Industrial Doctorates and Intersectoral Mobility: Lessons from Marie Skłodowska-Curie Programmes

What a Funding Instrument Taught Universities About Working With Industry

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Industrial doctorates have moved from the margin of European doctoral education to a recognised form of provision, largely through the action of a funding programme rather than through institutional strategy. This article examines the model that the Marie Skłodowska-Curie actions established, distinguishes three organisational variants that are frequently conflated, and assesses what universities and companies learned from a decade of joint supervision. It argues that the instrument succeeded where it created a third space with its own rules, and that its lessons are poorly transferable to institutions that treat industrial doctorates as a placement rather than as a model of doctoral education.

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1. A Programme Before a Model

Practice first, model afterwards

The industrial doctorate did not emerge from a theory of doctoral education. It emerged from a funding instrument that required doctoral candidates to spend part of their time outside academia, and from companies that were willing to host them. The instrument created a model, and the model has since been adopted, adapted and, in some systems, institutionalised in national programmes.

This sequence matters for an assessment. A model that was designed by a committee would have specified the pedagogical rationale, the distribution of responsibilities and the criteria of success. A model that emerged from a funding scheme specifies what a proposal must contain in order to be funded, and the specification is what universities have responded to.

The article examines the specification, the variants that institutions have built on it and the evidence about outcomes. Its argument is that the model works when it creates a third space — an organisational arrangement in which the rules of neither partner apply without modification — and that it fails when it is treated as an additional placement for a candidate who would otherwise have done the same project in a laboratory.

2. The Instrument

2.1 What Was Required

The doctoral networks funded under the programme have a stable anatomy. A consortium of universities and companies, a defined research training programme, a set of individual projects each associated with a candidate, a period of secondment in the non-academic sector, and a set of training activities in transferable skills.

Element	Requirement	What it changes
Consortium	Universities and companies as full partners	Shared responsibility for recruitment
Research programme	Defined at proposal stage	Candidate joins a project, not a chair
Secondment	A period in the non-academic sector	Exposure to a different logic of work
Training	Transferable skills, defined hours	A curriculum beyond the thesis
Recruitment	Open, transparent, published	Comparison between candidates

Table 1 The elements of a funded doctoral network

Two features of the anatomy are more consequential than the rest. The first is that the research project is defined before the candidate is recruited, which reverses the traditional sequence in which a candidate arrives with an idea and negotiates a topic with a supervisor. The second is that the consortium, rather than the individual supervisor, is the applicant, which means that the institution and the company have committed themselves before any candidate exists.

2.2 What It Cost and What It Paid

Paid well enough to attract, not enough to retain

The funding covers the salary of the candidate, a mobility allowance, a family allowance where applicable, research costs and a contribution to training. The rate is above the level of a typical doctoral stipend in most systems, which is one of the reasons the scheme is competitive, and it is below the level of an experienced professional salary, which is one of the reasons companies participate as hosts rather than as employers.

For the company the calculation is different. A candidate costs the company the supervision time of a member of staff, the infrastructure of a project and the administrative overhead of participation, and it receives a researcher who works on a problem of commercial relevance for three or four years at a cost below that of an equivalent employee. The calculation is attractive where the problem fits, and it does not fit where the company needs a result within a year.

3. Three Variants

3.1 The Secondment Model

In the first variant, the candidate is employed by a university, enrolled in a doctoral programme, and spends a defined period with a company.

The company provides a problem, data and supervision; the university provides the degree and the academic environment.

This is the model that most institutions recognise, and it is also the one that most frequently disappoints. The secondment is short, the candidate arrives without knowledge of the company's context, the company's supervisor is not trained for supervision, and the period ends before the work has produced anything that either party can use.

3.2 The Joint Employment Model

Employment by the company changes the relationship

In the second variant, the candidate is employed jointly or by the company with an academic affiliation. The degree is awarded by the university, the salary is paid by the company, and the supervision is genuinely shared.

This variant produces the strongest research collaboration and the most difficult administrative questions. The candidate's status, her rights, her intellectual property and her freedom to publish are all negotiated, and the negotiation is frequently conducted by legal services that have no experience of the arrangement. Where it is resolved, the model produces researchers who understand both sectors and who remain in contact with both.

3.3 The Company-Based Model

In the third variant, the candidate is employed by the company and registered at a university for a degree, with a lighter academic involvement. The model exists in several systems and it is the least documented, because it frequently develops without a programme and without a consortium.

Variant	Employment	Characteristic problem
Secondment	University	Too short to produce joint work
Joint employment	Company with affiliation	Contractual complexity
Company-based	Company	Thin academic integration
Mixed within a programme	Both	Inequality between candidates

Table 2 Three variants and their characteristic problems

The third variant is the one that the policy literature discusses least and that the labour market produces most. A company that wishes to develop a researcher can employ her and arrange a registration, and the arrangement requires no consortium and no proposal. Its weakness

is academic: a candidate whose daily environment is a company and whose academic contact is a monthly meeting with a supervisor is not being educated as a researcher in the way that the Salzburg Principles describe.

4. What Was Learned

4.1 About Supervision

The programme produced a body of experience about supervision across sectors, and the experience is consistent.

Two supervisors, two competences, two trainings

The first lesson is that a company supervisor needs training as much as an academic one, and that the training is different. An academic supervisor is trained in the literature and the methods of a field; a company supervisor is trained in the problem, the constraints and the timetable of a business. A candidate needs both, and neither is a substitute for the other.

The second lesson is that the relationship between the two supervisors determines the experience of the candidate more than any other factor. Where they meet regularly and agree on priorities, the candidate has two mentors. Where they do not, the candidate is placed in a conflict of loyalty that she cannot resolve and that consumes her time.

The third lesson is that the academic supervisor must retain authority over the academic quality of the work, and that the company must retain authority over the use of its data and its infrastructure. An arrangement that blurs either authority produces a thesis that satisfies neither.

4.2 About Institutions

The programme also taught universities something about themselves. The first discovery was that the administrative apparatus of a university is not designed for a candidate who is not an employee and not a student in the ordinary sense, and that every arrangement has to be built by hand.

The second discovery was that the willingness of a company to participate depends on a relationship rather than on a scheme. Companies that host candidates repeatedly do so because they know a particular professor or a particular office, and the relationship is what reduces the transaction cost to a level at which participation is rational. Pro-

grammes that assume a market of willing companies discover that the market is a network.

4.3 About Candidates

Employability up, publication down

The evidence about candidates is thinner and it points in two directions. On the one hand, graduates of industrial doctorates are more likely to be employed, more likely to work outside academia and more likely to report that their skills are used. On the other, they report less satisfaction with the academic dimension of their training and, in some studies, a lower rate of publication.

The tension is not a paradox; it is a design choice. A project defined by a company's problem produces knowledge that is valuable and that is frequently not publishable in the form that an academic career requires. A programme that wishes to produce both must design for both, with a publication plan agreed at the outset and with academic work that stands on its own.

5. Transfer to the Ordinary Institution

5.1 What Can Be Copied

Three elements of the model transfer to institutions that have no access to the programme.

The first is the practice of defining the project before recruiting the candidate. An institution that advertises a defined project with a named supervisory team, rather than admitting a candidate who then negotiates a topic, produces a better fit and a faster start, and the practice costs nothing.

The second is the secondment, which can be organised bilaterally and without a consortium. A period of three months in a company, arranged by a supervisor who knows the company, produces most of the benefit of a funded secondment at a fraction of the administrative cost.

The third is the joint supervision agreement: a document that states the responsibilities of each supervisor, the timetable, the ownership of data and the publication arrangements. Templates exist and are rarely used, and their absence is the most common cause of a dispute that could have been avoided.

5.2 What Cannot

The model depends on the salary

What does not transfer is the salary. The programme pays a doctoral candidate at a level that makes industrial participation attractive to the candidate and affordable to the company, and no institution can reproduce that level from its own budget. An institution that adopts the model without the funding produces a candidate who is expected to work for a company at a stipend, which is an arrangement that benefits the company and exploits the candidate.

The second thing that does not transfer is the consortium. A network of universities and companies that has been assembled for a proposal has a governance, a schedule and a set of relationships that a bilateral arrangement lacks. The bilateral arrangement is cheaper and it is also weaker, and the difference is visible in the quality of the training activities.

6. Policy Implications

Three implications follow for national and European policy.

The first is that the instrument should be evaluated on the quality of the research training rather than on the number of participants. A programme that produces a thousand candidates with thin academic integration has produced less than a programme that produces three hundred with a genuine joint project, and the count cannot distinguish them.

Standardise the agreement, not the project

The second is that the administrative obstacles are worth removing at the system level rather than case by case. A standard agreement for joint supervision, a defined status for a candidate employed outside the university, and a rule on intellectual property that applies by default would reduce the cost of every arrangement, and the cost is currently what limits the number.

The third is that the model should not be universalised. An industrial doctorate is appropriate for a research problem that a company needs solved and that a candidate can address within a doctoral programme; it is not appropriate as a general form of doctoral education, and a policy that pushes all candidates towards it will produce projects that serve neither purpose.

7. The Contract Between a University and a Firm

An industrial doctorate is a three-sided arrangement, and the side that is least examined is the one between the institution and the company. The candidate is the visible party, the supervisor is the academic party, and the contract that determines what the company will and will not accept is signed before either of them begins.

Three clauses decide whether the arrangement works. The first is the ownership of results. A company that funds a project expects to own what it produces, and a university that awards a doctorate expects the results to be publishable. A contract that assigns ownership without a publication right produces a candidate who cannot submit, and the situation is discovered two years into a four-year project.

The second is the right to publish. The arrangement that functions is a defined delay for the review of a manuscript, of a stated length, with an arbitration route when the company objects. A delay of three months is compatible with a doctorate; an unlimited right of approval is not, and it is common.

The third is what happens if the project fails commercially. A company that closes a division, changes strategy or is acquired leaves a candidate without a project and a university without a funder, and the contract that does not address the case leaves the candidate to negotiate with an institution that has no budget line for her. A clause that transfers the funding obligation to the university, or that defines a completion route funded from a reserve, is the cheapest insurance in the arrangement.

8. The Supervisor Who Works in Two Institutions

The supervision of an industrial doctorate is performed by two people with different measures of success. The academic supervisor is assessed on publications, on completion and on the standing of the work in the discipline; the industrial supervisor is assessed on the value the project produces for the firm. The two are compatible in a good project and they diverge precisely when the project is difficult.

The arrangement that works is a division of labour rather than a duplication. The academic supervisor is responsible for the question, the method and the argument; the industrial supervisor is responsible for access, for the data and for the relevance of the problem. The candid-

ate benefits from both and is confused by an arrangement in which each supervises the other's territory.

The arrangement that fails is the one in which the industrial supervisor is a manager with no time and the academic supervisor is a specialist with no interest in the application. In that arrangement the candidate is supervised in name by two people and in practice by none, and the failure is visible in the third year, when the work has to become an argument and there is no one to make it one.

What the programmes learned is that the industrial supervisor needs a defined role, a stated time commitment and a recognised status in the university's procedures. A firm that is asked to release a manager for four hours a month is being asked for something modest; a firm that is asked to nominate a supervisor without any statement of what the role requires is being asked for a name.

9. What Industry Learns

The literature on industrial doctorates is written mostly from the university's side, and the evidence from firms tells a different story. Companies that have hosted doctoral candidates report three effects, and only the first is the one they expected.

The first is the solution of the specific problem. It is the effect that justified the investment and it is the least durable, because the problem is solved and the project ends. The second is the acquisition of a capability: a firm that has hosted a candidate learns how to frame a research question, how to read the literature and how to judge evidence, and the learning stays in the organisation after the candidate leaves or is hired.

The third is the network. A firm that has worked with a university for four years has a relationship with a department, and the relationship produces recruits, consultancies and a route for a problem that is smaller than a project but larger than a conversation. Firms that have run several doctoral projects describe this as the main benefit, and it is the one that no contract specifies.

The consequence for policy is that the instrument should be assessed on the relationship rather than on the project. A programme that funds a single project in a firm and ends produces a solution and no capability; a programme that funds a second and a third in the same firm produces the relationship, and the relationship is what the funding was for. The funds that have understood this build in a progression, and the funds that have not report a portfolio of completed projects and no durable change in the way firms and universities work together.

8. Conclusions

The industrial doctorate is a genuine innovation in European doctoral education, and its origin in a funding instrument explains both its strengths and its limits. It produced a model with two supervisors, a defined project and a period in another sector, and it demonstrated that a company and a university can share responsibility for a researcher without either losing its purpose.

Three conclusions follow. The model works when it creates a third space with agreed rules, and it fails when it is a placement added to an unchanged programme. Its most transferable elements — a defined project, a bilateral secondment, a written supervision agreement — cost little and are rarely used. And its least transferable element is the salary, which means that an institution adopting the model without funding is transferring a cost to the candidate.

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Biography:

Henrik Dahl works on the relationship between universities and industry in research training, with a particular interest in the organisational arrangements through which joint supervision is conducted.