recommended to abolish the extensions at all (OECD 2012). Countries, in which the legal possibility of the state extending collective agreements exist, but is rarely used include Austria, Bulgaria, Croatia, Czech Republic, Estonia, Germany, Hungary, Ireland, Latvia, Lithuania, Norway, Poland, Portugal, Slovak Republic and Slovenia. In Germany, for example, the number of extensions strongly decreased over the 2000s. But, in 2014, the German government relaxed the strict quorum for extension and strengthened the criterion of collective agreements being in the ‘public interest’. In seven member states there is no legal procedure for extending agreements at all – Cyprus, Denmark, Greece, Italy, Malta, Sweden and the United Kingdom. But one has to acknowledge, that in the case of Austria and Italy although no extension mechanism exists or hasn’t been used very much, there are functional equivalents in place that lead to a high coverage of collective agreements. In the case of Austria this results from employers’ obligation to be members of the Chamber of Trade and Commerce, which is the collective bargaining partner from the employers’ side. In Italy employees not covered by collective bargaining agreements can claim for coverage at court. Table 2 summarises the usage of the extension of collective agreements by the state in Europe.

The effects of extending collective agreements

Extending collective agreements very frequently leads to high collective bargaining coverage. The collective bargaining coverage, as the percentage of employees covered by collective agreements, varies greatly

Table 2

Overview of the usage of extending collective agreements by the state

Automatically or very widespread	Possible, but uncommon or rare	No extension mechanism in place
Belgium, Finland, France, Luxembourg, Netherlands, Spain	Austria ¹ , Bulgaria, Croatia, Czech Republic, Estonia, Germany, Hungary, Ireland, Latvia, Lithuania, Norway, Poland, Portugal ² , Romania, Slovak Republic, Slovenia	Italy ¹ , Cyprus, Denmark, Greece ² , Malta, Sweden ³ , United Kingdom

¹ In Austria and Italy legislations exist that have somehow the same effect like extensions by the state (see Table 1);

² In Greece until 2011 and in Portugal until 2012 the use was very widespread;

³ Voluntarily extensions by employers are very common.

Source: Author, based on Eurofound (2011), Eurofound (2015a), Eurofound (2015b) and Schulten (2012).

across the European countries, from coverage rates below 40 percent (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic and United Kingdom) to coverage rates of 80 percent and more (Austria, Belgium, Denmark, Finland, France, Italy, Netherlands, Portugal, Slovenia and Sweden). The reasons for high coverage rates cannot be seen only in the extension of collective agreements by the state, in Denmark and Sweden, for example, no extension mechanism exists, but the high proportion of employees in unions provide for high collective bar-

gaining coverage. Moreover, countries in Europe have different rates of employers' organisations density, or percentages of employees working in companies organised in employers' associations, which also has an effect on collective bargaining coverage. Table 3 shows the proportion of employees in unions, the employers' organisation density and collective bargaining coverage and the use of extending collective agreements by the state. One can see, that there are three ways for reaching a high collective bargaining coverage: firstly, through a high proportion of employees in unions (Denmark,

Table 3

The determinants of collective bargaining coverage				
	(1) Proportion of employees in unions (in %)	(2) Employers' organization density (in %)	(3) Extension of collective agreements by the state	Collective bargaining coverage (in %)
Austria	28	100	Uncommon or rare	95
Belgium	50	82	Very widespread	96
Bulgaria	20	50	Uncommon or rare	30
Cyprus	55	63	No mechanism	52
Czech Republic	17	41	Uncommon or rare	38
Denmark	67	68	No mechanism	80
Estonia	10	25	Uncommon or rare	33
Finland	74	70	Very widespread	91
France	8	75	Very widespread	98
Germany	18	58	Uncommon or rare	57
Greece ¹	25	44	No mechanism	65
Hungary	12	40	Uncommon or rare	33
Ireland	31	60	Uncommon or rare	44
Italy	35	56	No mechanism	80
Latvia	13	41	Uncommon or rare	34
Lithuania	10	14	Uncommon or rare	15
Luxembourg ²	41	80	Very widespread	50
Malta	51	60	No mechanism	61
Netherlands	20	85	Very widespread	81
Norway	52	65	Uncommon or rare	70
Poland	15	20	Uncommon or rare	30
Portugal ¹	19	38	Uncommon or rare	92
Romania	33	60	Uncommon or rare	36
Slovak Republic	17	31	Uncommon or rare	35
Slovenia ³	27	60	Uncommon or rare	90
Spain	19	75	Very widespread	70
Sweden	70	82	No mechanism	88
United Kingdom	26	35	No mechanism	29

(1) Before 2011/2012 the extension of collective agreements by the state was very widespread; (2) The collective bargaining coverage in the private sector is shown. In the public sector the coverage rate is 100 percent. No overall coverage rate available; (3) In Slovenia membership of the Chamber of Commerce and Industry - which stands for membership of the employers' association - was obligatory until 2006.

Source: Author, based on Worker-participation.eu, ICTWSS Data base, Eurofound (2015a) and Eurofound (2015b).

Sweden); secondly, through a high employers' organisation density as a result of a compulsory membership for companies in employers' associations (Austria, Slovenia until 2006) and thirdly, through the extension of collective agreements by the state (Belgium, France, Finland, Netherlands, Portugal until 2012).

Yet other effects can be observed: if collective agreements are extended frequently by the state to the whole industry, companies tend to be a member of the employers' associations voluntarily in order to be able to take part in the bargaining process (Traxler 2004). This can be observed for all countries with a frequent use of extension mechanism (Belgium, France, Luxembourg and the Netherlands), where the employers' organisation density is between 70 and over 80 percent. Moreover, the incentives for workers to become union members are diminished by the prospect of an extension given the resulting scope for free-riding (Martins 2014). This can be observed in France, where the extension of collective agreements is quasi automatic, and union membership of eight percent is the lowest rate in Europe. In most other countries, in which collective bargaining is characterised by non-interference by the state via extensions, the employers' organisation density more or less determines the collective bargaining coverage (for example, in Germany, Malta and Norway).

But what are the economic effects of extending collective agreements, especially in the case of a very widespread usage resulting in high collective bargaining coverage? Firstly one has to acknowledge that by extending collective agreements, the state interferes in the collective bargaining process between employers and employees. But there are pros and cons concerning this mechanism. On the pro side, it is argued that the extension of collective agreements sets common working conditions within the same industry and therefore limits wage inequality and reduces gender wage gaps (Villanueva 2015). Therefore the main arguments in favour of extending collective agreements, or a high collective bargaining coverage in general, can be seen to strengthen the before mentioned protection and distributive functions of collective agreements. Moreover, the arguments in favour of collective agreements are similar to those used in support of minimum wages; namely that they raise living standards and promote a more balanced income distribution (Martins 2014).

However, several studies suggest that those benefits come at the cost of reduced employment levels, especially during recessions. The income losses of workers

who are displaced because of a collective agreement extension can offset the wage gains among workers who keep their jobs (Villanueva 2015). The main arguments against the extension mechanisms evolve around two issues: firstly, collective agreements raise wages and set minimum wages in many cases; and secondly, competition is hindered by the strong cartelising effect of multi-employer agreements. Haucap, Pauly and Wey (2001) analysed the anticompetitive, and therefore cartelising effects, of generally binding wage agreements. It is shown that both employers' associations and unions may have a common interest in extending collective agreements, so that wages are increased to raise rivals' costs as well. Product markets competition can be limited by making new entries less profitable. Consequently, the above mentioned paper argues that coverage extension rules should be a subject matter of antitrust policy, for their labour market implications and also for their effects on product markets. Insider-outsider theory claims that big companies that are well-established in the market have a particular interest in extending collective agreements, as they enable the setting of certain collectively agreed standards that newly founded firms are unable to meet. As a result, new firms are discouraged from entering the market (Haucap, Pauly and Wey 2001; Schulten 2012). Moreover, two studies analyse the effects of extending collective agreements in Portugal (Martins 2014) and in France and Spain (Murtin, de Serres and Hijzen 2014) on employment. Both studies find a positive correlation between extending collective agreements and unemployment. In the case of Portugal, the authors found out that overall employment falls by two percent, and in the case of small firms, even by 25 percent after extending collective agreements due to reduced hiring and firm closure. These extensions were equivalent to setting fully-binding minimum wages for the companies.

Conclusion

Collective bargaining plays a key role in industrial relations in the EU and in this process collective agreements are concluded between employers or their organisations and the organisations of workers (trade unions) to establish the content of individual contracts of employment like wage levels and working conditions. Usually, multi-employer collective agreements only cover the companies that are part of the collective bargaining process. But in the majority of the European countries the state can extend the concluded agreements to the whole industry by special extension mechanisms, so that all

of the companies within that industry are covered by collective agreements. Countries, in which collective agreements are frequently extended are Belgium, Finland, France, Luxembourg, Netherlands and Spain. The effects of extending collective agreements, which corresponds to high collective bargaining coverage, are reduced wage inequality and gender wage gaps on the one hand. On the other hand, employment may be reduced due to the mechanism of extending collective agreements, as these extensions are equivalent to setting fully-binding minimum wages for the companies.

Katrin Oesingmann

References

- Eurofound (2015a), *Collective Bargaining in Europe in the 21st Century*, Publications Office of the European Union, Luxembourg.
- Eurofound (2015b), Working Life Country Profile, eurofound.europa.eu (accessed 03 March 2016).
- Eurofound (2013), European Collective Agreements, <http://www.eurofound.europa.eu/observatories/eurwork/industrial-relations-dictionary/european-collective-agreements> (accessed 04 March 2016).
- Eurofound (2011), Extension of Collective Bargaining Agreements in the EU, *Background paper*.
- European Union (2000), "Charter of the Fundamental Rights of the European Union", *Official Journal of the European Communities* C 364, 1–22.
- Haucap, J., U. Pauly, and C. Wey (2001), "Collective Wage Setting When Wages Are Generally Binding: An Anti-Trust Perspective", *International Review of Law and Economics* 21 (3), 187–207.
- Martins, P. (2014), "30,000 Minimum Wages: The Economic Effects of Collective Agreement Extensions", *University of London, School of Business and Management, Centre for Globalisation Research Working Paper* no. 51.
- Murtin, F., A. de Serres, and A. Hijzen (2014), "Unemployment and the Coverage Extension of Collective Wage Agreements", *European Economic Review* 71 (C), 52–66.
- OECD (2012), *OECD Economic surveys: Portugal*, OECD Publishing, Paris.
- Schulten, T. (2012), "Stellenwert der Allgemeinverbindlicherklärung für die Tarifvertragsysteme in Europa", *WSI Mitteilungen* 7/2012, Wirtschafts- und Sozialwissenschaftliches Institut.
- Traxler, F. (2004), "Employer Associations, Institutions and Economic Change: A Crossnational Comparison", *Industrielle Beziehungen (German Journal of Industrial Relations)* 11 (1+2), 42–60.
- Traxler, F. (1998), "Collective Bargaining in the OECD: Developments, Preconditions and Effects", *European Journal of Industrial Relations* 4 (2), 207–26.
- Villanueva, E. (2015), Employment and Wage Effects of Extending Collective Bargaining Agreements, *IZA World of Labor* 136.
- Visser, J. (2015), ICTWSS Data Base. version 5.0., Amsterdam Institute for Advanced Labour Studies (AIAS), www.uva-aias.net/208 (accessed 04 March 2016).
- Worker-Participation.eu (2016), <http://www.worker-participation.eu/> (accessed 04 March 2016).

ENVIRONMENT AND DEMOCRACY

The use of highly aggregated indices has become common in political debates and for international comparisons as an instrument for evaluating different policy fields and their integration into the political discourse. This also applies to indices regarding the environment. The latter especially show changes that are a result of policy or protection measures. The indices differ from specific indicators that mainly cover current state and target state in a defined environmental topic. Two of these highly aggregated indices are the *Environmental Performance Index* (EPI) and the newly developed *Environmental Democracy Index* (EDI). While the first one measures the overall environmental performance of a country, the latter evaluates the chances for democratic participation in environmental issues.

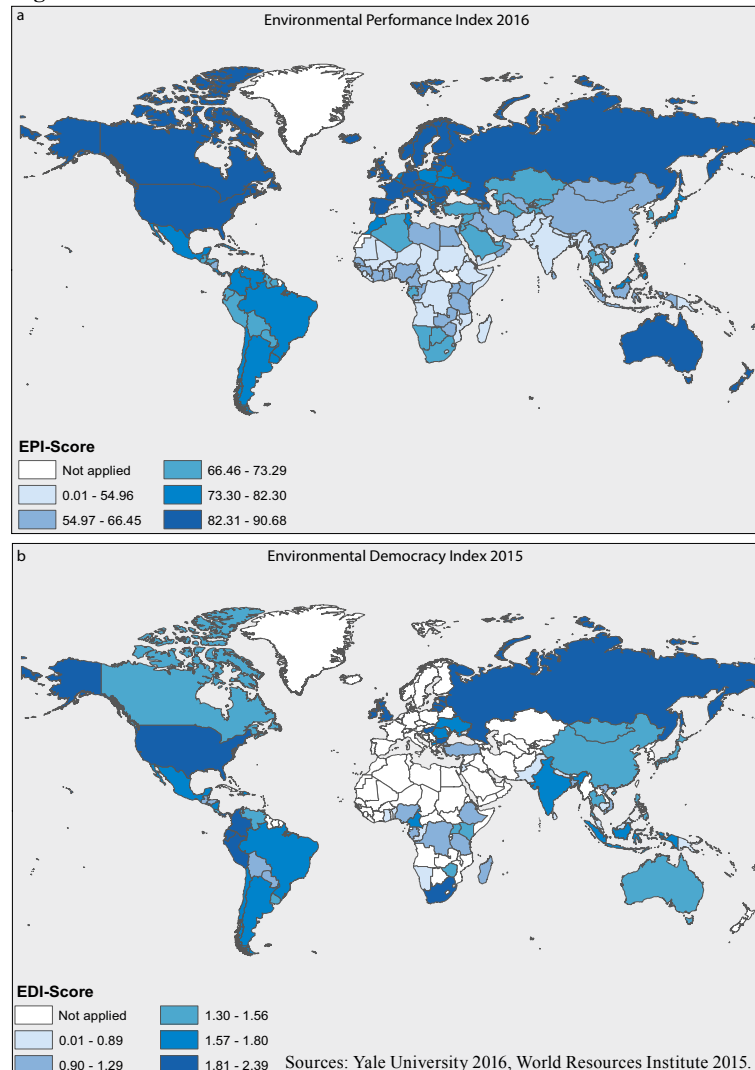
country. With this information individual countries can see the areas of environmental policy in which they have potential for improvement. Most of the underlying data originate from official statistics, as they are reported to international organizations like the UN or the WHO. The data get standardized according to population, land area and GDP and then normalized. For each underlying indicator a policy target is identified as a benchmark. The benchmarks are either taken from aims defined by international organizations like the WHO, or are set by the indicator itself for example at the 95th percentile of the range. The scores are measured and then converted to a scale between zero (farthest from the target) to 100 (closest to the target).

The index gets published every two years. Earlier releases of the indicator are not fully comparable because the indicator gets improved with every version both methodologically and in terms of the use of more

Environmental Performance Index

EPI was developed at the University of Yale and came into existence in 2006. It measures the overall ecological performance of countries and offers a basis for the assessment and comparison of national environmental policies. EPI uses 20 indicators from nine topics that can be separated into two categories: the protection of human health and the protection of the ecosystem. The former includes air quality, health effects and water supply, while the latter, for example, covers biodiversity, climate change, agriculture and fisheries. These issues are further divided into 20 indicators, which highlight the overarching themes. The indicators that are used include, for example, the quality of drinking water, waste water management, CO₂ intensity, air quality in homes, as well as the nitrogen balance in soils. The data map a broad spectrum of information available on the current situation of the environment in a

Figure 1



suitable data. The quality of data available for all countries is one of the main problems of the EPI. The global approach gives rise to further problems regarding the use of the EPI to measure a country's performance: in different regions of the world different environmental problems are pressing. Kraemer and Peichelt (2008) recommend the use of regional indices to evaluate a country's performance. Even the authors of the EPI studies admit that the overall EPI has only limited value for international comparisons. In their view, the strength of the EPI studies mainly lies in their compilation of underlying data that cover a broad range of environmental areas in different countries (Hsu et al. 2016).

Apart from the top Scandinavian countries like Finland, Sweden and Denmark that achieved scores of around 90, the EPI reached a particularly high value in the Baltic countries in 2016. The United Kingdom, Australia and Ireland also performed well (see Figure 1a and DICE Database 2016a). Germany (84) and Belgium (80) performed worst among the western European countries. Compared to other European countries Germany scores weakly due to its intensive agriculture and fishery, while Belgium's poor performance is due to deforestation and higher air pollution. Countries in the African region only reached the lowest ranks overall.

The current EPI shows that some environmental areas outperform others: there is access to clean drinking water for much of the world's population (almost 50 percent). Moreover, the number of maritime conservation areas has improved significantly over the last 16 years. Air quality, however, worsens at a low level. Around one third of the people living in poor air conditions can be found in East Asia and the Pacific region. Over 50 percent of people in China and South Korea are exposed to higher levels of particulate matter (Yale University 2016). This can largely be attributed to the fact that additional economic growth in developing countries leads to a deterioration in air quality. On the other hand, there is a strong correlation between a country's environmental performance and its wealth as measured by GDP. This can be explained by the fact that wealthy countries have more financial resources to invest in environmental performance (Hsu et al. 2016).

Environmental Democracy Index

The Environmental Performance Index mainly focuses on the quantitative evaluation of individual countries in terms of their ecological balance and the implementa-

tion of protective measures for the environment and human health. By contrast, the Environmental Democracy Index (EDI) explicitly assesses opportunities to participate in decision-making in the area of environmental issues. Set up in 2015 and initiated by the World Resources Institute (WRI) and the Access Initiative (TAI), the index is based on the tenth principle of the Rio Declaration on Environment and Development. This declaration was initiated at the Earth Summit in 1992 and, along with the Aarhus Convention 1998, established as a legally-binding instrument for public participation in environmental issues (World Resources Institute 2015).

The core of this principle consists of three major legal statements: namely information, participation and justice. Firstly, environmental issues should be handled with the participation of all of the citizens concerned to ensure that they all have access to information on the environment and its condition, as well as on hazardous substances. Secondly, citizens should have the chance to participate in the decision-making process. Thirdly, access to judicial and administrative procedures has to be granted (UN 1992). The background is the fact that major discrepancies between the laws and their implementation currently still exist. Countries that have signed the Aarhus Convention basically have stricter laws and better legal protection of democratic rights in the environmental field. The index thus presents the first platform on which countries can be assessed in terms of their progress towards promoting transparency and public participation in environmental decision-making. The protection of these rights, particularly of marginalized and vulnerable groups, represents a first step towards the promotion of equality and fairness in the field of sustainable development (World Resources Institute 2015).

75 legal indicators and 24 qualitative practice indicators are aggregated in the index. The legal indicators include internationally acknowledged standards, which were developed by the United Nations Environmental Program (UNEP). The practice indicators provide insights into the current state of implementation. To evaluate the individual indicators the experts and lawyers responsible for assessment will find a selection of options available that allows them to assess the relevant indicator regarding the implementation of the law or the environmental regulations. They use a scale from three to zero with three meaning the law is fully implemented and zero if the law is silent regarding the topic. In addition, there is the possibility of commenting on the annual number of credit points for each country. The index currently considers 70 countries. These are countries

that are members of the Access Initiative or the Open Government Partnership. The latter represents a multi-lateral initiative to promote transparency and participation, as well as to reduce corruption (Open Government Partnership 2016). Exceptions to date include most Western European countries, North Africa, countries of the Middle East and Central Asia.

Countries like Lithuania, Latvia and the United States occupy the top places in the index (as of July 2015). In all three categories (information, participation, justice) Lithuania and Latvia are among the top ten countries (see Figure 1b and DICE Database 2016b). According to WRI, there is a correlation between a country's EDI score and its prosperity. Some less developed countries, however, are among the upper third, including Panama, Colombia, Indonesia, India and El Salvador. Generally there is a substantial backlog in the field of public participation laws. Almost 80 percent of the participating countries do not have adequate measures for public participation (World Resources Institute 2015). This means that those countries score lower than 1.5 points on the participation category on a scale of three (best) to zero (worst). For the other categories the overall picture is better. In terms of both information and justice, only 40 percent of countries score lower than 1.5 points (DICE Database 2016b). The weak performance in the information category is illustrated by the fact that only half of the countries provide data on the air quality of their capital cities on the internet.

Relation between EDI and EPI

The EDI attempts to measure the strength of the rights of civil society in environmental issues, whereas the EPI assesses the environmental performance of a country. Assuming that a high degree of informed public and enforceable rights leads to better performance in a policy field, it can be assumed at first glance that there is a strong relationship between those two indicators. Correlations show that there is a positive relationship between the two indices ($r = 0.62$).

To classify the strength of this relationship we check how the EPI is correlated with a broader democracy index, such as the “Freedom in the World Index”¹ (Freedom House 2016). The relationship between EPI

and the “Freedom in the World Index” is equally as strong ($r = 0.61$) as the relationship between EPI and EDI. This suggests that there is a positive relation between opportunities to participate in environmental issues and overall ecological performance. This relationship, however, is no stronger than the relationship between the existence of general civil liberties and overall ecological performance. Strong civil liberties affect the performance in a lot of policy fields, as well as in environmental issues.

As an index aimed especially at environmental topics, the EDI should perform better than the broader “Freedom in the World Index”. However, for methodological reasons the EDI is based on the de-jure state, i.e. the situation in the legal texts. The de facto observation seems to be more important to evaluate the environmental performance of a country because legal systems do not perform equally well in all countries. Therefore, extensive rights to participate in environmental issues do not automatically lead to a good result in terms of environmental balance.

Daniel Leithold and Jana Lippelt

References

- DICE Database (2016a), “Environmental Performance Index (EPI), 2008, 2010, 2012, 2014 and 2016”, Ifo Institute, Munich, www.ifo.de/w/3hf9iZ9nF.
- DICE Database (2016b), “Environmental Democracy Index (EDI), 2016”, Ifo Institute, Munich, <http://www.ifo.de/de/w/DAGUvVgz>.
- Freedom House (2016), Freedom in the World 2016, Anxious Dictators, Wavering Democracies: Global Freedom under Pressure, www.freedomhouse.org/report/freedom-world/freedom-world-2016 (accessed 17 May 2016).
- Hsu, A. et al. (2016), 2016 Environmental Performance Index, Yale University, New Haven, www.epi.yale.edu (accessed 17 May 2016).
- Kraemer, R. A. and H. Peichert (2008), *Analysis of the Yale Environmental Performance Index (EPI)*, UBA-Texte 09/08, available at: http://ecologic.eu/sites/files/publication/2015/kraemer_08_analysis_of_the_epi.pdf.
- Open Government Partnership (2016), From Commitment to Action, <http://www.opengovpartnership.org/> (accessed 17 May 2016).
- United Nations (1992), Rio Declaration on Environment and Development 1992, <http://www.jus.uio.no/lm/environmental.development.rio.declaration.1992/portrait.a4.pdf> (accessed 17 May 2016).
- World Resources Institute (2015), Measuring, Mapping and Strengthening Rights: The Environmental Democracy Index, http://www.environmentaldemocracyindex.org/sites/default/files/files/EDI_Brochure_English_6_2015.pdf (accessed 17 May 2016).
- Yale University (2016), Global Metrics for the Environment. The Environmental Performance Index, https://issuu.com/2016yaleepi/docs/epi2016_final (accessed 17 May 2016).

¹ The “Freedom in the World Index” has existed since 1978 and evaluates political rights and civil liberties like freedom of expression and belief, political pluralism as well as the functioning of the government in 210 countries. To measure these aspects, 25 indicators are used that can score between zero (worst) and four (best), so the index ranges between zero and 100.

SCHOOLING INSTITUTIONS AND THE INFLUENCE OF PARENTAL AND IMMIGRANT BACKGROUND ON ACADEMIC PERFORMANCE

Educational equity can be viewed as a key indicator of a country's social equity in general. In most countries, however, educational success varies widely across socio-economic groups. Furthermore, immigrant children often lag behind their native peers, even after accounting for socio-economic characteristics (OECD 2012). Thus, examining and identifying educational disparities between social strata can motivate institutional changes that contribute to social cohesion.

The international student assessment PISA distinguishes between participation and fairness in educational equity. Educational equity with regard to fairness is defined as granting all students equal opportunities to benefit from education, regardless of gender or family background. This should then be reflected in a lower correlation between family characteristics and academic success (OECD 2012).

Schooling performance in the PISA assessment is measured in three main categories: mathematics, reading and science. We will focus our analysis on performance in the PISA mathematics section.¹

The effect of socio-economic background on academic performance

To measure socio-economic and cultural background, PISA 2012 employs the Index of Economic, Social and Cultural Status (ESCS). The ESCS-Index includes three components: employment and occupation of parents, parental education level and cultural possessions in the household. The latter serves as a proxy for cultural resources. Specifically, the proxy indicates whether the household possesses objects of cultural value; such as the number of books at home, literary classics, stationary and learning equipment, as well as IT-related items. Furthermore, the ESCS is constructed so that zero constitutes the OECD-mean and standard deviation across

OECD countries is normalised to one (Ehmke and Siegle 2005).

Figure 1 indicates the average difference in mathematics scores associated with a variation of one standard deviation in the ESCS-Index. On average, European OECD members exhibit a decrease in mathematics scores of 39 points, due to a one standard-deviation decrease in the ESCS-Index across all OECD-countries. This difference corresponds to roughly one year of schooling (OECD 2013).

This gap is highest in the Slovak Republic (-54), France (-52), the Czech Republic (-51), Belgium (-49) and Hungary (-47). Conversely, a student's family background is least associated with academic performance in Estonia (-29), Italy (-30), Iceland (-31), Norway (-32) and Finland (-32).

This pattern is robust to alternative measurements of the score-gap. The numbers in Figure 1 are stated in absolute score gaps associated with a one standard-deviation decrease in the ECSC-Index. However, to take the overall performance level of the country into account, the score-difference can be expressed in percentages of the average country score. The ranking of high and low gap countries nevertheless remains the same with this alternative scaling of the score-gap.

Recent literature suggests that schooling institutions are an important factor in achieving educational equity. More specifically, sorting students into different tracks with distinct curricula can intensify the role of family background due to the cancelled benefits of spillovers from better performing to disadvantaged students (Hanushek and Wößmann 2006). Hanushek and Wößmann (2006) find a negative association between early tracking and performance equity.

Indeed, the PISA 2012 results confirm this relationship. In Figure 1, the age of first tracking is stated for each country in parentheses. In countries with the highest score-differences (except for France), first tracking takes place at a young age of 10 to 12 years. Czech children, for instance, are sorted into five different school tracks after five years of primary school at age 11, according to academic performance. Better performing students are admitted to tracks that prepare students for academic tertiary education. Lower achieving students, on the other hand, receive vocational training.

¹ For immigration and its influence on reading scores, see Klosowiak (2012).

However, countries exhibiting the most equitable educational outcomes sort students at a later age. In Norway, students attend the same track until the age of 16 and can pursue vocational or academic education thereafter.

Thus, schooling institutions with later tracking seem to reduce the influence of socio-economic background on academic achievement. Similarly, one can also examine whether this also holds for the influence of an immigrant background on educational performance.

Influence of immigrant background on academic performance

Figure 2 depicts the gaps in mathematics scores between native and immigrant students. Here, ‘immigrant students’ include both first and second generation immigrants. First generation immigrants are defined as children born in the country of origin, while second generation immigrants are born in the destination country.

For almost every European OECD country, PISA 2012 results indicate that immigrant children attain lower scores in mathematics than native children. On average, the penalty for immigrant children is 34 PISA points, which corresponds to a deficit of around one year of schooling. However, socio-economic characteristics may account for a large fraction of this variation, as immigrant cohorts often differ from the native population in socio-economic status. After controlling for socio-economic background, the gap reduces to 22 points at mean. However, this effect varies between different countries.

In Belgium, for instance, the discrepancy between migrants and natives is the largest among European OECD members, with 75 points being almost two years of schooling. The data indicate a similar picture for Sweden, Denmark and Austria. After controlling for socio-economic background, this pattern seems to persist, but to different degrees.

By contrast, immigrant students lag only little behind natives in Ireland and the UK. After accounting for socio-economic background, the penalty ranges from about five to ten points for this group of countries.

Interestingly, a ‘premium’ in mathematics scores can be observed in Hungary and the Slovak Republic. However, this finding may be largely due to the composition of immigrant cohorts in these countries. For instance, only

ten percent of immigrants in the Slovak Republic speak a language other than Slovak at home. Furthermore, the PISA assessment in mathematics is text-intensive, requiring numerous word problems. The PISA mathematics assessment is therefore affected by literacy skills to some extent. Hence in the Slovak Republic, language barriers can be assumed to be no issue for the majority of immigrants when sitting the test.

There does not appear to be a strong relationship between the immigrant-native gap and tracking ages. Finnish students, for instance, are not tracked until the age of 16, but the penalty for immigrant students is the highest in the sample. Germany tracks children at age ten and the penalty is only half the Finnish difference. Ireland first tracks students at the same age, but indicates a low penalty of four points.

Ruhose and Schwerdt (2015) assess the influence of early tracking on migrant-native gaps in mathematics score. They exploit a natural experiment in Germany and employ a difference-in-difference approach. Consistent with our descriptive statistics, the authors find no overall effect of early sorting on differences in performance between natives and immigrants, controlling for socio-economic status.

Figure 1

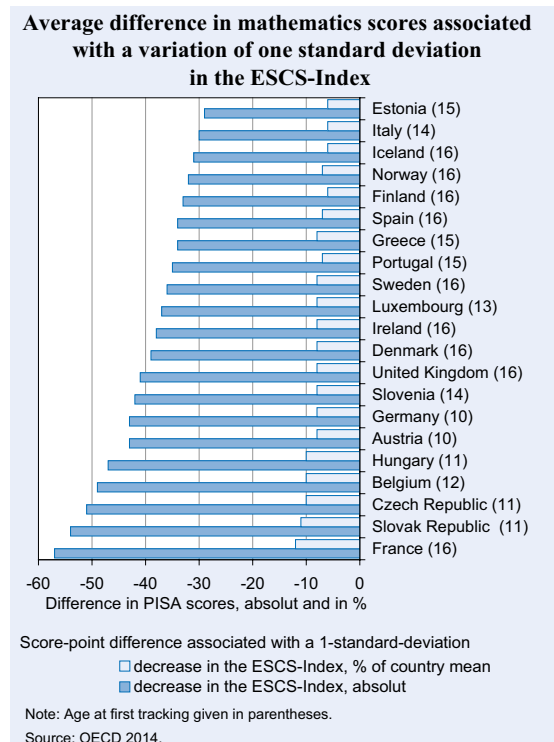
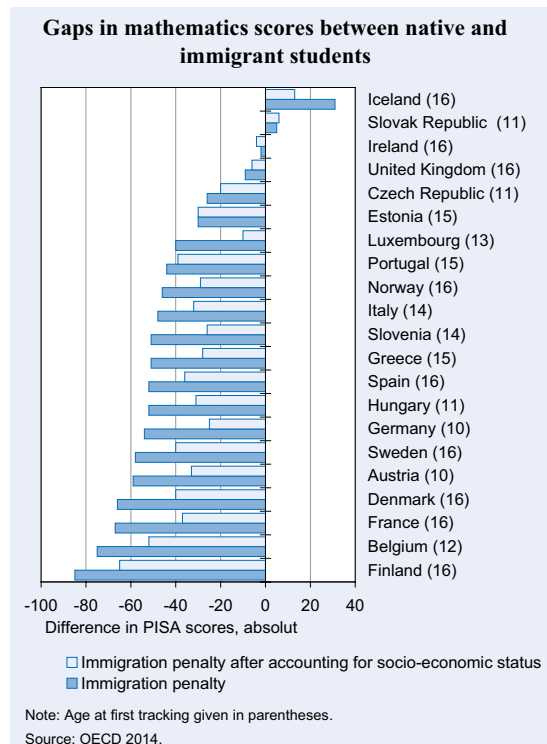


Figure 2



References

- Ehmke, T. and T. Siegle (2005), "ISEI, ISCED, HOMEPOS, ESCS", *Zeitschrift für Erziehungswissenschaft* 8(4), 521–39.
- Hanushek, E. A. and L. Wößmann (2006), "Does Educational Tracking Affect Performance and Inequality? Differences-in-Differences Evidence across Countries", *Economic Journal* 116 (510), C63–C76.
- Klosowiak, A. (2012), "Immigrant Arrival Age and Its Influence on Reading Performance", *CESifo DICE Report* 10 (4), 53–4.
- OECD (2012), *Equity and Quality in Education: Supporting Disadvantaged Students and Schools*, OECD Publishing, Paris.
- OECD (2013), *PISA 2012 Results: Excellence through Equity*, Vol. 2, OECD Publishing, Paris.
- OECD (2014), *PISA 2012 Results: What Students Know and Can Do*, OECD Publishing, Paris.
- Ruhose, J. and G. Schwerdt (2015), "Does Early Educational Tracking Increase Migrant-Native Achievement Gaps? Differences-In-Differences Evidence across Countries", *IZA Working Paper* no. 8903.

Conclusion

Most of the variation in PISA scores can be attributed to the interaction between socio-economic characteristics and schooling institutions. Early tracking aggravates the educational disadvantages of the socially deprived, regardless of whether they are native or immigrant children. The PISA 2012 results once again highlight the importance of institutional frameworks to educational and social equity. Table 1 summarises the data used in this database article. The table also includes average mathematics scores for all children and for immigrant children.

Yuchen Guo, Till Nikolka and Katrin Oesingmann

Table 1

PISA 2012: Mean mathematics scores by country, penalty in mathematics scores for immigrants, age of first tracking

	Mean score in mathematics	Total explained variance in mathematics performance by socio-economic background	Score-point difference in mathematics associated with a one-unit decrease in the ESCS-Index	Score-point difference in mathematics associated with a one-unit decrease in the ESCS-Index, % of country mean in mathematics scores	Penalty for immigrant children in math scores	Penalty for immigrant children after accounting for socio-economic status	Percentage of immigrant students	Age at first tracking
Austria	506	23	-43	-8	-59	-33	16	10
Belgium	515	24	-49	-10	-75	-52	15	12
Czech Republic	499	25	-51	-10	-26	-20	3	11
Denmark	500	22	-39	-8	-66	-40	9	16
Estonia	521	18	-29	-6	-30	-30	8	15
Finland	519	16	-33	-6	-85	-65	3	16
France	495	30	-57	-12	-67	-37	15	16
Germany	514	23	-43	-8	-54	-25	13	10
Greece	453	20	-34	-8	-51	-28	11	15
Hungary	477	31	-47	-10	31	13	2	11
Ireland	501	22	-38	-8	-2	-4	10	16
Italy	485	17	-30	-6	-48	-32	7	14
Luxembourg	490	29	-37	-8	-40	-10	46	13
Netherlands	523	19	-37	-8	-57	-35	11	12
Portugal	487	24	-35	-7	-44	-39	7	15
Slovak Republic	482	32	-54	-11	5	6	1	11
Slovenia	501	22	-42	-8	-51	-26	9	14
Spain	484	23	-34	-7	-52	-36	10	16
Sweden	478	18	-36	-8	-58	-40	15	16
United Kingdom	494	23	-41	-8	-9	-6	13	16
Iceland	493	15	-31	-6	-52	-31	3	16
Norway	489	17	-32	-7	-46	-29	9	16
Switzerland	531	20	-32	-7	-63	-42	24	12
Turkey	448	18	-32	-7	3	-5	1	11

Note: Empty cells: No data available.

Source: OECD 2014.

NEW AT DICE DATABASE

Recent entries to the DICE Database

The second quarter of 2016 saw a number of new entries to the DICE Database, consisting partly of updates and partly of new topics, including:

- Government responses to improve access to finance
- World proven natural gas reserves by country
- World proven crude oil reserves by country
- Extension of collective agreements in Europe
- Social housing in the EU: Reported policy objectives
- Minimum income schemes in Europe: Types of minimum income schemes and eligibility conditions
- Guaranteeing sufficient resources: Means-related conditions
- Guaranteeing sufficient resources: Basic regulation
- Employer, employee and self-employed social security contributions

The interactive graphics application [Visual Storytelling](#) has been further expanded.

FORTHCOMING CONFERENCES

CESifo Area Conference on Economics of Education 2–3 September 2016, Munich

The 2016 CESifo Area Conference on the Economics of Education aims to bring together network members to discuss their recent research and to encourage broader interactions, particularly on both sides of the Atlantic. The Jacobs Foundation Lecture will be delivered by Joseph G. Altonji (Yale University).

Scientific organisers: Professor Eric A. Hanushek and Professor Dr. Ludger Wößmann

6th “Regional Economics” Workshop 15–16 September 2016, Dresden

The Dresden Branch of the Ifo Institute and the Technische Universität Braunschweig are pleased to announce the 6th Ifo Dresden Workshop on Regional Economics. The workshop aims to facilitate the networking of young scientists and promote the exchange of their latest research results spanning the fields of regional economics, persistency in regional inequality, regional structural change and growth-enhancing regional policies.

Scientific organisers: Jan Kluge and Christian Ochsner

CESifo Area Conference on Energy and Climate Economics

14–15 October 2016, Munich

This conference aims to stimulate exchanges between members of the CESifo Research Network and promote closer links between them. All CESifo research network members are invited to submit their papers, which may deal with any topic in the field of Energy and Climate Economics. The keynote lecture will be delivered by Charles D. Kolstad, Stanford University.

Scientific organiser: Professor Michael Hoel

CESifo Area Conference on Behavioural Economics 21–22 October 2016, Munich

The purpose of the conference is to bring together CESifo members to present and discuss their ongoing research, and to stimulate interaction and co-operation between them. All CESifo research network members are invited to submit their papers, which may deal with any topic within the broad domain of behavioural and experimental economics and applications to other fields. The keynote lectures will be delivered by Raj Chetty (Stanford University) and Ran Spiegler (Tel Aviv University).

Scientific organisers: Professor Dr. Klaus Schmidt and Professor Dr. Ernst Fehr

NEW BOOKS ON INSTITUTIONS

Efficiency, Finance, and Varieties of Industrial Policy Guiding Resources, Learning, and Technology for Sustained Growth

Edited by Akbar Noman and Joseph E. Stiglitz
Columbia University Press, 2016

Local Governance, Economic Development and Institutions

Edited by Georgina M. Gómez and Peter Knorringa
Palgrave Macmillan, 2016

Understanding Institutions: The Science and Philosophy of Living Together

Francesco Guala
Princeton University Press, 2016