

Workpackage number: WP 1.2		Start date or starting event: month 2					
Workpackage title: <i>Functioning of Knowledge Transfer via FDI</i>							
Participant id:	IWH	IER	NIFU-STEP	SPRU	UoT	GEA	
Person-months per participant:	14	12	6	1	22	10	

Objectives:

The overarching objective of this WP is to generate a better understanding of mechanisms/channels, determinants, and intensities of knowledge flows between firms. In the project, knowledge flows are exemplified through international transfer of knowledge and technology via foreign direct investment (FDI). Particular emphasis is placed on FDI-activity involving new member states as confronting hierarchical power relationships with embedded networks.

- 1 The first objective is to quantify the relative importance of different types of knowledge and technology transfer, as well as the respective determinants for each of the types of transfer.
- 2 The second objective is to analyse knowledge transfer by focussing on the multinational companies' (MNCs) strategies towards their subsidiaries. We place special emphasis on intellectual property right (IPR) issues, the processes of R&D and innovation in international production networks, as well as the absorptive capacities (and related skills) in subsidiaries and domestic enterprises.
- 3 The third objective is to discuss the appropriateness of FDI policies (general, horizontal or selective, industry-specific, and by use of e.g. subsidies, tax-breaks, provision of infrastructure for investors).

Description of work:

This workpackage is split into three methods: first, we use existing national firm-level databases for econometric analysis in a production function approach; second, the CIS allow us to analyse direct survey evidence on national and international technology transfer; and third qualitative data on MNC and subsidiary-specific factors will be generated by way of a questionnaire-field study.

- 1 For the first objective, the national firm-level financial databases of a representative sample (Estonia, the Czech Republic, and Slovenia) serve as data sources for an indirect analysis of the respective weights of different types of transfer. We research (i) direct transfer (between foreign investors and domestic subsidiaries) and (ii) indirect spillovers (between domestic subsidiaries and the host economy). Within the latter, we distinguish between horizontal and vertical spillovers, which both can be assessed with a regional perspective. Moreover, we test for the significance of a range of determinants for each type of transfer, including host country-specific (such as factor endowment, policy factors, etc.), industry-specific (such as industry input intensities, scale requirements, competition regimes), and determinants related to the actors in FDI themselves (motives for investment, mode of subsidiary establishment etc.). We place particular emphasis on such determinants that have so far not sufficiently been considered, such as: technology gaps across countries/sectors, competition issues, IPR-regimes. Home country effects through outward investment are additionally analysed. CIS data allows us to also infer directly international and local technology transfer at the firm level, by assessing the propensity of local and foreign subsidiaries to acquire and disseminate knowledge to other domestic firms. Therefore, CIS 3 data will be used as an complementary approach to the more traditional production function approach in measuring spillovers.
- 2 Both the national financial databases, as well as the CIS do not contain the necessary information to infer the roles of MNC-strategies and absorptive capacities in subsidiaries and local firms for technology transfer. Therefore, our questionnaire is designed to inform us about MNC strategies, innovation in international production networks, MNCs and IPR issues, the internal and external sources of relevant skills and absorptive capacities. The impact of these determinants on (i) the intensity of technology transfer, on (ii) the type of knowledge and technology transfer, (iii) the mechanisms and channels through which transfer works, as well as (iv) the content, kind, and properties of knowledge transferred (tacit vs codified, private vs public, etc.) are tested. In a prior field study project, the participants have successfully applied this innovative method. Whilst this focused on autonomy issues and subsidiary development, the

questionnaire proposed here is targeted at other MNC strategies and absorptive capacities and involves foreign investment subsidiaries and domestic firms as a control group. The field work is planned for the Czech Republic, Hungary (new EU members), Romania (accession country), and Germany (as representative of EU-15). In the selection of firms, we go beyond the state-of-the-art by extending the survey from manufacturing to the service sector, starting with business-related services, financial services, and other already liberalised services.

- 3 The assessment of results from this workpackage provides the necessary information to discuss the appropriateness of individual FDI policies: are knowledge and technology transfer intensities and mechanisms different across industries (general, horizontal or selective industry-specific measures); given the extent of externalities of FDI, are subsidies, tax-breaks, or the provision of infrastructure for investors geared towards the public good character of knowledge spillovers: for example, do policies sufficiently address linkage formation between domestic firms and foreign subsidiaries to facilitate vertical spillover effects?

Deliverables:

- D7 *Report on knowledge transfer and technology spillovers in selected European countries.* Responsible: B. Majcen (IER) (month 20)
- IER: Summary chapter on the State-of-the-Art in Researching Technology Transfer (month 20)
 - NIFU-STEP, IER, IWH: Using CIS data for assessing technology transfer (month 9)
 - IER, NIFU-STEP, UoT, IWH, GEA: Quantitative evidence regarding outward/inward FDI in Slovenia, Estonia, and the Czech Republic (also as input for WP 3.4) (month 15)
 - IWH, IER: The effects of MNC strategies towards FIEs on knowledge transfer (also as input for WP 3.4) (month 17)
 - IWH, UoT, IER, NIFU-STEP: Human capital and skills requirements for absorptive capacities for a dynamic, two-way knowledge transfer between subsidiary and parent (also as input for 3.1 and 3.4) (month 17)
 - BC, IWH, NIFU-STEP: The role of IPR in the innovation process (CIS data) of firms and technology transfer via FDI (fieldwork data) (as input for WP 3.2) (month 20)
 - NIFU-STEP, IER, UoT, IWH: Pushing the methodology frontier, and evidence from mezzo-analysis, quantitative, and CIS analysis on technology transfer via FDI in Central East Europe (month 20)
- D8 *Policy-paper synthesizing the evidence from the innovation process (WP 1.1) with the evidence from this WP in regard to FDI and innovation policies* (also as input for WP 3.4 and WP 3.5) Responsible: SPRU, UoT (month 24)
- D9 *Policy-briefing: FDI effects, innovation, and policy.* Responsible: SPRU, IWH (month 24)

Milestones and expected result:

- 4 Mechanisms of knowledge and technology transfer within the production networks of the enlarged EU
- 5 Human capital requirement of domestic firms to increase absorptive capacities