

Volume 3
Number 1
Spring 2005

ISSN 1581-6311

*Managing
Global
Transitions*

EDITOR
Boštjan Antončič

*International
Research
Journal*

Managing Global Transitions

International Research Journal

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The publication of the journal is supported by the Slovenian Research Agency.

Managing Global Transitions

International Research Journal

VOLUME 3 · NUMBER 1 · SPRING 2005 · ISSN 1581-6311

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The Editor's Corner

With this new issue, the journal begins with a renewed editorial team and board. At this occasion I would especially like to thank, among others who contributed to the birth and growth of the journal, the past editor Anita Trnavčević for setting good foundations for the development of the journal.

In its third year of existence the journal continues focusing on the transition research and emphasizing the openness to different research areas, topics, and methods, as well as the international and interdisciplinary research nature of scholarly articles published in the journal. The current issue covers topics such as the importance of e-learning in corporate training and development change, school leadership training, returns to education, restructuring and business reengineering, and sectoral analysis of transition.

This issue starts with a paper on the nature of e-learning-driven change of training and development delivery in organizations. Max Zornada examines the approaches used by several leading global Australian and Asian corporations, and identifies some emerging trends and practices that enable a successful deployment of e-learning strategies. In the second paper, Arild Tjeldvoll, Christopher Wales, and Anne Welle-Strand focus on school leadership training in the context of globalisation, and make a comparison between the UK, the US, and Norway. In the third paper, Susanne Milcher and Katarína Zigová analyze educational issues faced by Roma households on the basis of data from Bulgaria, the Czech Republic, Hungary, Romania, and Slovakia. The fourth paper of Drago Dubrovski discusses restructuring and business reengineering in integrative processes, while the last – fifth paper of Henryk Gurgul and Paweł Majdosz examines the structure of Polish economy by means of the key sector analysis finding persistence of characteristics of a centrally planned economy rather than characteristics of a market economy.

Boštjan Antončič
Editor

E-Learning and the Changing Face of Corporate Training and Development

Max Zornada

As much as ERP is critical to a manufacturing supply chain environment, e-learning is critical in a knowledge dependent supply chain environment.

Larry Pereira, Motorola

Internet technologies and the advent of e-learning applications in many organisations have made a fundamental difference to the way organisations deliver training and development content, activities and experiences to their employees. Some of the organisations at the forefront of deploying e-learning technologies have been global corporations and/or transaction processing intensive organisations, who typically have difficulties assembling their staff for traditional classroom based training activities, either due to logistical difficulties or because of the impact this would have on work flows and business continuity. Such organisations have developed approaches to e-learning and competency development that overcome the logistical problems of conventional training by making innovative use of e-learning. This paper examines the approaches used by several leading global, Australian and Asian organisations, including Cisco Systems, Motorola, Qantas and several others by drawing on a field study conducted by the writer during 2003–2004. It attempts to identify some key emerging trends and practices in the field, and lessons that can be learnt from the experiences of organisations reviewed, for the successful deployment of e-learning strategies.

Key Words: e-learning, learning and content management systems, Australia and Asia Pacific

JEL Classification: M53, O33

Introduction

Since widespread internet access became available during the early to mid 1990's, business has looked for opportunities to harness this new technology for its benefit.

Max Zornada is an Adjunct Lecturer at the Adelaide Graduate School of Business, The University of Adelaide, Australia

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This paper presents and discusses the results of the writer's field based review of how several major corporations in Australia and in the Asia Pacific region more broadly are applying e-learning technologies to support the implementation of their training and development strategies. The applications observed and discussed range from the tentative first steps to make a single topic module available for study on the corporate intranet, through to sophisticated corporation wide learning and content management systems (LCMS) deployed by Cisco and Motorola which are indicative of the substantial commitment to e-learning being made by these organisations.

Methodology and Approach

The findings and cases presented and discussed in this paper are based on a combination of:

- Field based interviews of managers at the organisations reviewed and review of e-learning practices.
- Information drawn from research reports into e-learning submitted by managers at some of the featured organisations, submitted as part of the assessment requirements for the writer's e-business MBA subject in which these managers were students, in Adelaide, Hong Kong and Singapore.
- Desk based review of published literature in this field.

Companies specifically referred to and included within the scope of this study include, Westpac Banking Corporation, Qantas Airways of Australia, Motorola, Cisco Systems Asia Pacific and the University of Adelaide.

The First Small Steps Towards E-Learning

The experiences of a major Australian bank, Westpac, are typical of the first steps to e-learning taken by many organisations.¹ During the late 1990's the Australian Government introduced changes to legislation affecting the granting of credit. This was known as the Uniform Credit Code (UCC). The impact of the legislative changes was that all staff involved in any aspect of decision making concerning credit were required to be familiar with the legislation and were required to make decisions in a manner consistent with the legislation. In the bank's Home Mortgage Processing operations, almost all employees were affected by this legislation to some extent and would need thorough training to familiarise

themselves with the details and how it affected their work decisions. This created the need to train and update thousands of employees.

The approach used by most financial institutions including Westpac initially, was to develop a class room based training program that all employees were required to attend. The class room training concluded with an exam and only employees passing the exam were accredited to be allocated to roles affected by the UCC.

The key problem with this approach related to the fact that the majority of staff would only use the knowledge gained on an ad hoc basis due to the normal variations in the flow of work and personnel allocations. This meant that enough time could pass between successive occasions when staff would be called upon to apply the knowledge learned in the class room, that there was ample time to forget and make errors. This represented an unacceptable risk to the bank. Other problematic issues included:

- Orientation and training of new employees. The need to establish a 'critical mass' of new employees in order to make the classroom-based training viable meant that there could often be a significant lead time from when employees joined to when they received the required training in the UCC. This severely restricted the range of tasks employees could be asked to perform and restricted management's ability to manage workloads and service levels.
- The legislation itself was also subject to change over time. Facilitating shorter follow-up workshops such as the initial classroom-based program to brief staff on changes, everytime a change happened was seen as undesirable because of the large number of employees affected and the consequent disruption this would cause to operations.

This is an example of Regulation-Driven Demand (Barron 2002), an area in which Barron's research suggests there are significant opportunities for e-learning based applications.

In Westpac's case, the solution came in the form of an online system delivered through the desktop on the bank's organisation wide intranet. The functionality built into the online system addressed many of the problem issues previously mentioned. The online system was offered as an option to attending the classroom-based training.

A new employee could work through a series of 'programmed learning' style modules delivered to the desktop. Employees could work

through these at their own pace and spread them out over several sessions without leaving their workstation. In this manner, employees could often exploit quiet periods during the working day in order to complete individual modules without being absent and effectively unavailable for work for the entire training day, as they would have if they had attended a classroom-based session. This feature gave the team leaders the ability to schedule required training modules into normal working days by taking advantage of naturally occurring periods when workloads were lower, while still having team members available at their desks to cope with periods when workloads were high.

Each module featured an online test which gave the employee immediate feedback on performance. Upon completion, the final accreditation exam was delivered and assessed on line. The employee's final result was automatically recorded in the Human Resource Management system, and if they had not achieved a sufficient level of proficiency this would automatically be flagged when their team leader made work allocations. Employees could repeat the training and the exam as often as they liked, until they passed the exam. The online system also kept track of when each employee had last been accredited and at predetermined intervals would flag the need to re-accredit. This was particularly important for employees who only used these skills on an ad-hoc basis and might forget some of the content between subsequent applications. Once flagged, employees had a set amount of time to re-accredit, otherwise their UCC status would be suspended. The re-accreditation exam was delivered online with immediate feedback of results. If the employee did not achieve re-accreditation the system would flag their unavailability for tasks requiring accreditation until such time as they successfully re-accredited. All results and details of training completed were updated on their employee file, and impacted on the range of tasks they could be assigned to do.

The e-learning module provided an effective vehicle for the delivery of training activities. However, by linking the assessment process to the Human Resources database, the e-learning system supported processing quality by ensuring that only qualified and accredited employees were assignment to tasks requiring those skills and that the need for ongoing maintenance of critical competencies was efficiently met.

Qantas Airways of Australia, Australia's national airline, similarly were an early mover into e-learning. Qantas has a workforce of some 30,000 employees, with approximately 18,000 employed in Sydney, Australia, the

remainder deployed around the world. A major barrier to training for an international airline like Qantas are the impacts and difficulties of getting a critical mass of employees in one location at one time for conventional classroom-based training. Not only is there the cost impact of releasing personnel from the workplace to attend training, there are also the cost impacts and logistical difficulties associated with a global workforce which is constantly on the move.

As early as 1995, Qantas commenced work with an Adelaide based solutions development company, TechWorks, to investigate the potential of e-learning to meet their needs.² Although starting as a relatively simple system implemented as a vehicle for updating its globally dispersed workforce on company policies and procedures, the Qantas e-learning platform (currently managed by Hudson Learning Solutions), very quickly grew into Qantas College Online.

Qantas College Online won the prestigious ANTA Australian Training Award in 2001 and was finalist in the 1997 Australian Technology Awards (see www.learning.hudson.com). Qantas College Online is accessible to any Qantas employee anywhere in the world at any time, and now has more than 10,000 registered learners (Hudson Learning 2004). The system routinely tracks learner progress, assessment and accreditation.

What is E-Learning

The previous two companies examined, document the implementation of e-learning in their respective corporate environments.

Although the term e-learning can be applied to a broad range of technology supported learning approaches, for the purposes of this paper, the term e-learning will be used to refer to the more contemporary approaches. In particular, approaches that make use of Web-based systems and Learning and Content Management Systems for making training and development activities available on the desktop using intranet or internet based platforms. This includes:

- Synchronous (instructor led or mentored) programs, where the learner follows an instructor determined schedule and interacts with the instructor during the course of study using email, chat technology or forums – also referred to as ‘blended’ learning when coupled with class room based activities.
- Asynchronous (individual/self paced) programs, which the learner progresses through independently and at his/her own pace.

Let us now consider how a large technology savvy organisation might go about rolling out an e-learning strategy and consider the case of Motorola.

Motorola

As might be expected from a company that regards itself as at the forefront of information technology, Motorola has made the internet a key element of its information technology infrastructure.

Since 1997 it has progressively migrated most of its management and employee transactions from paper based systems to online B2E (Business-to-Employee) portals (Pereira 2004). This includes portals such as:

- my.mot.com, a personalised business information portal,
- myhr.mot.com, a human resource processes portal,
- pm.mot.com, employee performance management systems portal,
- enet.mot.com, an employee database portal,
- travel.mot.com, a travel information portal,
- mu.mot.com, an e-learning portal.

This network of portals, illustrated in fig. 1, is used by managers and employees on a daily basis and can be accessed from the desktop at work, home or while travelling.

We will discuss the e-learning portal in more detail and the way it implements Motorola's E-Learning strategy.

E-LEARNING @ MOTOROLA

Motorola University (MU) is the foundation on which employee learning and education is built at Motorola. MU has a global presence with a charter to implement Motorola's Learning Policy.

The business impact of the internet led Motorola University to establish an e-learning group in October 2000 as an incubator for Motorola's entry into large scale e-learning. The e-learning organisation was initiated to be the premier destination for e-learning services and as an aggregator for designing, collecting and delivering e-learning solutions to Motorola employees.

Industry studies in 2000 showed that Returns On Investment of between \$3 and \$33 saved for every \$1 spent could be realised by the effective use of E-Learning (Whalen and Wright 2000).

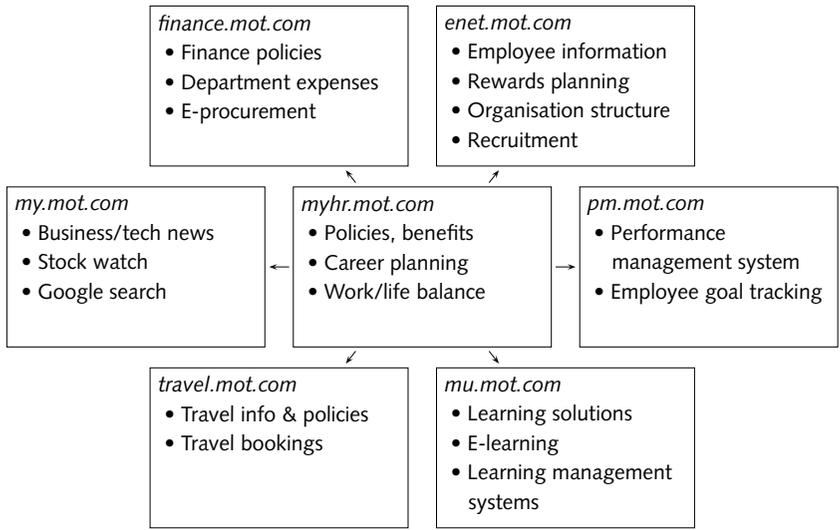


FIGURE 1 Motorola’s B2E portal network (not exhaustive)

MU set a goal of 30% of delivered training to be done online in 2001, increasing to 50% by 2003. While initially targeted at Motorola employees, its longer term strategy is to include suppliers, channel partners and customers (E-Learning Strategic Plan 2001).

The E-Learning process steps supported by the MU e-learning portal are illustrated in fig. 2 in the form of an ‘egg-diagram’ – a technique proposed by Rayport and Jaworski (2002) for mapping out the decision processes and functionality of online systems.

As illustrated by the Egg Diagram, the e-learning portal offers a complete Learning Management System providing employees access to a total learning solution for online or instructor led courses. The system maintains a list of courses taken by an employee and through the Learning Plan provides the capability of identifying gaps in an employee’s skills. It can then register the employee for courses to fill skills gaps. Skills assessments are done through the Performance Management system and are initiated after dialog between an employee and their manager.

The e-learning portal caters for the delivery of synchronous (instructor led or mentored) programs or asynchronous (individual/self paced) programs and registration for class room based training.

The overall process supported by the Motorola e-learning systems can be depicted as an ‘E-Learning Value Chain’, shown in fig. 3.

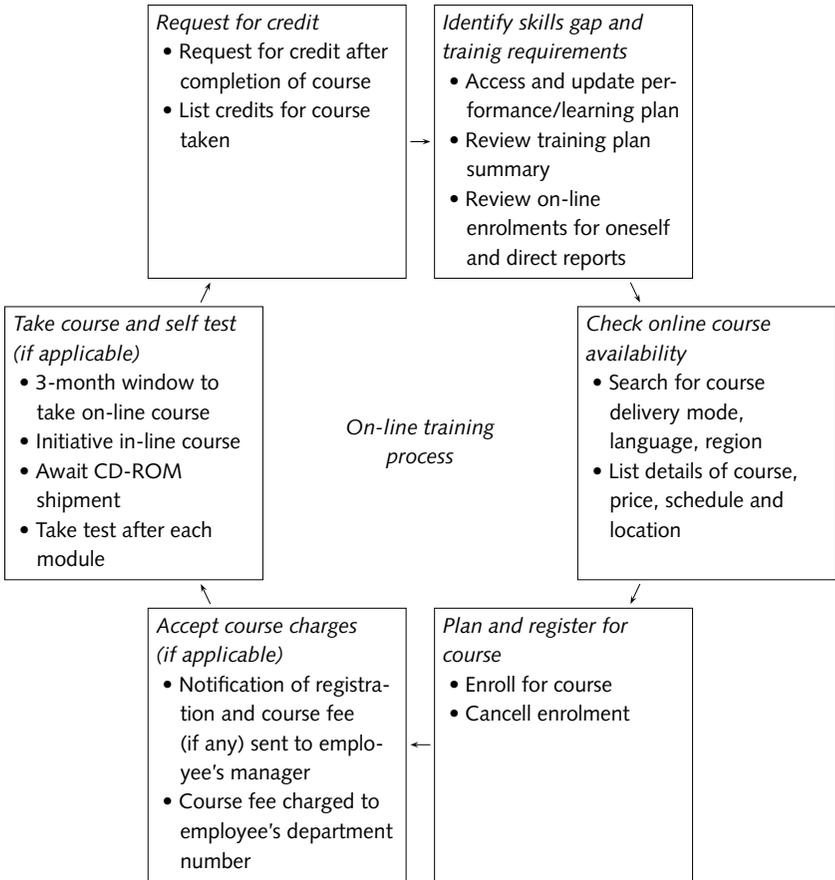


FIGURE 2 Diagram of decision process of online course enrolment

The e-learning Value Chain, as Motorola have called it, is in effect, what e-learning platform providers would refer to as a Learning and Content Management System or LCMS. The process commences with the business needs and skills assessment. The learner accesses the learning portal, which through the learning delivery server gives access to the content database. This includes internally developed and externally developed licensed content.

The learning management server provides access to learning process management resources. Details of the learner and programs completed are tracked in the student database.

The participant environment in which the program is delivered can be at the desktop for purely online components, Learning Resources Cen-

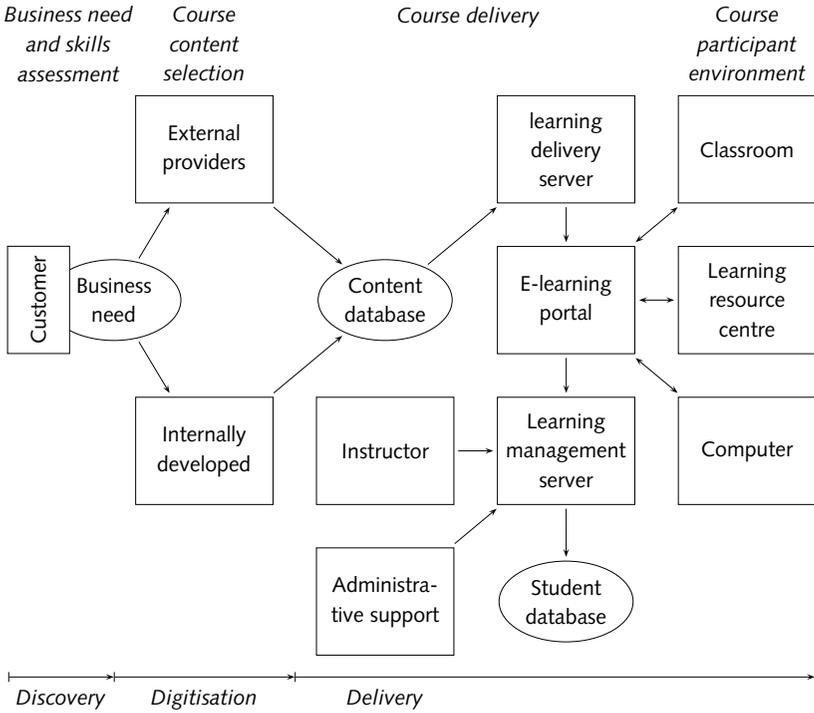


FIGURE 3 The Motorola e-learning value chain

tres (state of the art facilities dedicated to multiple learning categories located at major Motorola facilities) or classroom-based.

Some of the key benefits stated by Motorola employees and managers include the access to a wide variety of courses, around the clock, at any location and at a lower price.

Cisco Systems

Apart from technology and product leadership, Cisco aims to be recognised as a forerunner in how future business will be run. The company's Networked Virtual Organisation (NVO) is the showcase for using the Internet to provide customer support, sell products, offer training, and manage finances (Heng 2003).

Internally, the role of the intranet is critical. Cisco regards its intranet and the applications deployed through the intranet as a key enabler of workforce optimisation (Nolan, Porter, and Akers 2001). A key application is that of e-learning. E-learning modules are available to employees directly on the desktop.

The use of the modules as well as information about their effectiveness is tracked to determine the extent of use. From the tracking information, the quality and effectiveness of the modules can be assessed as the needs of the organisation change over time.

Heng (2003) of Cisco Systems Asia Pacific, Singapore states: ‘Training – Cisco stays competitive by responding effectively to change. They ensure that their employees can quickly learn new skills, update old skills, and assimilate vast amounts of information about new products, markets, and the competition. E-learning is a revolutionary way to empower a workforce with the skills and knowledge it needs to keep pace with a rapidly changing market. The people, companies, and countries with the greatest knowledge, skills, and ability to efficiently create and share information are most likely to succeed in the knowledge-based economy’.

Cisco have also pushed ahead with the use of their e-learning platform as a vehicle for training vendor partners as well as their own staff. An example of this is Cisco System’s Account Manager Learning Environment (AMLE) e-learning initiative (Cisco 2003). This system provides Account Managers with online learning resources to improve their professional effectiveness. The courses which make up AMLE are targeted at Cisco’s own 5,000 internal account managers and 2,000 external channel partners located in 60 countries around the world. Account Managers can access the AMLE through the learning portal, where they can select from a range of delivery options – online or offline with a web based lesson, a downloadable paper based booklet, with interactive sales scenarios. When they have finished a program they can complete the mastery assessment.

A key part of Cisco’s approach is the identification and development of ‘re-usable learning objects’ RLO’s which are modularised pieces of learning content whose value can be leveraged across other modules and courses.

The E-Learning Advantage

COST BENEFITS

The cost advantages of e-learning were identified by Periera (2004) as being predominantly in the area of cost avoidance.

By transitioning what was traditionally run as a class room based seminar onto an online e-learning environment, many costs usually associated with training can be avoided. Avoided costs included:

- Accommodation costs for staff who have travelled to the training venue.
- Travelling costs associated with travelling to the training venue.
- The cost of the training venue (room hire).
- Instructor costs.

This is supported by the work of Hall who suggests that the costs of travel and entertainment can be reduced by 50% and Hemphill who quotes a more aggressive 80% reduction reported by THINKQ (2004).

A summary of Cisco's cost-benefit analysis for their AMLE system is as follows:

Users of the AMLE platform reported that before its introduction, an average of two hours a week was spent gathering knowledge required to perform their duties. The online course reduced this by an average of 40%. In addition, the online training reduced the time required to gain technical competency in the selected areas, and knowledge acquisition was reported to be from 40–80% faster than without the AMLE system.

The research time savings alone translate into \$511,000 saving per week across the enterprise team. The cost of delivering a full suite of courses to a learner is estimated at \$1,000 per person.

In another example, Cisco replaced a classroom-only course with a blended learning course on Interorganisational Information Systems (IOS). Savings in travel, accommodation and lost productivity amounted to approximately \$1.2 Million per annum for a program that is offered twice a month to 40 participants at a time.

Both Cisco and Motorola report that costs to set up an effective e-learning system are initially high, but delivery costs are low, offering excellent scale economies.

This made them ideal for situations where large numbers of employees needed to be trained, or where there was a need to offer a course on a frequent basis. Examples of what Barron (2002) calls Certification Driven Demand and Training Intensity Driven demand training markets.

PRODUCTIVITY AND ORGANISATIONAL BENEFITS

The results of other studies in the field of computer based and multimedia based training, summarised by THINKQ (2004) suggest that the key advantages of e-learning should be:

- Less time taken without diminishing learning benefits.
- Time away from work is reduced.

- Better meets the needs of a geographically dispersed workforce.
- Course delivery is more consistent.
- Instruction can be better tailored to individual learners.
- More cost effective.

The experience of Westpac, Qantas, Motorola, Cisco Systems reviewed as part of this study and discussed in this paper, as well as the experience of the University of Adelaide in general support the above views. However, the experiences of the organisations reviewed can further lead us to make more specific statements regarding benefits.

E-learning led to a sustained and deeper level of understanding of the program content by learners, particularly in the case of Westpac where employees were required to re-accredit on a regular basis. This translated into higher work quality (less errors and less risk of non-compliant decisions) and higher worker productivity levels.

Higher productivity levels were experienced in more general terms, not just as a result of less errors and better decisions. This was attributed to several sources. The option of taking a course online, particularly one for which the skills and knowledge could be immediately applied to give improved work performance, meant that employees could take the online training at any time (usually just-in-time). There was no need to wait until enough new employees were available to have a critical mass of participants to make a classroom training program viable. Employees could do the training as soon as required and apply it immediately. This was of particular value in making new employees productive as quickly as possible or for training employees in areas that were new to them.

Because e-learning modules could be completed at an employee's regular workstation, when travelling or in remote offices, employees could take the training over an extended period of time and at their own pace, often utilising what otherwise would have been unproductive downtime. Not only did this allow learners to use their own time better, it also made it easier for their managers, who did not end up losing employees for whole days or longer when attending a training course. This simplified resource planning and workload balancing. The fact that employees could move through the modules at their own pace, repeat them as desired, and that training was often taken just-in-time followed by immediate application, led to a deeper level of learning.

It was the case in all the organisations reviewed, that the e-learning option did indeed better meet the needs of a dispersed workforce – par-

ticularly a globally dispersed workforce. In many of the organisations reviewed, particularly Qantas, it was the training challenges posed by a globally dispersed and highly mobile workforce that led them to become one of the early adopters of e-learning.

Barron (2002) suggests that e-learning is ideally suited to:

- Certification Driven Markets – where large numbers of learners need to be accredited to certain standards to achieve certification e. g. certification of Cisco and Microsoft Certified Engineers.
- Regulation driven markets – where large numbers of learners need to be kept up to date on regulations e. g. Westpac and UCC.
- Training intensive markets – where a lot of training is required as part of the normal operating environment or a given training course needs to be repeated frequently. This is the case in many technology industries.
- Multinational organisations – where a large dispersed workforce needs to be trained, preferably in a consistent manner.
- An effective e-learning system can effectively provide training customised to individual learners' needs and produce more even outcomes across a training population.

For example, Barker College, a private boys school in Sydney, Australia providing K-12 education uses an e-learning system as a supplement to traditional learning. The system records learner responses and then uses this information to generate additional tasks, questions and exercises that it presents to the learner in order to develop weaknesses detected from previous responses.

Limitations of E-Learning

Turban (2004) discusses some of the drawbacks of e-learning.

Some of the key ones include:

- Lack of face-to-face interaction with a learning peer group,
- Equipment, software and support needs.
- Maintenance and updating of content.
- Program development costs.
- Learner drop out.
- Assessment i. e. guaranteeing that it was the actual intended learner who completed the assessment.

The lack of face-to-face interaction with a peer group can be a significant issue in a corporate environment depending on the objectives of the training. This may mean that e-learning will only be suitable for delivering certain types of training, and class room based training will continue to survive as an important forum for corporate learning. Each approach will find its suitable context. For example, many training programs delivered in corporate settings are focused on developing interpersonal skills, team skills, leadership – all topics which ideally will require contact with a training peer group as part of the learning process. In addition, many training activities have an underlying agenda such as team building and group bonding – again, requiring interaction with a peer group as part of the learning process.

The other issue revolves around the fact that many participants see the group interaction and discussion as a key facilitating process for their own learning.

The writer's own experience in teaching in a blended learning program at the Master's level, found that students were far more talkative and interactive, wishing to discuss and debate issues at greater length with the instructor as well as with other class mates during face-to-face sessions compared to students who were enrolled in the classroom-based option only. It seemed that the blending learning students almost craved the social interaction that comes from a classroom environment and were using the scheduled face-to-face sessions to overcompensate for what they were not getting online. It may be that some topics as well as some learners, may just not be suited to e-learning.

The issues of learner dropout and assessment guarantee, which Turban (2004) discusses with respect to open subscription e-learning programs, may not be such an issue in the corporate environment. The higher levels of learner accountability and supervisory direction and control associated with learning activities in a corporate environment would work against learner drop out and assessment identity uncertainty which may occur in uncontrolled public subscription environments.

The issue of costs has previously been addressed, with organisations such as Motorola noting that the initial set up costs were high, but benefits came in the form of lower delivery costs.

The development, updating and maintenance of content is a significant issue. Current practices by leading adopters of e-learning suggest that this will only be able to be done effectively by drawing on both externally sourced as well as internally developed content. This in turn will

create opportunities for third party organisations wishing to develop, supply, update and maintain content on e-learning systems on behalf of clients, such as is the case in the relationship between Hudson Learning Solutions and Qantas.

Comparisons and Conclusions

By comparing some of the major characteristics of the way e-learning has been implemented at each of the major case studies considered in this paper, we can identify some common themes that cut across all of the organisations as well as some significant points of difference. These include:

- A relatively large and dispersed workforce. In the cases of Qantas, Cisco and Motorola – globally dispersed, making traditional classroom-based training logistically difficult.
- All organisations used e-learning initially to deliver what could be best described as ‘technical’ content – product and technology knowledge, legislative knowledge and knowledge of company processes and procedures. In this respect, the e-learning system is in effect being used as a major element in the management and disbursement of organisational knowledge. Although there were stated intentions to do so, the writer did not observe management and interpersonal skills development content being effectively delivered by e-learning, at this point in time.
- In all cases, the e-learning programs offered were online versions of training previously (and in many cases still) offered offline.
- All organisations had built links back to Human Resource Management systems to keep track of courses completed, competencies, needs and gaps.
- In all cases, the e-learning functionality was available as a function in a company wide intranet – available everywhere, anytime. In the case of Cisco and Motorola e-learning was part of a comprehensive web-enabled corporate IT system.
- The initial focus of e-learning delivery was on internal employees, although Cisco and Motorola had deliberate strategies to roll this out to vendor partners.
- All companies report that the costs of implementing e-learning were ‘significant’. The major cost benefits came by way of good scalability and repeated use of e-learning modules.

The most significant differences observed were mainly related to degree of commitment to e-learning and aggressiveness of implementation targets – with Motorola and Cisco projecting that the majority of their training requirements would be delivered in this manner. The other key difference was in the degree of outsourcing used. Qantas has chosen to outsource all aspects of providing the e-learning platform, while the other organisations retained this inhouse.

Finally, the key conclusions we can draw from the study reported in this paper are:

- Organisations are using e-learning as an increasing part of delivering on the training strategy.
- Organisations using e-learning are substituting E-Learning based delivery of training and content for what was previously classroom-based training.
- E-Learning is seen by many organisations as a low risk E-Business initiative and can be used as a pilot to the deployment of more comprehensive business critical intranet or extranet portals.
- Many of the companies at the forefront of internet technologies e. g. Motorola and Cisco have been at the forefront of pursuing e-learning and have set aggressive targets for the proportion of overall training to be migrated to e-learning.
- There are real benefits to e-learning which suggest that in many training areas, it yields superior outcomes to classroom-based learning for the learner.
- There are real cost and productivity benefits for organisations from e-learning.
- E-learning is not universally applicable to all learning areas of interest to corporates.
- The cost of developing and implementing an e-learning platform is significant and offers opportunities for independent, third part organisations to develop and deliver this functionality to corporate clients (as is the case with Hudson Learning Solutions and Qantas).
- The significant effort required to develop, update, convert and maintain content suggests that externally sourced content and outsourced content management services will emerge as a key feature of effective corporate e-learning implementations, as was found in cases reviewed.

It would appear that e-learning has not only arrived, but is here to stay as a permanent feature of the corporate learning landscape in today's organisations, playing a role together with more traditional approaches to employee training and development.

It appears that e-learning offers organisations the opportunity to exploit 'Virtuous Circles' in the way they implement training and development activities (Hallowell 2002). That is, opportunities where the enablement of what was previously an offline activity allows organisations to achieve improved outcomes at lower costs.

In today's increasingly competitive and globalised business environment, e-learning is something organisations cannot afford to ignore.

Notes

- 1 The information was obtained from a conversation with John Pawalski, Manager at the Westpac Banking Corporation, Mortgage Processing Centre, in 1999.
- 2 The information was obtained from a conversation with Mark Keough, Chief Executive Officer of TechWorks, in 1995.

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School Leadership Training under Globalisation: Comparisons of the UK, the US and Norway

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In common the three countries see a need for increased quality of schooling as necessary because of globalisation. Leadership is crucial to achieve quality. However, there are distinct critiques in all countries fearing ineffective bureaucratization. There is resistance among education researchers towards the market orientation and the application of the language of business. Universities have played a conservative role. In terms of differences, the UK is uniform by its centrally organised National College, while the US with over 500 programmes and no national coordination shows complexity, if not chaos. Norway, with its National Network gives much freedom to individual institutions, although the diversity leads to tensions when the municipalities now can choose the training providers. All three nations are attempting to 'reframe and reform'. Some educators think the defining factors will be quality of performance and quality of collaboration, while others believe that there must be a shift from focus on performance to focus on learning.

Key Words: globalisation, school leadership, training, policy

JEL Classification: I20, I23, I28

Introduction

According to the OECD Report, *New school management approaches, into School leadership across nine countries*, 'School management is essentially a twentieth century invention' (OECD 2001, 17). The current situation, it is claimed, arose from the need to 'download' managerial responsibility to the individual school leader. The Report argues that these developments have placed the role of the school manager under the spot-

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light. In an era of focus upon increased accountability and quality, the school leader's role is changing and the question as to how well they are prepared for it is a valid one. Two of the countries highlighted in the OECD Report are the United Kingdom and the United States of America. Related to an ongoing comparative study on school leadership training in five countries it is found interesting to make a comparison of school leader training in the UK and US with a third OECD nation, Norway.¹ To which extent is there convergence or recurring difference in how school leadership training is organised in the three countries – and, how are current policies assessed by education researchers in these countries? As an introduction we present what education researchers in the three countries see as the historical development of leadership programmes, followed by analysis of how training is currently organised. Finally, we wonder if globalisation makes it likely to see convergence, or recurring differences between them.

The United Kingdom

There has been much written about the development of educational 'leadership' and 'management' in the UK. Hence some key information has to be omitted, in favour of a brief outline of key elements in the British tradition. In the 1970s there was little reason to consider, and no apparent imperative to be interested in, educational management (Day et al. 2000, 7), in an educational system described as a 'triangle of tension' between central government, local government and individual schools (Garner 2000). Garner argues, however, that since the 1988 Education Reform Act (ERA), the triangle has been redefined to one of a tension between society, the state and providers of education (Garner 2000). Much of the political decentralisation that took place during this period seems to be aimed more at removing the powers of middle and local layers of government, than at directly improving schools. This changed the role of the school leader significantly, within a class structure still evident and a country used to gaps in society.²

Martin McLean (1997) considers the political tradition of the UK to be one of pluralism, and its curriculum tradition essentialist (Holmes and McLean 1992). While his definition of pluralism is helpful, Little and Smith's (1992) definition of realism seems to be a more appropriate definition for the system in the UK. Garner adds that 'Education has been seen as instrument of both control and entitlement' (2000, 99).³ This led to two main educational philosophies of education simultaneously;

the pursuit of knowledge for its own sake and education as a technical device, product focused and meeting society's needs. This, according to Garner, has been the focus for the last 20 years in the UK. This sets the scene for an understanding of school leadership practices in the UK.

In terms of school leadership, the 'time of change' that Day et al. (2000, 6), describe has seen a focus on quality of headship, which impacts the motivation of teachers and quality of teaching. This focus upon quality has been a key development in the UK. Day et al. (2000, 7–10) argue that these initiatives are to be welcomed, but point also to the changing context in the UK, especially one of increased accountability and market orientation for head teachers. In quoting Gerald Grace they see that 'contemporary head teachers are [...] expected to "market the school", "deliver the curriculum", and to "satisfy the customers."' The language of business has become the language of the staff room, which is where the pluralistic focus has been most sharply felt. Southworth suggests that the tradition of school leadership in England is individualistic, proprietorial, pivotal and powerful (in Walker and Dimmock 2003, 200).

Brundrett's recent research (2001) revealed a patchwork of provisions, including certificate, diploma, MA, MBA, MEd, MSc and EdD courses which, despite such confusing variety, provides a comparatively structured provision of progressive academic qualifications grounded in both theory and practice. Slowly the purely academic basis was being changed, with the focus drawing away from the universities as sole providers. It was at this stage in the early 1990s that the concepts of leadership and management were being rethought.

MacBeath (2003) writes that leadership itself is 'a term full of ambiguity and a range of interpretations [...] that can mean just what we want it to mean'. The trend was a shift from notions of management, to re-branding movements, projects and organisations under the leadership banner, which creates a distance between leadership and management – the latter being seen as a more limited concept and too closely associated with managerialism, a somewhat discredited approach based on rational, 'scientific' principles.

Nathan (2000) highlighted a need for new head teachers to receive proper preparation and more induction, arguing that this was even more necessary after the ERA 1988, which changed head teachers from administrators of LEA policies with limited budgets into managers of an organisation with decision and policy making powers, and resulted in a totally delegated budget.

The United States of America

In a review of the ISLLC Standards,⁴ Murphy (2003a) shows the development of school administration in the USA that is a helpful accumulation and update of previous research. The initial phase was formed from philosophy and religion which resulted in a kind of doctrine of applied philosophy. Murphy sees little of this concept from the 1800s of administrator as 'philosopher-educator' surviving as the profession develops. The profession was 'constructed [...] on a two layered foundation' (2003a, 6) with concepts and theories drawn from management and the behavioural sciences. The idea of school leader as business manager developed early in the twentieth century and continued alongside new principles in the business world of how the corporate sector should be managed effectively.

Changes in the USA post World War II impacted upon school leaders. The new gurus of development were scientists. The quest for a 'science of administration' in schools, based on the behavioural sciences developed 'a ladder shaped structure for the profession, with one leg fostering the growth of ideas from management and the other leg nurturing the development of concepts from the social sciences'. The solution was to deal with unanswered questions by adding lengths to either side of the ladder, believing that management problems require new management approaches and theoretical problems require new theories of science, following the vogues of sociology from political science to anthropology to postmodernism and to the new favourite Emotional intelligence.

Change, it is therefore argued, would need to come from a new arena. Murphy sees the development of ISLLC as the new pathway and believes that focus should be placed on the effectiveness of the organic whole, where the most important issues are quality, equity and the value added dimension. The aim is to change school administration from management to educational leadership and from administration to learning, while linking management and behavioural science knowledge to the larger goal of student learning. This is not a new alternative, but a re-framing. The ISLLC standards are seen as the Change Engine. This may answer the problem raised by Young et al. (2003, 1), of how to rebuild the foundations of school administration 'within the practice and academic domains of the profession'. The ISLLC has refocused school leadership to being about students, learning and teaching away from an organizational understanding of schools towards that of a community approach.

Norway

It was in 1936 that the term 'overlærer' (head teacher) first appeared, implying the idea of the school leader as 'first among equals'. In the 1970s focus was placed on the assumed authoritarian relationship between teacher and pupil. Any focus on authority of either head teacher or teacher at that time was deemed to hinder and inhibit true dialogue and communication. The head teacher was still the first among equals, in what Telhaug and Mediås (2003) refer to as a flat structure. The education system of Norway has developed firstly along encyclopaedic curriculum lines and then towards progressivism, within the social democratic tradition of Scandinavia, and needs to be seen in the light of regionalism (Smith 1997).

Karlsen (2002) argues that it is only since the 1990s that focus has shifted to the power relationship between the adults in the school system. This recent development has focused on the planning, effectivity and control of the educational process. This shift essentially moved the school head teacher from being the first among equals to a professional management representative for the education system (2002, 27). The development of terms used is interesting. Karlsen asserts that the term 'rektor',⁵ which appeared post 1975 as a development from the term 'skolestyrer' (literally meaning school manager), may be more associated with the Macro level of thinking, whilst the new favoured term 'skoleleder' (school leader) is more suited to the organisational level. This is attributed to the beginning of the period of New Public Management (NPM) (Karlsen 2002, 28). In the Norwegian context 'leadership' used to mean, in principle, to control the relationship between the inside and outside of an organisation, the result being that as long as clear roles and regulations are followed, leadership with authority is not needed, merely a gifted administrator (Karlsen 2002, 76). This is contrasted with the concept of 'management', which has more to do with control. It is important to distinguish between actors, their influence, direct and indirect and processes, including strategies and dynamics.

Stålsett (2000, 281) writes that the leadership focus in schools should be on 'pedagogical leadership', that is, to concentrate on planning for and inspiring the main pedagogical processes of school, learning and development. This is a widespread norm amongst academics in the field of education and pedagogy in Norway (e. g. Grøterud and Nilsen 2001, Lillejord 2003, Møller 1996). The different opinions between the Ministry

and education researchers about the need for a more executive school leader can also be related to different interpretations of the level of professionalism of Norwegian teachers. If, as has been claimed (Tjeldvoll 1980a), a de-professionalisation process among teachers has taken place since the 1960s, the authorities' initiatives for a stronger leadership make sense. Teachers and education researchers (many of them former teachers) may have in common values and interests that are contrary to the Government's, of either left or right ideological orientation. Also in the Norwegian context, globalisation has impacted the education system and forced change upon the authorities. As a result the general focus of school leadership has become increasingly goal-oriented.

With no qualification initially available at universities or colleges, especially as the *rektor* was merely a promoted teacher, in-service training courses were instigated by the authorities in Norway from the 1970s. There was much variation in both content and delivery style reflecting the more decentralised nature and an 'accept all views, favour none' mentality in Norwegian school politics (Andersen 2002). The role of a school leader was not to be as concrete as it had been seen in the UK.

A period of increased decentralisation in the 1980s (Andersen 2002, 17) saw each school taking more responsibility for the content of the school day. Three programmes were introduced during the period 1980–2000 aimed at renewing and developing the role of school leadership and, ultimately, the system itself. The first programme, in the period 1981–1986, aimed at school development combined with leadership training, seemed to weaken the school leader's position. The Ministry's Board for Lower Secondary and Primary Education commissioned a nation-wide external evaluation of the programme (MOLIS). The evaluation's conclusion was that the programme had been a complete failure, firstly in terms of having goals that were not consistent with current education policy goals, secondly, the content of the training courses was neither consistent with the programme itself nor national policies. The training activities were incidental, and there was no evaluation of the participants' learning achievements. At the school level there were no effects observed whatsoever (Johansen and Tjeldvoll 1987). In a follow-up report the evaluators outlined recommendations for a new programme that would be rational and consistent in terms of theoretical underpinning and policy relevance and with consistency amongst programme goals, training activities and evaluation procedures (Johansen and Tjeldvoll 1988).

However, subsequent programmes, although increasingly accepting

the necessity of increasing both administrative and pedagogical competence of the school leader, failed to succeed in achieving the double goals of school leadership competence and school development. It seems that the project managers lacked theoretical understanding and practical skills for programmes of this character. A more important reason for the lack of success is probably the fighting behind the scenes between different stakeholders having conflicting interests. Especially the main teacher trade union was negative towards seeing the appearance of a new school leadership profession that might disturb and curb their traditional, next-to-complete control over classroom activities. In the *MOLIS* Evaluation there were found several indications of teachers and head teachers together sabotaging the programme, because real involvement would require them to change ways of working in a more innovative pedagogical way, which they thought would imply more work for them (Johansen and Tjeldvoll 1987). Teacher autonomy can result in either innovation or conservation. The quality of the school leader is likely to be decisive for one or the other. In 1993 the municipality was given responsibility to decide who should provide school leadership education.

Summarised, the development in the UK has been from decentralised to centralised control measures of school development, particularly indicated by the head teacher being expected to implement centrally decided policies. In the US a long period of understanding school leadership from the view of 'administrative science' seems to be challenged by pressures to focus more on leadership than on administration. In Norway an early period with the head teachers as an administrator, as the 'first among equals' was followed by instituting the rector as a manager above his 'equals'. This development has over the recent decades been challenged by ideas of 'pedagogical leadership'. However, the present policies seem to reinforce the management character of the role, stimulated by the influence of New Public Management ideas.

In the next section we will observe the present situation in the three countries, and try to track the influence of different stakeholders, interests and ideologies upon programmes for school leader training.

Uniformity, Complexity and Freedom

Key differences between the three countries are obvious. The US is a federal state with education ministries only at state level, and with strong local influence at district and community levels. Educational philosophy is pragmatist and progressivist. The UK used to have a decentralised sys-

tem, but Post ERA 1988 has turned both highly centralised and school-based simultaneously. Educational philosophy is essentialist and elite-oriented. Norway is a small country, with a centralist policy tradition, although significantly influenced by local interests and values. The teachers' union and 'the education lobby' still have a strong influence on policy formation and implementation. Educational philosophy historically was encyclopaedic, but since WW II American progressivism has become increasingly more dominant. These differences given, what the three, however, now have in common are governments who see increased quality of education output as crucial for their future competitiveness in the global knowledge economy. In this section we try to see how this common policy interest plays out in terms of how training is organised and assessed by education researchers in the three countries.

THE UK: COOPERATION AND UNIFORMITY?

THE NATIONAL COLLEGE FOR SCHOOL LEADERSHIP

2001 saw the first graduates of new headship training programmes as a result of the Government setting up the National College for School Leadership (NCSL) in 2000. In September 2000 the former Secretary of State, for the then Department for Education and Employment, David Blunkett, transferred responsibility for the administration of the three national headship training programmes to NCSL to be a 'single national focus for school leadership development, research and innovation' (DfEE 2000). The College has three core areas of activity:⁶

1. leadership development (national and partnership programmes, including the National Professional Qualification for Headship (Headlamp) and the Leadership Programme for Serving Headteachers,
2. research and development and
3. online learning, networks and information – including Talking Heads and Virtual Heads, which are the College's online communities.

The process is underway to dovetail the many paths available today into educational leadership. According to Bush et al. (1999), NCSL shall: 'Promote clear links between NPQH and appropriate Master's degrees, as advocated by the Secretary of State, to enable aspiring heads to "twin track" towards both qualifications and to move freely between routes in accordance with their professional development needs'. These ideas

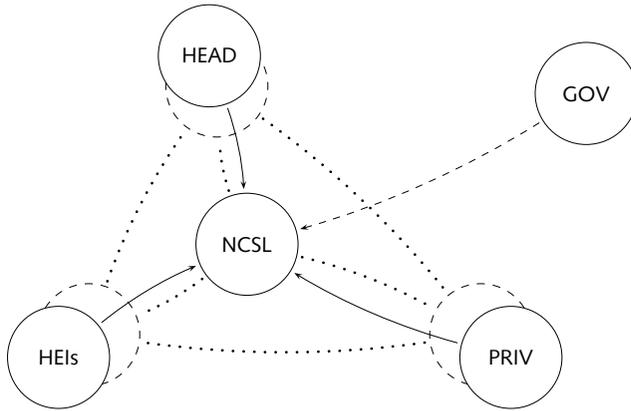
have also been raised by Brundrett (2001) pointing out that the 'national programmes have created a complex, highly structured and centralized provision, which has led to concern about the dangers of establishing a heavy bureaucratic apparatus'. Along the same lines, Glatter claims that 'all our experience, both within education and outside it, shows that it would be counterproductive' (in Brundett 2001). He recognised that the NCSL could change this, but that still remains to be seen.

In its *Framework for leadership* (2002), NCSL highlight that a National Leadership Learning Network will draw together all existing strands as well as addressing more issues besides. Brundrett commenting upon NCSL's programme, claims that in the post-modern, pluralistic era 'competence-based training should have assumed apparent dominance' (2000, 366) and that simplicity and measurability may be the key to its success, but at the same time be cause for critique 'as simplistic, atomistic and behaviourally determinist'. Brundrett's concern is whether these programmes are merely reductionism, or whether they 'develop the kind of reflective knowing and higher order cognitive abilities that will undoubtedly be required by leaders in the increasingly complex world of educational leadership in the twenty-first century'. He further pointed out (Brundrett 2001) that 'the UK has moved toward more cognitive-based learning in concert with practice experiences', closer to the American style of training. He hopes that balance will be brought between theory and practice in the training programmes.

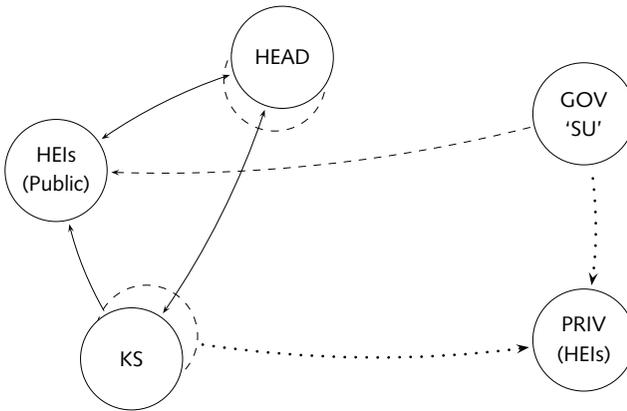
The programmes have been criticised in a national evaluation for not showing a 'clear progression in the content of the three national training programmes for head teachers' (OFSTED 2002, 6), and are under re-evaluation, as are the National Standards in order to make them both 'inspirational and aspirational' as opposed to the criticism of being 'over-complicated and uninspiring [...] and only used to a limited extent by head teachers and other stakeholders' (NCSL 2003). The first diagram in fig. 1 attempts to represent the current situation in the UK.

USA: COMPLEXITY OR CHAOS?

Cambron-McCabe and Cunningham (2003) write that the most central question in the USA today is what does it mean to lead? They point out that whilst ideas have changed about school leadership and needs have changed amongst school leaders and even institution members seem to embrace these ideas – the programmes themselves have not changed to any noticeable effect. The ISLLC Standards mentioned in section 2 were



Current leadership training structures in the UK



Current leadership training structures in Norway

Thick line circle indicates an actor in the process of school leadership training.

Broken lined circle indicates movement.

Thick lined arrow indicates focus of actor.

Dotted line indicates growing communication and cooperation.

Broken lined arrow indicates Government implementation.

HEIs – Public higher education institutions.

GOV – Government (SU – Norwegian national education office).

PRIV – Private higher education institutions, and consultancy firms etc.

HEAD – Individual headteacher.

KS – The Norwegian Association of Local and Regional Authorities (NALRA) in Norwegian Kommunenes Sentralforbund, KS).

NCSL – National College for School Leadership.

FIGURE 1 The current situation in the UK and Norway: The National College for School Leadership and the National Network for School Leadership

rapidly adopted by 30 of the 50 state departments of education and have become the central point of a process of re-conceptualization of school leadership. The curricula of preparation programmes in universities are now being reformulated to include the teaching of the Standards together with the core courses such as school finance, law, curriculum development and instructional supervision.

Wagner points out that the main challenge to school leaders nowadays is to develop a framework for change by recuperating the spirit of community at each school. Schools have developed themselves as bureaucracies often managed by leaders who rely on compliance and not on commitment, as leaders in communities do, and they '[require] a leader with qualities of heart and mind that are very different from those associated with the traditional role model' (Wagner 2001). Murphy (2003b) sees 'a movement away from a century-long preoccupation with management ideology and with the dominant metaphor of superintendent as manager'.

There are over 500 training programmes and over 60 doctoral programmes for educational leadership in the United States and a wide variety of approaches and models. Two leading institutions are Harvard University and Stanford University. The Change Leadership Group at Harvard University focus primarily on the reinvention of the American school system through the return of the spirit of community. The emphasis is put on the development of leaders able to create a new framework for change. Other examples of a more humanist approach towards educational leadership are the training programmes and ongoing research at the University of Wisconsin at Green Bay and at the University at Buffalo in the State of New York.

The training programme of Stanford University seems to follow a different tendency. In the Joint Degree Programme of the Graduate School of Business and the School of Education, the student obtains simultaneously a Master's degree in Business Administration and a Master's degree in Education. The focus of the programme is to prepare students to apply management skills to the field of education. The programmes focus on issues such as the application of technology to education, educational policy and management. The training programme of Lehigh University in Pennsylvania also follows this more business-influenced approach. The universities of New Mexico and San Diego aim at providing professionals with ability to improve learning not only at the school level but also in the business world, military and government.

In the USA a recent article by Townsend (2002, 31) highlighted dissatisfaction with Doctor of Education (EDD) programmes describing them as to ‘seemingly fail to provide practitioners with the knowledge, skills, and behaviours needed for effective leadership in educational settings’ These degrees seem to offer institutions with more status than the qualification offers to graduates. This further highlights the question raised by the ‘conservative’ Thomas B. Fordham Foundation’s Broad Manifesto *Better leaders for America’s schools: Are school leaders merely ‘certified’ or are they ‘qualified’ for their role?* The Manifesto (Broad Foundation and Thomas B. Fordham Institute 2003) concludes that The United States is approaching a crisis in school leadership. Nearly 40% of its 92,000 principals are eligible to retire in the next four years. They say that in many school systems, two-thirds of the principals will reach retirement age during this decade. These, they call the leaders that they already have, not the same as the leaders they say that they need. Their solution is to open up roles to those from non-educational backgrounds to lead the schools of tomorrow.

The League: Interdependence, Complexity and Collaboration

The USA is considered too complex to reduce to a simple response to the question of reforming school leadership training, but Young et al. (2003), in their NCAELP report, attempt to offer a new metaphor that may help resolve some of the underlying problems and lead to a possible reframing. As described earlier, each state in the USA has freedom to set up expectations and requirements for its school leaders. Young et al. (2003) argue that most programmes offered by institutions have therefore been at the whim of the ethos of the institutions themselves and reflect little of what is required of school leaders today, in relation to state and federal education policies.

Young et al. (2003) use two key words to describe the situation in the US today as one of ‘complexity’ that requires ‘collaboration’. Quoting Sergiovanni (1991) it is suggested that, in order to develop a new leadership practice, the metaphors must be changed and they present a strong case for Costas’ metaphor of *a league* to be applied to schools leadership.⁷ Costas points out that in a league, each franchise is not independent, but interdependent. The necessary interdependence of schools and educational institutions is forced by what the authors term ‘the only lasting definition of success [...] the achievement of children’ (1991, 22). This idea is paramount to all schools, but seems especially relevant in



FIGURE 2 The league of key-stakeholders contributing to the quality preparation of educational leaders (Young, Petersen, and Short 2003, 24)

the American culture and climate today. The authors claim that the impact upon leadership preparation ‘must be the development of competent, compassionate, instructional leaders committed to the success of every child’, maintaining that it is vital for all schools that their ‘concurrents’ are in just as healthy a position as they are themselves – where the perception of health should be equally understood by stakeholders and customers. The authors take the idea one step further and suggest that programmes for the preparation of educational leadership should adopt the same protocol as Costas suggests baseball should, in order to enter a period of growth again.

Young et al. (2003) consider there to be too many fragmented and conflicting programmes available to school leaders in the US today. No ‘national standards’ have been enshrined as yet in the US, unlike the UK. It would seem that with globalisation leading to demands and pressures upon universities to compete in attracting customers, this fragmentation will continue as development takes place with no fixed norms and little ‘national accountability’. That is, without a national system of evaluation and inspection, fragmented competition will continue to dominate current thinking. Of course, given that education, according to the Constitution, is a state task, this issue may always be an unresolved problem

in the us. However, the problem could perhaps be overcome with the recognition of ‘collective responsibility’ among stakeholders and an intention to associate in the preparation of ‘competent, compassionate and pedagogically oriented leaders’ (2003, 23). The decisive proposition that each of the key stakeholders could adapt and work collectively is helpful. However, most of these issues are shrouded by their key issue, that what is preached is not practised. Intentions are not enough, binding structures and accountability are needed. These pointers tie in with the results from the Wallace foundation’s *Making sense of leading schools* (Portin et al. 2003), that most school leaders believe that the skills they developed in their jobs have come since they were settled in post. Comments from providers in the UK note that after 5 years in post there is little difference between those who have received training in school leadership and those who have not (Wales 2004).

NORWAY: FREEDOM AND TENSION?

NATIONAL NETWORK FOR SCHOOL LEADERSHIP

In 1998, as the most recent nationwide school leader in-service training project was implemented, a regional network for school leadership programme providers was set up. The University of Oslo (Uio) was given responsibility as leader of this network. The purpose of the Network was to draw out the best of the competence in school leadership training that had been developed in all regions of Norway and to develop it further. This was to be partly focused on by improving IT based programmes that would provide greater access for all. In 2000 the project was completed, and was handed over to the Learning Centre at the Ministry of Education, for further development. At this point, and confirmed later in the Government white paper of 2002, Uio was given the national role for coordinating school leadership programmes amongst the 19 other participating higher education institutions. The focus of the Network is to build up a decentralised resource bank, share experience, focus on research and reflect on international developments. Significantly there is no requirement to run the same types of programme in each region.

In 2001 an analysis of the last nationwide in-service training programme was made by Møller⁸ (2001). Although this was not an overall evaluation of all institutions’ findings it does contain interesting material. The Network of providers led to a great difference in what was on offer, especially in terms of a theoretical versus a practical based structure to the programmes. Møller criticised the Government’s revision

in 2000, amongst other things, for a shift towards mainly IT provision and learning, over and above the more broadly based approach of the first programmes. She saw all of the new developments in the light of the previously mentioned shift by the Government towards New Public Management and application of goal and result orientated philosophies. Møller maintained that the difference between private and public leadership was becoming less clear. The fact that the municipal school administration had been made responsible for leader training makes the shift towards the private somewhat inevitable, since the training provider would be chosen according to the municipal administration's interpretation of quality, relevance and price. In the country at large there would operate highly different understandings of goals as far as the role a school leader should play. The municipality stands between the Ministry of Education and the school. Møller highlights what she terms the Government's rhetoric on the importance of curriculum analysis and school development, whilst the municipality seemed to be focusing on making their school leaders like all other local authority leaders and becoming more like small businesses trying to 'sell themselves'. Implicit in her view seems to be that there is a contradiction between school leadership and leadership as a profession.

Møller throughout her report focuses on this shift away from the tradition of control of the Norwegian school system by the 'education lobby'.⁹ At the same time she highlights the issue of the shift away from using primarily the public teaching institutions for leader training. She notes that whilst the Ministry of Education had given the role of Network coordinators to its Universities, Colleges and teacher training institutions, it was BI Norwegian School of Management, a private business school, that was called upon to train the Ministry's top administrators in leadership of the education system (Møller 2001, 20). But is this an unrealistic a situation? Møller herself admits that this may be due to greater satisfaction with the quality of the programme and a perception of the training being of greater relevance. Her fear is of programmes with a focus away from the basic goal of the Norwegian school system at the administrative level that in turn will influence the school at the lower level. The irony is, however, that Møller's own programme in school leadership at uio in 2003 is being widened to target leaders from other sectors than education. The University seems being drawn into making competitive based reforms (Carnoy 1999), if it wants to stay in business.

Despite the fact that the training programmes are stated to be assessed

according to the Ministry of Education's aims (Stålsett 2000), the 'patchwork provision' that has been on offer in Norway has not been structured in the same way as in the UK. The 2002 Government white paper highlighted the fact that research showed that about 60% of school leaders had no formal leader training and only 8% had 20 study points¹⁰ or above. In addition to improved teacher training, the Government saw professional training for all school leaders as the most important measure for the general quality improvement of Norwegian education. Competition is encouraged and private providers are welcome.

University of Oslo has already taken 'the market challenge' and is developing its school leadership programme into a Master's in Educational leadership, which is aimed at both teaching professionals and *those working in public administration*. The latter target group might be seen as the University adapting to NPM rationales. This course will be developed in cooperation with two other higher education institutions. It is a part time course, relying on a theoretical and practical approach with a heavy focus on personal guidance for candidates. Other institutions have offered courses in school leadership that are much shorter, modular programmes that can be tailored to suit individual needs (e.g. Buskerud University College). With more focus on the development of Master degrees many of these types of courses are disappearing or being subsumed into other programmes. There has also been the development of a national IT cooperative project in further education of school leaders called Rektorskolen (the Head Teacher School) aimed at teachers and others wishing to develop skills for educational leadership. This programme has been available to all since autumn 2003.

Today there continues to be a heated debate around the focus upon leader of a school as a manager or as a 'pedagogical leader' (Telhaug and Mediås 2003). This question ought, however, to be seen as part of deeper changes in the Norwegian society; moving from collectivist welfare state and progressivist school philosophies towards a liberalist market economy, and school quality related to the knowledge economy. It also has much to do with the break up of the Welfare State and relative national autonomy as a result of globalisation.

Another question being raised about the future of the Network and the development of its ideas is a proposal for the 2003 plan for the National Network for School leadership to seek closer cooperation with NCSL (Møller 2003). This could be an interesting development, but exactly how similar are they in practice? There is a special focus with those academics

who hold a similar educational philosophy to their own, for example Chris Day talking of the 'intelligent head with an intelligent heart' (Day et al. 2000, 24). Which academic group/education philosophy is the most dominant in the two countries?

Also interesting developments may take place in the private universities and the extension of their Master programmes in educational leadership and management. Will they develop in parallel, in competition or cooperation, and how will they be affected by the particular Norwegian tradition of educational progressivism? These questions need further analysis, and only some of them will be focused on in the next section. The second diagram in fig. 1 (see page 32) attempts to represent the current situation in the Norway.

Converging or Different Rationales and Strategies?

Walker and Dimmock (2003) claim that there has been much borrowing in the arena of educational leadership:

The content of educational leadership programmes has considerable similarities in different countries, leading to a hypothesis that there is an international curriculum for school leadership preparation. Most courses focus on leadership, including vision, mission and transformational leadership, give prominence to issues of learning and teaching, often described as instructional leadership, and incorporate consideration of the main task areas of administration or management, such as human resources and professional development, finance, curriculum and external relations (Bush and Jackson 2002, 420–421).

Returning to Brundrett's dichotomy (Brundrett 2000; 2001), and taking the UK as a starting point, what has been the recent development? Has it moved away from the 'simplistic, atomistic and behaviourally determinist' approach and has there been congruence with the US and other countries?

NATIONAL POLICY BACKGROUND

MacBeath notes that the current governments in the United States and the UK have placed *education* at the head of their policy programmes, and in an interesting development have made themselves figureheads for the development. This has also been true to a great extent in Norway,

where the current (2004) education minister Kristin Clemet has continued to head up policy development. MacBeath (in Walker and Dimmock 2003, 104) writes that countries today are bound together by *globalisation*. This factor is important, as he notes how hopes for school leadership have been based on what he claims to be several myths, including acceptance of the business model, objective measurement for improvement, economic productivity and standards. This seems to be a common approach amongst politicians across the three countries. It would seem that this concurs with the earlier mentioned metaphor of ladder extensions of Murphy (2003a). It does seem bizarre to suggest that leadership of schools should now be refocusing on the learner again, what else could really be the focus of learning institutions? This has been the focus all the time, many would think, while others wonder if the teaching profession as such or the administrative apparatuses have become ends in themselves, with a primary concern for their own material interests, with less focus on children's learning achievements. However, attention has varied about the significance of non-academic goals, and which organisational means would lead to high quality learning for all.

To adopt the *league* metaphor of Young et al. (2003) would demand outstanding quality of each individual provider in order to secure survival of the whole league. However, will each individual provider be nationally accountable in the US? A *college* will perhaps focus on equipping a group of prospective leaders through a nationally relevant curriculum, but will the individual leaders be accountable in their special situation and local climate? A *network* will allow for breadth and diversity, but can accountability be achieved without any standard format that can be tested or referred to nationwide? Accountability proved by systematic external evaluations seems to be a common denominator of policies in all three countries. However, MacBeath (2003) claims that research does not suggest that overall standards improve as a result of evaluations.

Murphy (in Cambron-McCabe and Cunningham 2003) calls for leaders to embed new dimensions in their approach to all pupils at their school, by becoming moral stewards, educators and community builders. Surprisingly enough these factors seemed to have been suggested for some time, discussed and been approved of, but still do not make it into programmes. Educators do not seem to have been able to convince the policy makers and mandators of education about the relevance and wisdom of their suggestions. Or, maybe the educators have not been sufficiently motivated to follow 'the call' of Murphy and others? If Murphy's

new dimensions were taken seriously by policy makers and educators in administrative positions one would expect to see the dimensions as main criteria of goal achievement expressed in terms of reference for external evaluations. And the US, unlike the UK, without a national system of stringent testing, will find it increasingly harder to hold programmes to a desired common standard. Related to accreditation requirements, maybe 'learning management competence' of the leadership of the institutions offering training programmes ought to be externally evaluated?

An interesting interconnecting line needs to be drawn to both the National network for school leadership in Norway and the National College for School leadership in the UK. The US could be described as sitting in between the UK and Norway, but at this present time due to the ideological climate considerably closer to the UK. The Norwegian educationalist academic response would tend to suggest that the mood is one of being able to select those ideas that suit development in what is seen as a well balanced system, whereas the current Christian Party-led conservative coalition government¹¹ calls for more wide-sweeping changes, claiming that the very basis for the education system and its training is in need of an overhaul. Over and above, the Norwegian scene can be seen as a battle between the Conservative party, parts of the Labour Party, the business community on the one hand, and, on the other the Socialist Left Party in association with the Education Lobby.

PROVIDERS

In a time when research suggests that school leaders may come from non traditional backgrounds (Slenning 1999; Nytell 1994), Murphy asserts that leaders must still be constructed as educators and be 'much more knowledgeable about the core technology of education in particular' (2003b, 10) and among educators there is still great reaction to employing non-teachers as school leaders. Of course, this point of view can both be due to reasons of principle, or to protecting the profession from invaders.

Cambron-McCabe and Cunningham (2003) highlight that NCAELP sponsored articles have recognised a diversity of providers for school leader training in the United States, something which mirrors to some extent the UK experience, but has had relatively little impact in Norway. However, instead of offering a pre-packaged programme like the centralised focus directed by the NCSL in the UK, the American system has been far more fluid. One wonders if a similar approach to that in the UK

would have developed in Norway had there been a national requirement for leadership training and development. Most of all these NCAELP papers have highlighted the shift away from university involvement, not so much at the pre-service preparation stage, but within professional development. The UK has seen more initial training offered by private companies, but within a prescribed curriculum.

THE FUTURE

Whereas each country will need to adopt programmes to suit their societal culture (Walker and Dimmock 2003), academic quality and policy relevance, especially the needs of the knowledge economy, must be assured. But how will it be assured? There is a need for greater leader autonomy anchored in solid professional competence based on profound theoretical understanding of organising of learning, of national education policy goals and of 'educational efficiency', as well as skills in planning, implementing and evaluating how the school organisation meets the goals of the students, the community and the nation. To evaluate school leaders according to these criteria, and only let leaders who meet the standards keep their job, will require huge paradigm shifts in each of the three countries.

However, if we use the label of learner centred lifelong learning, obviously the learner is at the centre and all resources must be directed to developing, training and supporting school leaders in this ultimate goal. The learner's achievement level is the ultimate criterion of success for the school leader. This might require each country to break with their treasured traditions and adopt an approach like that of *a league*; real involvement of all stakeholders, and taking responsibility for finding the common ground necessary for cooperation and accountability in terms of reaching equity by delivering quality education to all students. However, the key agent, decisive for making such educational justice happen, is the professional school leader. This leader ought to be employed on contract with a competitive salary, and the contract renewed only when the external evaluation had confirmed that he or she had made the school reach the goals of learning achievements of quality for all students.

To what extent, however, could – as Murphy (2003b) and Wagner (2001) call for – schools be perceived as *communities* again? One might argue that they have neither developed as organizations nor as communities, but finding another definition is difficult. The individual school may more closely represent either of these ideas depending on the influ-

ence of the individual approach of the school leadership, but in general practice, the political atmosphere has always decided the path a school shall take. One must therefore follow developments in education policy and curriculum traditions to come closer to a satisfactory definition.

There is also the issue of licensure across all countries. Just who should we look for, leaders with 'hearts' and ability for the role that are willing to be trained, or should we train the interested and formally qualified and then see if they are good enough and employable? Murphy (2003b) claimed that leadership should be determined by backward mapping from student learning. Therefore, simply put, key leaders would invest in the core business of schools, that is, organising of goal-effective learning for all students. Simply put, first, we look for people having demonstrated that they can organise learning effectively; secondly, within that group we look for people who can demonstrate that they can make their teacher colleagues develop their professionalism; and thirdly, within the group covering these two first criteria, we select those who have also demonstrated that they can manage (administratively) the school as an organisation in an effective and efficient way.

These factors seen together return us to the issue of whether teachers and only teachers make good school leaders. Murphy's suggestions that practicing teachers make the best future school leaders could be questioned (2003a). Among the applicants scoring highest on learning management, personnel management and organisation management, those short-listed should be given a probation period – to prove, in practice, that they can deliver. Whatever their professional background, those who make their school deliver successful organising of learning making all learners strive to achieve optimally according to their abilities – they are the good school leaders.

Concluding Remarks

The purpose of this paper was to reflect upon a) to which extent there is convergence or recurring difference in how school leadership training is carried out in three countries, and b) to identify how current policies are assessed by education researchers in the three countries.

Convergence or Recurring Differences?

Globalising factors have increased demands for greater standards and improved skills of school leaders. The onset of competition creates a dichotomy in relation to their role. Although schools are enclosed within

national boundaries (and often regional to local ones) the effects of their outcomes are felt on a national and worldwide scale. Results matter and leaders are increasingly made to become more accountable. Accompanying decentralisation and public spending cutbacks have placed greater managerial responsibility upon the school leader role.

Alongside this one must recognise historical, social and societal contexts and backgrounds when examining school leadership practices. In one respect, each of the models mentioned in this paper might appear to provide internally appropriate responses to match cultural conundrums. However, at least in Western Europe, there appears to be a growing convergence towards even greater decentralisation of management responsibility and alongside central control of curriculum and targets. This increased accountability will require more consistent standard setting at national levels. Here the network model will find difficulty in retaining its coexistence of diversity, with institutions finding greater difficulty in securing funding to promote the variety of programmes. The emphasis on 'education' over 'training' may continue to remain popular at the practitioner level, at least for some, but inappropriate at the mandator level. The claim for academic freedom may be relegated to the passing of the Humboldtian style University.

At the same time, the professional college model will need to make greater provision for bottom-up change whilst downloading state desires. Tension between implementers of national programmes, i. e. between the public and private institutions, will need to be regulated more. Is a national qualification enough to ensure the progression needed to manage a complex organisation such as a school and develop skills through the leadership and management team?

The league model remains at its conceptual stage and may develop to be nothing more than a good idea. Questions remain as to whether it is the golden middle way between the rigid structure of a college model supported by a national qualification and the diversity and fluidity of the network approach. It may 'suit' the American situation merely because of the geographic and societal complexity, but a reconsideration of the model – developing cooperation and competition at the same time – may be too hard to manage.

Educational Researchers' Assessment of Current Policies

What are the similarities and differences between the three countries? An interesting similarity between Norway and the US is that education

researchers in both countries are suggesting a move away from greater focus on managerial practice towards the teaching process, in Norway expressed as the need for 'pedagogical leadership' and the head teacher as 'the first among equals'. However, programmes in the US maintain the understanding of organizational management: a leader with authority above the staff is needed. Collaboration and linkage between stakeholders are seen as the way ahead in the US. Similar moves are now seen in the Norwegian network. Debate as to who makes up the stakeholders is perhaps a little more deferential, and collaboration is spread less widely in Norway. The dilemma is as yet unresolved in the US.

One factor that has been seen in all three countries is that active reform has taken place outside of the university. The slow moving universities have been extremely reluctant to either give up ground to others or change internally, or perhaps merely to respond to public policy. In the US competition is forcing their hand, in Norway it seems that a crisis of culture is forcing this, and in the United Kingdom it is governmental reform all stemming from the same external, globalizing pressures.

All three nations are attempting to 'reframe and reform', and some educators think the defining factors will be quality of performance and quality of collaboration, while others believe that there must be a shift from focus on performance to performance on learning.

Acronyms

DFEE Department for Education and Employment

ERA Education Reform Act 1988

LEA Local Education Authority

MOLIS Miljø og ledelse i skolen (Environment and School Leadership)

NCAELP National Commission for the Advancement of Educational Leadership Preparation

NCSL National College for School Leadership

NPM New Public Management

NPQH National Professional Qualification for Headship

Uio University of Oslo

Notes

- 1 The direct reason for doing this comparison is a Norwegian research pilot project on School Manager Training for Accountable Quality Education (HEAD), funded by the Research Council of Norway's special programme for Research on Innovation and Renewal of the Norwegian Public Sector 2002–2006. The purpose of the HEAD Pilot was to

- prepare a four year action research and comparative research project (2004–2007) on curriculum, organisation and achievements of school manager training programmes within ‘the value chain of education’ in Norway (see www.bi.no/cem).
- 2 Societal culture in the UK is said to be based on three continuing ideologies; individualism, intelligence and behaviour – described as normality (Garner 2000, 98).
 - 3 At the same time the 1960s saw departure to a more child centred approach to the learning environment.
 - 4 The Interstate School Leaders Licensure Consortium (ISLLC) Standards for School Leader’s, developed by the National Policy Board for Educational Administration and by representatives of 23 state departments of education (see <http://www.sru.edu/depts/educatio/National%20Standards%20Principalship.doc>). This document is composed of six standards, all beginning with the sentence ‘a school administrator is an educational leader who promotes the success of all students by [...]’:
Standard 1: Facilitating the development, implementation, and stewardship of a vision of learning that is shared and supported by the community.
Standard 2: Advocating, nurturing and sustaining a school culture and instructional program conducive to student learning and staff professional growth.
Standard 3: Ensuring management of the organization, operations, and resources for a safe, efficient, and effective learning environment.
Standard 4: Collaborating with families and community members, responding to diverse community interests and needs, and mobilizing community resources.
Standard 5: Acting with integrity, with fairness, and in an ethical manner.
Standard 6: Understanding, responding to, and influencing the larger political, social, economic, legal and cultural contexts.
 - 5 In Norwegian the title is *rektor* – from the Latin word meaning ‘to rule over’.
 - 6 [Http://www.ncsl.org.uk/index.cfm?pageid=ldf](http://www.ncsl.org.uk/index.cfm?pageid=ldf).
 - 7 Applied by Costas to baseball.
 - 8 Møller, in addition to analyzing the programme as a researcher, also played two other roles: the administrative coordinator of the Network and teacher at uio’s programme in school leader training.
 - 9 The Norwegian ‘education lobby’ consists of the dominant teacher union, the education administrative bureaucracy at municipality, county and central levels, the majority of teachers and researchers

- of the field of education at the universities and colleges – and the ‘Teachers’ Political Party’ in Parliament – The Socialist Left Party.
- 10 Equivalent to less than one semester of full time study.
- 11 The Norwegian Government 2004 is a coalition of the Conservatives, the Christian People’s Party and the Liberals, led by a Prime Minister from the Christian People’s Party.

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Evidence of Returns to Education Among Roma in Central and Eastern Europe and Their Policy Implications

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In this paper we analyze specific educational issues faced by Roma households using data from the UNDP/ILO survey conducted in Bulgaria, the Czech Republic, Hungary, Romania and Slovakia in 2001. Roma situation is characterized by poverty, low educational achievements, and consequently limited employment opportunities. We believe that the core of this trap is insufficient education, non-preparedness for entry into the labor market of a market economy. This is demonstrated by the existence of vital returns to education estimated for Roma households throughout the region. The patterns are similar over the whole region and hence the need for a systematic and common education policy of Roma is both necessary and beneficial.

Key Words: returns to education, Roma minority, poverty,
labour market

JEL Classification: J15, J24, J31

Introduction

In 2001, the United Nations Development Programme (UNDP) conducted a large survey on Roma households in five Central and Eastern European countries, which revealed a critical socio-economic status of this ethnicity. Roma live predominantly in disadvantaged areas isolated from the majority population, facing poor housing standards and health care. Due to their segregation in settlements, Roma find it harder to attend and complete education comparable with that of the majority. Consequently, they encounter constraints on the labor market. As a result of these problems and specificities, the Roma minority belongs

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Managing Global Transitions 3 (1): 51–69

throughout Europe to the poorest ethnic group. They suffered disproportionately from restructuring and more than ten years later, they are worse off in terms of nearly all basic social welfare indicators.

The crucial issue of our paper is returns to education. Some empirical results from Central and Eastern European countries (Jones and Ilayperuma 1994 for Bulgaria; Halpern and Kőrösi 1997 for Hungary; Chase 1997; Flanagan 1995 for the Czech Republic and Slovakia) suggest that the returns to education increased for higher educated individuals in comparison with the socialism period. As conventionally assumed, results indicate that returns to education increased during transition, since contributions by skilled individuals were devalued in the communist system. On the other hand, some skills learned under socialism are no longer applicable in modern market economies, therefore returns to experience obtained under communism are found to decrease during transition (Filer, Jurajda and Plánovský 1999). Several attempts to establish global patterns have been made during the last 40 years (Psacharopoulos 1973; 1985; 1994; Psacharopoulos and Patrinos 2002). The latest update of the classic pattern of falling returns to education by level of economic development and level of education estimates a 10% average rate of return to another year of schooling for 42 countries. However, returns to education for Roma tend to show different patterns because they are rarely high educated, and most of their skills attained during socialism are not marketable any more (World Bank 2001). Secondly, the majority of Roma live in less developed areas, where unemployment is more pronounced and dependency on social contributions or irregular jobs is present. This therefore causes disincentives to invest into education of their children and creates a continuous circle of a weakly educated labor force.

In this paper, we analyze regional and ethnic disparities in five most Roma populated countries of Europe, where three of them are members of the enlarged Europe. In Bulgaria, the Czech Republic, Hungary, Romania and Slovakia there live, according to the estimates, more than 50% of the whole European Roma population (Vašečka et al. 2003). We utilize here two kinds of information sources. Firstly, we discuss the relations between the educational enrollment and log GDP (PPP¹) measures in the corresponding sub-regions of these five countries. We find that there is a notable gap between capitals and other regions within the country. These gaps coincide unfortunately also with enrollment gaps, particularly in pre-school and secondary enrollment rates. This means that the education coverage is unequal throughout the region, as well as within

TABLE 1 Roma population shares throughout the countries considered

Country	(1)	(2)	(3)
Bulgaria	4.6%	10%	700,000–800,000
Czech Republic	0.3%	3%	250,000–300,000
Hungary	4.0%	6%	550,000–600,000
Romania	2.5%	10%	1.800,000–2.800,000
Slovakia	1.6%	9%	480,000–520,000

NOTE: Column headings as follows: (1) World Fact Book (2003 estimates, based on 2001 census); (2) estimates of real proportions; (3) Estimates of real numbers (Vašečka et al. 2003).

the countries. Some of our results suggest that exactly the more Roma inhabited regions are the ones with weaker economic performance and lower enrollment rates. This, more or less intuitive fact, motivates our second part. Here we attempt to show that education matters for Roma as well. The patterns are similar over the whole region and hence a need for systematic and common education policy of Roma is both necessary and beneficial. For this part we use a unique regional dataset from the UNDP/ILO survey conducted in 2001, and estimate rates of return to different education levels for Roma households in these countries.

The presented paper is organized as follows. The next section introduces and discusses relations between sub-national log PPP levels and educational enrollment rates for different levels in 2001. In the third section we compute correlations to assess significant bivariate relations among variables. Afterwards a probit regression is used to estimate an alternative of the Mincerian log wage equation. Predicted probabilities are calculated in order to interpret the relevant outputs of this model. The last section presents the conclusions.

Educational Attainment and Economic Indicators

The Roma population composes a not negligible part in the considered countries (cf. table 1). One should exactly differentiate between the Roma numbers counted within the national rounds of censuses and the estimates of real amounts. The first number is usually much smaller (column 1) as lots of Roma do not self-identify as members of the majority population in the country they live in. One should rather rely on the estimated proportions (column 2), which are based on surveys and local municipalities' sums.

The situation, in which a big part of the Roma population lives, is

alarming. Long-term unemployment, reaching up to 80–100%, very often connected with extreme poverty, lack of hygiene and basic health care, or strong dependency on social assistance. We believe that at the core of this trap, is insufficient education, which causes disadvantages on the labor market.

It is conventionally assumed that educational enrollment rates and the level of education increase with economic development in the market economy. In the context of transition countries, the case might be different, as enrollment rates in almost all types of education had been already extraordinarily high during socialism, while economic development was stagnating. Since the breakdown of the socialist regime, educational reform has taken place parallel to economic and social turmoil that characterized transition countries. Due to large declines in GDP measures starting at the beginning of transition, two main challenges with respect to education can be identified:

1. As GDP declined rapidly and economic conditions have been unfavorable, governments and households are limited in their ability to finance school costs, and graduates may be limited in their labor market opportunities.
2. Reduced government revenues impede a sufficient provision of quality education.

These impediments led to declines in enrollment rates in the first half of the 1990s (Micklewright 2000). With improving economic indicators, after 1995, enrollment rates started to increase again at national level. However, economic development did not occur equally within the countries but often only in certain regions. In 2001, which is our benchmark year, substantial regional disparities between economic development and enrollment can be observed when having a closer look at NUTS II or III level (nomenclature of Territorial Units for Statistics). This implies threats to future equally distributed prosperity of certain parts of the countries, as education is a core driver of economic growth. In the following part we illustrate several examples of existing regional disparities within, and to a certain extent, between countries. Due to insufficient data sources, a comparison is made only between at most two countries. Moreover, there exist substantial differences between education systems as well as between the state of economic development (three new EU member states, two second-wave candidate countries). Hence, the inter-country comparison should be treated with caution.

Plotting pre-school net enrollment rates against log GDP (PPP) for the Czech Republic and Slovakia in 2001 (cf. fig. 1a on p. 56) shows:

1. substantial disparities between the capitals Prague and Bratislava and the rest of the country,
2. a positive trend in pre-school net enrollment rates with rising GDP and
3. that those regions with a large share of Roma are characterized by lower economic development and lower net enrollment rates.

The GDP (PPP) in 2001 by NUTS II level were calculated from GDP levels in 2001 in national currencies and the average USD exchange rate for 2001. The regions with a large share of Roma population were identified using various expert estimations.² Disaggregating the data by NUTS III level in Romania in 2001 (cf. fig. 1b on p. 57) shows also a positive trend between economic development and net enrollment rates. However, the capital Bucharest, displays a surprisingly low level of pre-school net enrollment although having the highest GDP level.

For primary education we observed almost constant net enrollment rates, independent from the magnitude of GDP. This can be easily explained, as universal primary education is obligatory in all five countries and even in disadvantaged regions, universal enrollment is guaranteed.

For secondary education, the situation again looks different (cf. fig. 1c on p. 56). First, a considerable difference can be observed between the economic development level of the two countries examined, the Czech Republic and Bulgaria. Lower average net enrollment rates for Czech regions result most likely from differences in education systems and measurements. Again, within each country, a positive trend between GDP and net enrollment rates can be seen. The two capitals, Sofia and Prague stand out substantially. The regions with a larger share of Roma are characterized again by both lower GDP and by lower net enrollment rates.

Lastly, we look one level deeper and plot net high and vocational enrollment rates against GDP at NUTS III level for Romania in 2001 (cf. fig. 1d on p. 57). Here, there exists again a positive trend with two outliers, one is expectedly the capital, which displays the highest levels of economic development and enrollment in higher education. The second one is a district belonging to Bucharest (Ilfov – black rectangle) with extremely low net enrollment rates compared to its corresponding level of economic development. This might be due to the large share of Roma living in this area.

FIGURE 1A Regional differences in the Czech Republic and Slovakia – pre-school, 2001 (NUTS II)

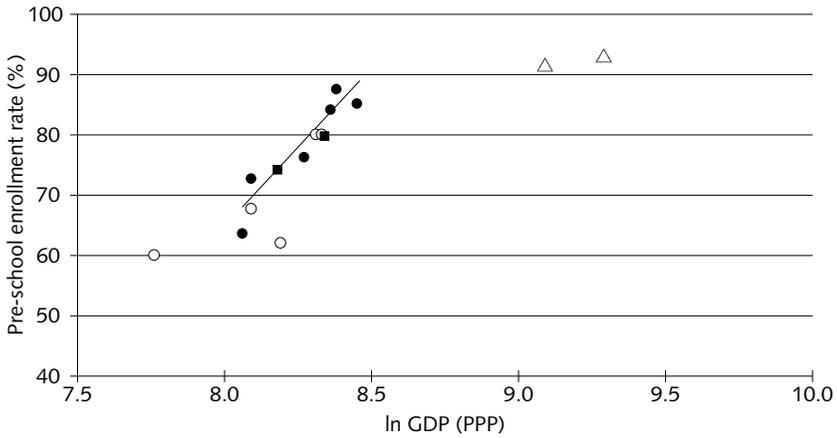
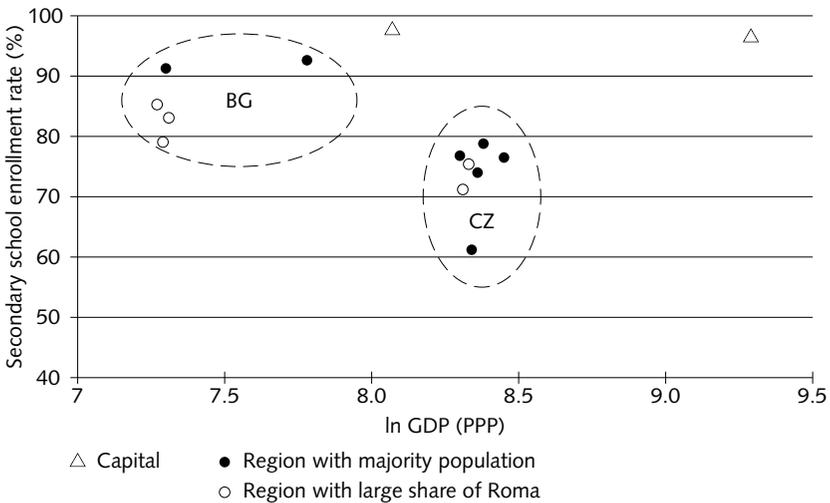


FIGURE 1C Regional differences in Bulgaria and the Czech Republic – secondary school, 2001 (NUTS II)



SOURCE: Statistical Offices of the Czech Republic, Slovakia, and Bulgaria.

The comparisons suggest two implications. First, disadvantaged regions lack opportunities for parents to enroll their children in pre-school and incentives for students to enroll in higher education. There is most likely a lack of funding from local governments to provide pre-school institutions. Moreover, the lack of labor market opportunities is a disincentive for students to proceed with secondary and higher education. The

FIGURE 1B Regional differences in Romania – pre-school, 2001 (NUTS III)

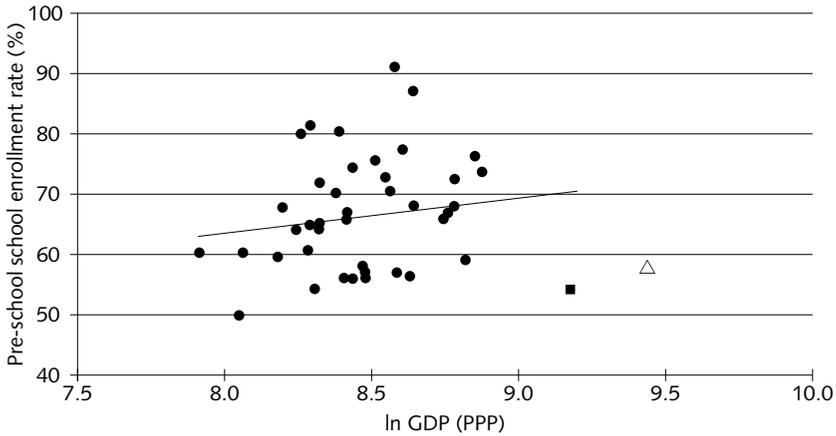
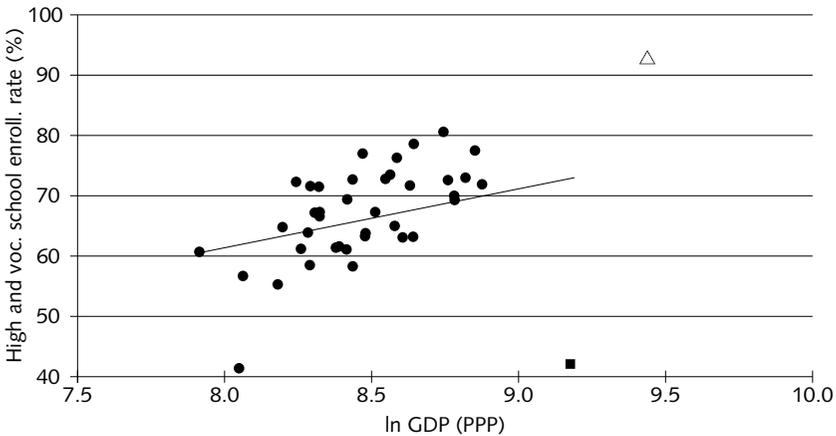


FIGURE 1D Regional differences in Romania – high and vocational school, 2001 (NUTS III)



△ Capital ● NUTS III region

SOURCE: Statistical Office of Romania.

second problem arising here is that poorer regions imply poorer households. They cannot afford pre-school and secondary education if it is combined with fees or requires longer distance travel. Obviously, Roma face all these problems disproportionately, since they live to a larger extent in the identified disadvantaged regions in all five countries. Returns to higher education did not develop fast enough in certain regions to convince the population that the investment in education will bring substantial benefits. In particular, many Roma families face the trade-off

between high costs of education and low chances on the labor market because of low educational achievements.

These regional disparities in enrollment rates will have a large impact on labor market chances and on the economic development of the country in the coming years. Entering the EU, the low enrollment rates in secondary and higher education prevent the creation of a ‘knowledge society’ envisaged in the ‘Lisbon Strategy’ by the European Union. Having in mind that Roma live predominantly in disadvantaged regions, and thus they have weak employment opportunities, a natural question arises. Does it make sense for Roma to invest into education?

Returns to Education

In this section, we address the question of whether the returns to education are present in Roma households. The return to education is already a classic theme in economics, where factors of the individual’s wage are investigated. However, estimating the returns for marginalized groups, in particular for Roma is, to our knowledge, a unique idea.

A significant deviation from the original Mincerian model settings was necessary. Throughout subsequent return-to-education analysis we use solely the *household’s characteristics* rather than individual ones. The reasons for this are twofold. First, the nature of the dataset requires household-based analysis. Second, using households as the unit of analysis has a rationale with regard to Roma lifestyle as well. Roma households are larger and broader than the majority households. This is not only given by the fact that they have more children, but very often brothers and sisters live together even when reaching adult age. Hence, their decisions, in this case educational and working decisions, are very much influenced by the interaction among adult household members.

In the following part, we firstly introduce the data set and main findings from the bivariate analysis, where influential factors of the wage variable are depicted. Finally we set up the model of Roma returns to education and show the main findings and implications.

DATA SET

The results discussed in this paper are based on the survey data collected from face to face interviews with 5034 Roma respondents, who represent at the same time a whole household, in Bulgaria, the Czech Republic, Hungary, Romania, and Slovakia. In a number of respects this survey is unique in its scale and consistency over countries. The results from

each country are comparable because they are based on a common questionnaire, translated into the respective local languages and an identical sampling design methodology. The sample size in each country was close to 1000. The survey is a representative sample of the Roma population in a respective country.

BIVARIATE RELATIONS

According to the classic study by Mincer (1974), the model estimating returns to education is based on those factors which influence the wage of individuals. Among them, the major role is played by education attained and experience acquired. Indeed, more factors are added to the model depending on the examining data background. Prior to running the model, we analyze bivariate relations with the wage variable, in order to account for its significance and magnitude. This exercise helps us to set up the components of the Roma wage equation. We consider here a set of household variables, in particular, economic, demographic, educational and social ones. Table 2 displays descriptive statistics of these variables. These variables prove to be significant both in the bivariate relation and in the returns to education model.

The proxy of the household's wage is an ordinal variable, which we created on the basis of the question: 'Which sources provide the most money for your household?' We aggregated the sources to four categories with clear ranking. The lowest category consists of sources as loans and remittances from people outside the household. This is clearly the worst version of dependency, as this source is highly informal and fragile. Slightly better is the dependency on the social contributions of various types. Here belong those households which stated child support, unemployment or social benefits as their main sources of money. One rank higher are those households which receive most money from various irregular jobs, mainly without an official contract. Clearly at the top we put households, which receive most of their money from regular wage jobs, mainly with an official contract.

The set of independent variables should necessarily contain two variables: education attained and experience acquired. The first variable is based on the answers to the question: 'What is the highest level of education reached by a member of your household?' Here again, we aggregated the answers into 4 categories with a rank. The lowest rank was assigned to households with no or incomplete primary education, the second rank was assigned to households with completed primary edu-

TABLE 2 Descriptive statistics on Roma population

Variable	Mean	Range	Description of the categories
Wage proxy of a household*	2.72	1–4	(1) loans (2) benefits (3) occasional wage (4) regular wage
Household highest education	2.39	1–4	(1) incomplete primary, none (2) primary (3) apprenticeship (4) completed secondary
Number of working adults	1.83	0–7	(7) = 7 and more working adults in the household
Number of unemployed	1.35	0–6	(6) = 6 and more unemployed in the household
Number of children	1.95	0–7	(7) = 7 and more children in the household
Household neighbourhood	1.77	1–3	(1) principally Roma (2) mixed (3) principally non-Roma
Type of settlement	3.07	1–4	(1) capital city (2) district center (3) small town (4) village
Household welfare	2.01	1–3	(1) low (2) medium (3) high

* Dependent variable.

cation, third rank was assigned to households with apprenticeship and incomplete secondary education, and the highest, i. e. the fourth category, was given to households which have a member with completed secondary education or higher. For the latter variable, acquired experience, we used the number of unemployed and employed household members. In fact, we built a ratio where in the nominator is the number of working adults compared to the number of adults in the active age (employed + unemployed).

In addition to those two, we included into the model two variables representing localization of the household. The type of settlement ranges from 1 to 4, where 1 stands for capital city, 2 means district capital, 3 represents small town and 4 is village. The household neighborhood ranges from 1 to 3, where 1 means principally Roma neighborhood, 2 is mixed and 3 stands for principally non-Roma neighborhood. Furthermore, we add into the model the number of children and the measure of household welfare, too, as further variables which are usually good in explaining the household background.

Note that the variables in table 2 are ordinal, exclusively. Hence, we use the Spearman Rho measure of bivariate correlation, which is an ordinal

TABLE 3 Bivariate relations for household wage and set of variables

Country	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Bulgaria	0.110**	0.246**	-0.183**	0.000	-0.163**	0.313**	-0.181**
The Czech Rep.	0.295**	0.395**	-0.418**	0.237**	-0.024	0.342**	-0.177**
Hungary	0.331**	0.292**	-0.236**	0.202**	-0.102**	0.315**	-0.160**
Romania	0.163**	0.082*	0.037	0.128**	-0.111**	0.227**	-0.074*
Slovakia	0.268**	0.370**	-0.373**	0.207**	-0.102**	0.354**	-0.178**
All countries	0.202**	0.290**	-0.278**	0.176**	-0.178**	0.269**	-0.165**

NOTE: Column headings as follows: (1) household highest education; (2) working adults in the household; (3) unemployed in the household; (4) household neighbourhood; (5) type of settlement; (6) household welfare; (7) children in household.

We use here the Spearman Rho as a measure of correlation. We indicate with ** and *, measures significant at 99%, or 95% significant levels respectively.

alternative of ordinary correlation measures. The results for all countries as well as for each single country are presented in table 3.

The household education, number of working adults, household neighborhood and household welfare have a positive impact on the wage level. On the contrary, the number of unemployed household members, the geography, expressed as type of settlement, and the number of children have a negative influence. The negative sign of the number of children is especially serious, as it expresses the risk of poverty of large households, but it might also be a sign for disincentives to look for a regular job, if the contributions (in this case child support) are offering the existence minimum for the household. The type of settlement is clearly negative and presumably would be negative also for other population groups, and expresses rather the economic gap between rural and urban regions or the gap between capitals and other municipalities. What attracts attention is a similar magnitude of influence of the variable number of working adults and unemployed household members, with opposite signs. An additional correlation test between these two variables reveals very high correlations. Hence a combination of these two variables was used in the final model, as described above. If comparing the magnitudes on the overall level, the education and the two variables expressing the working experience of the households have the strongest effects.

If we look closer at inter-country differences, remarkable and very interesting deviations from the all countries correlations are revealed, how-

ever the signs remain. In particular, a still repeating pattern can be observed. The three, so-to-say advanced countries, i. e. the Czech Republic, Hungary and Slovakia have similar magnitudes, while the less advanced countries, Romania and Bulgaria have remarkably different magnitudes than the three others. In the case of education, it has a stronger impact on wage levels in advanced countries, while the type of settlement has significantly stronger correlations with wage level in less advanced countries. This coincidence is especially interesting with regard to the number of unemployed household members. In the advanced country group we observe much stronger negative impacts than in the less advanced country group. Unfortunately, this ought to be again the effect of a generous social welfare system, which offers little motivation towards seeking for a serious job.

ROMA RETURNS TO EDUCATION

In this section we introduce our empirical findings on the returns to education model for Roma households. Recall that our observations are households rather than individuals. In addition our dependent variable, household wage, is an ordinal variable and hence we use the probit model to assess the returns to education. The set of our independent variables consists of three education dummies, where primary education is the base category. Moreover, we include a proxy for household experience, as explained above; geographic ordinal variables: type of settlement, neighborhood; a demographic variable: number of children in a household; and a proxy for household welfare. Finally we considered four country dummies, which grasp the unobservable country specific effects. Here, Slovakia serves as a base category. In table 4 we display the estimation results from the probit model of four distinct wage categories for 4481 Roma households³ in five European countries. The estimated parameters, except for significance, do not have a direct explanation, as the probit specification is a nonlinear model. Therefore, various transformations are used in order to interpret the values (Scott-Long 1997).

In our paper we use transformations into predicted probabilities and will observe the tendency of change within predicted probabilities for four distinct wage groups, given changes of some variables. In our specific Roma household model, one can explain the concept of predicted probabilities as follows. A predicted probability for one category of wage proxy variable is a probability, with which a Roma household can appear in this category, holding the set of independent variables constant

TABLE 4 Estimation results

Variable	Parameter estimates
Education dummy – incomplete primary, none	-0.091*
Education dummy – apprenticeship	0.191**
Education dummy – completed secondary and more	0.290**
Ratio – household experience	0.968**
Type of settlement	-0.098**
Household neighborhood	0.097**
Number of children in household	-0.079**
Household welfare	0.344**
Country dummy – Bulgaria	0.452**
Country dummy – The Czech Republic	0.160**
Country dummy – Hungary	0.310**
Country dummy – Romania	0.344**
Pseudo R^2	0.106
Number of households, N	4481

at their means (Scott-Long 1997). In addition to this basic definition, the researcher can go further and change the means of some variables and observe the underlying changes in the predicted probabilities. For us the variable of crucial interest is household education and experience. In fig. 2a, we display the predicted probabilities for levels of education, holding the rest of the independent variables constant at their means. In fig. 2b–d we additionally drop down the predicted probabilities with regard to education into three country groups that showed similar predicted probability patterns.

The pattern for all countries shows that there is a rapid increase in the probability of obtaining a regular wage job if one household member has higher education. At the same time, there is a slightly weaker, but still remarkable decline of the probability appearing in the passive-beneficial group. However, even with higher education, the probability of regular job wage households does not cross the one of households receiving benefits. The probability of occasional wage income is relatively stable (around 16%), across all education levels and the probabilities of households living on loans are in general negligible, but still we observe a weak decline with increasing education.

Separating these results for various country groups, we reveal signifi-

FIGURE 2A Predicted probabilities for all countries

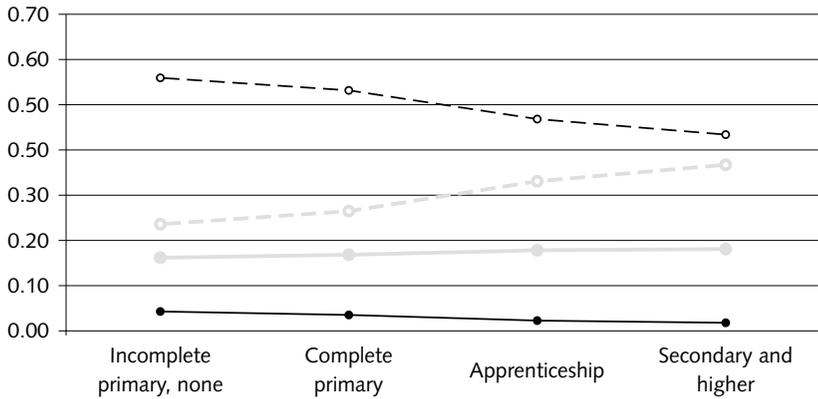
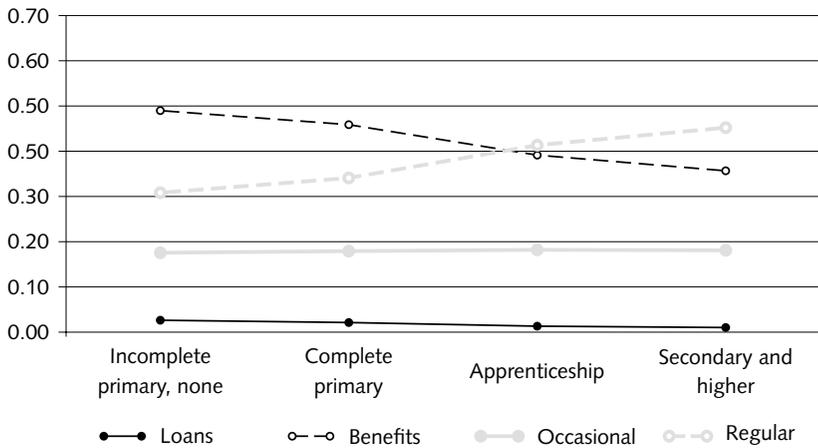


FIGURE 2B Predicted probabilities for the Czech Republic and Hungary



cant deviations, especially for beneficiary and regular wage probabilities. For example, in the advanced countries, such as Hungary and the Czech Republic, we witness that those households with regular wage income achieve in the two highest education levels higher probabilities than the beneficiaries group. An even more optimistic picture can be observed for the two less advanced countries in our sample: Bulgaria and Romania. Here, the probabilities have the same tendencies as observed before, though the probability level of regular wage receivers is throughout all education levels the highest and reaches almost 60% for households with secondary educated members. The picture in Slovakia shows rather the opposite. Here the tendencies are similar, but we observe a tremendously

FIGURE 2C Predicted probabilities for Bulgaria and Romania

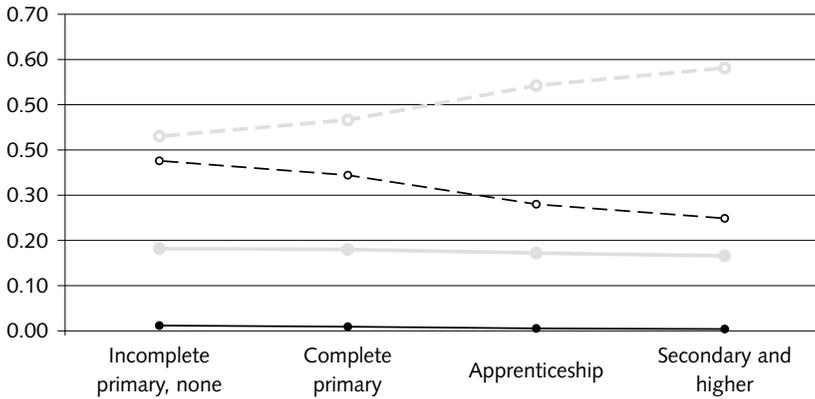
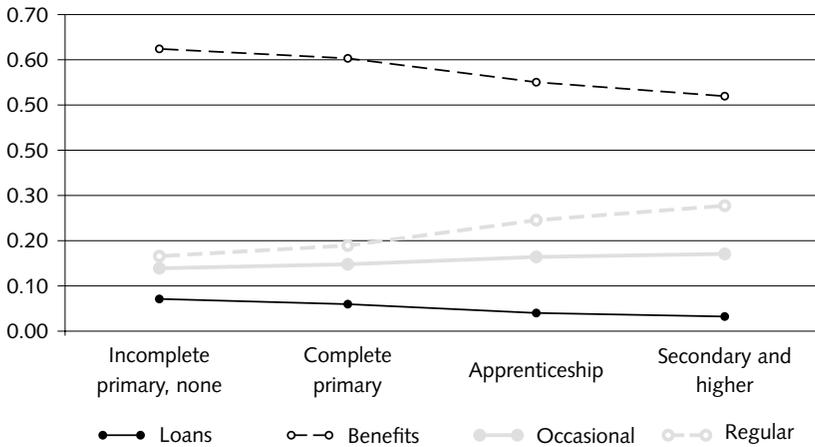


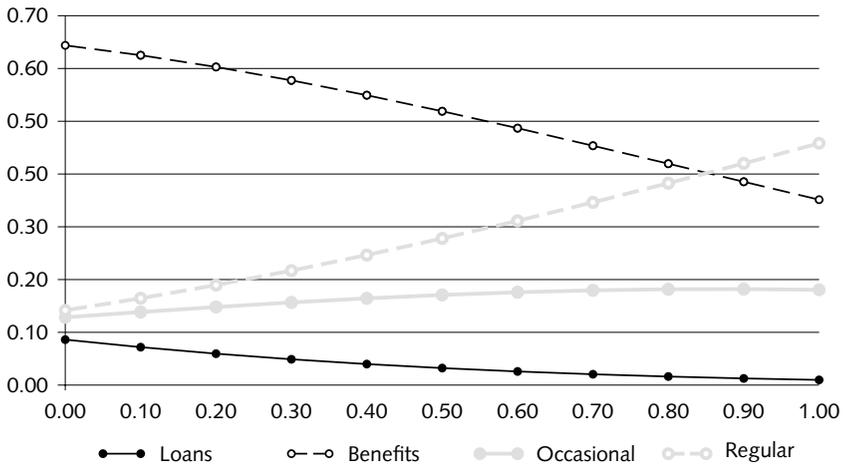
FIGURE 2D Predicted probabilities for Slovakia



high probability of beneficiary households, which is always the prevailing and reaches approximately 50% even for the highest education level. This is due to the very generous system of social benefits in Slovakia. In this country, the level of social benefits could reach the minimum wage and hence this system does not offer enough incentives to find a job if having achieved only little education. These inter-country deviations suggest the following remarks:

1. The education status matters throughout all countries.
2. However, it matters more in the less advanced countries, perhaps also because of weak social systems, but this is also supported by other studies (Psacharopoulos 1994).

FIGURE 3 Predicted probabilities for four wage categories with respect to the ratio of household experience



3. Whenever the system is too generous, it produces weak incentives to find a regular job, which ought to be the case of Slovakia.
4. The probability of occasional or irregular wage receivers is robust throughout the countries and education levels. It seems that 15% to 18% of Roma households are involved in the informal sector.

Another issue is that the weight of the education variable is on the first three education categories, while the last category is very weak in comparison to the majority population. Furthermore, in this education category, also few university educated Roma households (0.5%) are aggregated. Hence, computing returns to education for the tertiary education was impossible.

The return to education literature suggests that experience has a serious impact on wage. Our experience variable expresses the ratio of household members who are employed to that of all members in the active age. The Roma households as mentioned before are a bigger entity and the decisions here are made upon approval of all adult members. Hence the employed members might pursue the rest of household members to search for a serious wage job. This hypothesis is supported by fig. 3.

The higher the ratio of household experience, the lower is the probability of family members being the benefits receiver and conversely the higher is the probability of their having a regular wage income. The threshold is however relatively high, if more than 85% of adult mem-

bers are employed, the probability starts to be higher than the probability of being among the pure benefits receivers. Here again the probability of the loans group almost disappears and occasional wage jobs increase with only a negligible gain.

The results of our empirical analysis support the traditional hypothesis of the returns to education theory. The probability of being in the regular wage receivers group grows with the level of schooling and with work experience. This means that, given our sample, larger returns to education for higher educated Roma do exist, despite the unfavorable economic and social conditions.

Conclusion

This paper presents a unique analysis of returns to education for Roma in five Central and Eastern European countries (Bulgaria, the Czech Republic, Hungary, Romania and Slovakia) based on data from the UNDP/ILO survey conducted in 2001. The evidence from existing qualitative studies on the situation of Roma in Central and Eastern Europe suggests that low education levels are one of the main reasons for unemployment and poverty (e. g. UNDP 2002). The unfavorable starting position of the Roma at the beginning of transition in terms of low education levels and over-representation among the unskilled workers, has led to disadvantages on the labor market and dependence on the welfare system. Their over-representation in disadvantaged regions also affects decision-making and incentives for education. This situation leads to a vicious circle of increased poverty that in turn further impedes access to quality education. The current state of research on the situation of the Roma raises the question whether returns to education for Roma do matter and, if yes, to what extent.

The descriptive analysis in the second section revealed that in the examined countries, substantial within-country disparities exist in terms of economic development and enrollment rates for different types of education. A general pattern of increasing enrollment rates with rising GDP can be observed. Several regions face a substantial gap in providing enough education institutions, especially pre-school. On the other hand, in these regions incentives for proceeding with higher education are weak, due to the low level of economic development. Roma in all five countries live predominantly in those disadvantaged regions and suffer from these drawbacks to the largest extent. Therefore, it is important to prove that education matters even in these difficult situations.

Due to the difficulties of monitoring the Roma population in these countries, studies on returns to education for Roma literally do not exist. While returns to higher education had been undervalued in Central and Eastern Europe during the planned system, they rapidly increased during the beginning of the 1990s and have reached levels similar to those of other developed market economies. Unfortunately, this change does not affect Roma much, as they are usually low educated.

But still the results of the empirical analysis support higher returns to education for higher educated Roma. The probit model confirms that, in controlling for other household characteristics, returns to education are present. The probability of being dependent on state benefits is decreasing and the probability of having a regular wage income increases with education level, respectively. Similarly, with increasing experience, the probability of being dependent on benefits declines and conversely the probability of having a regular job income increases.

The results have remarkable implications for future policies, not only within each country but also in terms of the enlarged Europe. Regional disparities and minority issues have become even more transparent and will be the subject of discussions. In order to converge to EU levels in all economic spheres, education has a major role to play. When thinking about the European Union's strategy of creating a 'knowledge society', this does not only apply to the Roma minority but to the whole population, as well. It cannot be efficient to set up a large variety of separate projects dealing with Roma education. Rather the opposite, a reform of the mainstream school system seems to be a prerequisite to establish long-term success and effects. The main objective remains: successful integration of Roma into the national school system.

Notes

1. We always use log GDP measured in PPP dollars.
2. Statistical Office, Czech Republic; Institute of Public Affairs, Slovakia and UNDP Bulgaria.
3. We are lacking several households, from the original 5034, because of missing observations within the considered set of variables.

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Restructuring and Business Reengineering in Integrative Processes

Drago Dubrovski

Globalisation has intensified competition to such an extent that the corporations, merely with one's own resources, cannot achieve acceptable success any longer. Objectives, which had been set-up prior to establishing the alliance in order to justify the investment, frequently will not be possible to achieve if during the integrative period revolutionary methods of change are not applied, to which one can classify restructuring and reengineering. Therefore, it is essential to be successful, not only in rules and principles of strategic alliances but in the methods of radical changes.

Key Words: strategic alliance, integration, restructuring, reengineering, crisis

JEL Classification: G34, L14

Strategic Partnerships

Globalisation, which actually integrates all parts of the world into a joint global market, has intensified competition to such an extent that the corporations, merely with one's own resources, cannot achieve acceptable success any longer. Therefore a joint (combined) use of assets of a number of corporations appears and, in a such a way, it is possible to achieve objectives which a corporation on its own would not be capable of achieving. The general objective of linkage and co-operation is found in increased competitiveness, i. e. improved developmental capabilities.

Strategic partnership can be:

- strategic business (non-equity) alliance or
- equity (ownership) linkage (merger, acquisitions, take-over).

Strategic business alliance is not based on capital transactions, as participating corporations retain their own legal entities (status) and independence. Capital linkage is about altered ownership proportions and the business co-operation should therefore intensify. The relationship should be a more long-term one, although it is not necessary that the equity linkage includes elements of strategic business co-operation.

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Equity linkages could hardly be a priori defined as strategic partnerships since such a relationship is dominated by the stronger corporation (instead of a '2 + 2 = 5' outcome e. g. a '3 + 1 = 5'). Since equity linkages primarily represent the finalisation or the final step of prior strategic non-equity co-operations, in this case one could also place capital linkages among equity partnerships. From such a discussion one could conclude that capital linkages, in certain cases, play the role of strategic business partnerships (when achieving the '2 + 2 = 5' outcome) and, in some other cases, do not comprise elements characterised as partnership (e. g. 'straightforward' investments having exclusively financial objectives). Take-overs, mergers and acquisitions can therefore, on the one hand, represent finalisation of a strategic business alliance and, on the other, also the highest evolutionary level of a particular strategic alliance. As aforementioned, in this case, there is no reason not to classify equity linkages as strategic partnerships, regardless of whether they emerge as a developmental step in an evolution of a particular strategic alliance or come into existence directly, without an evolutionary course. Joint-ventures, take-overs, mergers, acquisitions and demergers, therefore, essentially represent merely a capital-supported form of one or another form of strategic linkages, if, indeed, such a content is present.

In any case it is true that at assessing the nature of contents and significance of a particular linkage, the substantial content and the significance of the business co-operation should be taken into account and not its external form, taking into account, indeed, that many of these do not have a formal configuration.

Non-equity business alliances, which represent up to 90% of all strategic linkages according to certain assessments (Lynch 1993, 29), nevertheless prevail in comparison to equity linkages, although the latter are more visible and echo more in professional circles and among the public.

Strategic alliances and partnerships are modern forms of obtaining and increasing competitiveness in the global market environment. The growing competition from all perspectives demands more co-operation between the corporation and its suppliers, between the corporation and its clients, between the corporation and its competitors and those carrying out out-sourced functions. By globalising international operations, when national and regional borders are being blurred or fading away and consequently the classical definition of product origin, the dimensions of competition process also change.

Today some authors (Schonberger 1996, 15) even speak of a 'part-

nership era' which commenced in the 90s and succeeded the preceding 'manufacturing era' (1940–1950, characterised by scarcity of goods), 'marketing era' (1950–1965, characterised by unexploited capacities), 'financial era' (1965–1980) and 'quality era' (1980–1990, characterised by intercontinental competition). The beginning of the partnership era can be traced to the early 80s, accompanied by rapid growth of intercontinental operations and technological headway.

The number of strategic alliances or partnerships cannot be estimated,¹ since for certain non-equity partnerships one cannot find officially published or otherwise accessible data. If one would attempt to present the 'partnership era' in numbers and amounts of international² joint ventures, mergers and take-overs, then the numbers and amounts of these (totalling minimally to a 10% ownership stake) in the period from 1987 to 1999 increased by 7 times i. e. from less than \$100 billion in 1987 to \$720 billion in 1999 (UN 2000, 10). The rate of growth both of the international and the national equity linkages during the period between 1980 and 1999 amounted to an astonishing 42% on a yearly base. In 1999 equity linkages already represented 8% of the world's GDP while in 1980 merely 0.3% (UN 2000, XIV).

The total amount of all equity linkages on the planetary level executed in 1998 is estimated at \$2.400 billion (*The Economist* 1998). In 2001 the amount of international acquisitions, mergers and take-overs is supposed to be in excess of \$1.100 billion (grand total almost \$3.500 billion). The amount of equity linkages in Europe and the US in 2001 has already reached \$1.830 billion and, due to the known events of 2001 in the US, it decreased to \$1.360 billion (decrease by 26%) in 2002. The period 1998–2001 some authors characterise as 'merger mania'.

Alliances – a Stage Process

Entering into equity and strategic business non-equity alliances is a highly demanding procedure, which does not include only stages of carrying out the purchase (take-overs) or signing the contract (strategic alliance), but also involves a set of tasks, duties and procedures³ as such, which can be classified into three time periods, in regard to the course of emerging of a particular alliance:

- period prior to entering into alliance,
- period of entering into alliance,
- period consequent to entering into alliance.

TABLE 1 Periods and procedures of the alliance process

Period	Procedures
Prior to entering into alliance	Defining and reassessment of strategic orientations Search for and assessment of partners and of the feasibility of the integration Selection of the partner(s) Selection of the type of integration Strategic and financial assessment of the integration Drafting plans for the integrative process
Entering into alliance	Introductory discussions Letter of intent Negotiations Entering into contract Appointing the responsible alliance manager Public announcement
Consequent to entering into alliance	Rapid integration Restructuring and re-engineering Learning from the partner Resolving conflicts Reconfiguration of the alliance

In the continuation we will only discuss the time period consequent to entering into alliance.

Time Period Consequent to Entering into Alliance

The time period consequent to entering into alliance is designated as the period of integration, the post-take-over period, the post-take-over integration or also the operational stage of the integration. It can be further divided into two stages:

- stage of carrying out the corporate integration, which is usually characterised by profound changes (restructuring, business process reengineering, renewal of the corporation);
- stage consequent to carrying out the integration, which is intended for achieving the planned synergy effects (post-integration stage).

The duration of the period intended for carrying out the operational integration cannot be fully defined, since each alliance has its own particularities. Certain research studies⁴ (e. g. Devine 2002, 19) state that the post-take-over period lasts for approximately two years, while the act of take-over itself lasts for 3–6 months, and the rest is intended for transitional adjustment (soft balancing, further restructuring, cultural integration).

The integration in strategic alliances can be:⁵

- procedural (includes combining two systems and procedures of participating corporations on operational, monitoring and strategic levels);
- physical (assets and resources – consolidation of programmes, manufacturing technologies, projects, operational-manufacturing units, infrastructure);
- managerial and socio-cultural (the most demanding problem – includes transfers of managers, modifications to the organisational structure, development of a consistent corporate culture, models of strategic operations, motivational system and installing a new leadership).

The integration must be rapid in order to achieve the synergy effects as soon as possible, i. e. achieve the pre-set objectives. The rapidity and effectiveness of the integration is largely dependent on the preparatory period (prior to the integration). Certain research (Devine 2002, 156) has determined that:

- 40% of all changes take place during the first two months consequent to establishing the alliance;
- more than half of the latter (20%) take place immediately after the alliance;
- changes continue at a high pace, but have a rapidly decreasing tendency during the next six months;
- after nine months more than 80% of changes had been initiated.

Processes referring primarily to equity linkages are highly stressful and cause anxiety, concern, anger, cynicism and depression among participating parties. This is one of the reasons why the integrative activities should be launched immediately after the formal entering into cooperation (or even prior to this), since fear and uncertainty can block achieving jointly pre-set objectives if such a state persists for a longer period.

This can also cause the so-called ‘merger syndrome’ (Devine 2002, 157) which addresses six common problems influencing the success of the operation in one way or another:

- deteriorating communications;
- poor productivity;
- increased parochialism and less team play;

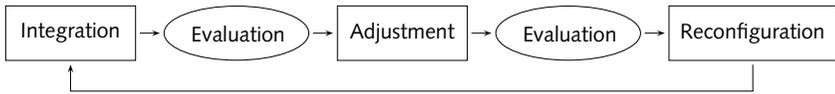


FIGURE 1 Adjustment and/or renewal of alliance

- power struggles;
- reduced commitment to corporate goals;
- a tendency to bail out by leaving the organisation.

The ‘merger syndrome’, therefore, can lead not only to inability for achieving the pre-set synergy effects, formed by the mutual value-added, but can also lead to the joint outcome being even on the negative balance side considering the costs that have already risen.

After the essential modifications towards the integrated corporations have been carried out, a significant part of the post-integration period is reverse learning from the partner, as the integrated corporations should possess complementary knowledge and skills which will lead to achieving the pre-set strategic objectives of the integration.

Integrative processes, despite the abundance of guidelines and instructions on carrying out the processes, often lack the so-called ‘co-operational mentality’ and even more in the case of integrating non-co-operative cultures. Therefore, learning for co-operation is an inevitable condition for successful functioning of the alliance. One must not overlook the fact that the transfer of knowledge, i. e. reverse learning, will not take place automatically.

Deviations, conflicts or poor functioning of the alliance or some of its parts might occur during its establishment or on its emergence, regardless of the preparative period being put to good use for assessing the future alliance, therefore, adjustments of the alliance should be pre-planned in order to adjust to new circumstances. In this case one might not talk of deep-penetrating changes but merely fine, soft adjustments and balancing (evolutionary changing). If the integration does turn out to be inappropriate, i. e. not functioning, then the process should be repeated from the very beginning i. e. a reconfiguration of the alliance should be carried out (revolutionary changes).

‘A gap appears to exist between what experts say about M&As and what managers experience [...]. Only a few M&A transitions can be neatly packaged into a set of processes, or a single magic formula’ (Devine 2002, 11).

A combination of order and chaos, planned and unexpected, is a characteristic of almost every equity linkage. Managing alliance is as much an art as a science. Equity linkages are matters which 'happen' to people who can join or oppose the process. The process of establishing strategic alliance often contains improvisations, adjustments, putting out fires and learning, not merely carrying out a pre-planned strategy.

Restructuring and Business Reengineering

Most frequently the process of integrating connected corporations will only be possible by using revolutionary methods of change, as which one can classify restructuring and business process reengineering. If a particular structure of a corporation or one of its individual sectors is not appropriate in regard to circumstances demanded by the new (altered) environment, the existing structure is to be changed and completely renewed. This process, representing a transition from the existing structure to a new one (programme-market, manufacturing, technological, financial, organisational, personnel, ownership, ecological, developmental) which enables greater successfulness and efficiency of corporate operations, is designated as restructuring. Restructuring is one of the methods of revolutionary changes and a way to achieve renewal of the corporation as a result of strategic alliances.

The basic distinction between the revolutionary methods of changes⁶ and the evolutionary methods of achieving changes lies in the frequency of the former being less common, being more profound and widely aimed, having a greater intensity and risk during a shorter time frame and simultaneously demanding certain sacrifices. The range of sacrifices can include tangible assets (selling premises, giving up traditional programmes, withdrawing from long-term equity and business alliances, sell-out of so-called 'social-standard' capabilities, decreasing resources for non-commercial investments, etc. . . .) and intangible assets (reducing the number of employees, replacing and making experts redundant, selling patents or brands, etc. . . .). Due to the very sacrifices the revolutionary methods of changes are not welcomed as pleasant but cause fear, uncertainty, and distress.

When addressing restructuring one should bear in mind the following important rules:

- it takes place in various areas (changing structures in one area demands changing structures in other areas);
- it derives from the fundamental strategies of the corporation;

- its departure points are programme-market structures (restructuring of programmes and markets);
- it contains all characteristics of the revolutionary methods of changes (already mentioned).

Restructuring usually cannot be carried out in an individual area (e. g. corporate function) regardless of others, and the effects will be visible only when modifying several area structures. Change of the product portfolio (restructuring of the programme) can also demand altering: the organisational structure of the corporation (organisational restructuring), the technology (technological restructuring), the financial resources (financial restructuring), the human resources (personnel restructuring), the informational system (informational restructuring), etc. Sometimes various changes are dependant on or triggered by ownership restructuring (alteration of the ownership structure). The need for a balanced and simultaneous restructuring is particularly applicable in order to relieve a crisis which cannot be relieved otherwise by mere financial restructuring, while other areas remain unchanged.

The consequences of restructuring processes can also be uncertain when projects are carried out unsuccessfully or the achieved outcomes fall below the expectations in regard to sacrifices and efforts. Rock and Rock (1990, 43) determined that half of the unsuccessful restructuring projects caused losses to their owners. Platt (1998, 144) also states that only 50% of the projects achieve the pre-set objectives (for cost-reductions the result is slightly higher at 61%). The actual problem in these cases are sacrifices suffered as restructuring needed to be implemented in the form of a radical alteration, while methods of step-by-step changes had either been neglected and underestimated, or else such an alteration is demanded by external (altered) circumstances (e. g. entering into partnership).

Programme-market restructuring represents a transition from the prior structural combination of products or services, and markets, to a new structure which must achieve greater successfulness (profitability) and efficiency of corporate functioning (productivity, cost-efficiency). In regard to such a restructuring, which takes place within a complex relation, one must consider the market (the selected segment of customers) and the programme (product, service), since it is most frequently true that the same offerings cannot be positioned in a new market or the new programme in the prior market. Therefore the essence

of the programme-market restructuring lies in the marketing approach. From the selection of needed and available measures, those in the area of programme-market changes are common both in the period of crisis solving and the period of corporate development. The research among 221 marketing experts (Shaw and Mazur 1997, 10) indicated (marks 1 to 5) that the altered conditions in the market (marketing) environment are the very foundation for programme-market restructuring.

The process of programme-market restructuring is, most frequently, conducted in two areas:

1. the internal aspect, aimed at achieving the optimal position of the programme in regard to mutually intertwined and dependant corporate functions and the organisational units of the corporation;
2. the market (external) aspect, aimed at exploring possibilities for implementation of the existing or the new programme in the selected markets i. e. segments.

Similarly to the programme-market, restructuring in the developmental⁷ and technological area is connected to the transition of the existing structures to the new ones which enable the corporation to achieve a more rapid, market-orientated development, greater efficiency of functioning and application of modern technological equipment. Developmental restructuring is, therefore, aimed at designing a structure of products and services which would contain more value-added, in other words, at achieving greater levels of technological sophistication of the product and of the processes. Technological restructuring, on the other hand, represents applying such scientific methods, knowledge and skills which will enable manufacturing of the planned products.

If the primary objective of technological and developmental restructuring is to design a structure of products and services containing a greater value-added, then one can derive the following objectives of restructuring processes in the mutually connected and dependent areas of development, technology and manufacturing:

- orientation of all activities toward customers;
- decrease of internal (passive, waiting) and external (introduction to the market) non-productive periods;
- simultaneous engineering;
- limitation and cancellation of activities which do not contribute to the value of the product (service);

- integration of various areas and processes;
- relative cut-offs (reductions) in costs;
- increase of productivity and flexibility by introduction of modern methods.

Restructuring of the manufacturing function represents the installation of such a structure of manufacturing methods and approaches and, on the other, processes and tasks which will ensure completion of selected (ordered, planned) products in the most efficient way.

Restructuring in the area of human resources should be discussed in a wider context, best represented by HR management. The tasks of managing employees are the following:

1. discovering and developing capabilities of personnel which are used by various sectors of the corporation in order to satisfy customers, achieve competitive advantages and contribute to the collective value of the corporation;
2. directing a variety of relations between managers, employees and others, and their interests, in accordance with corporate strategies.

Restructuring of the human resources area represents installing a new structure in regard to employees either as an entirety or as individual parts of the corporation (e. g. the management, manufacturing workers, particular functions or sectors, etc.). Similarly to other areas restructuring measures must also derive from the general strategy of the corporation and, therefore, have to be carefully prepared, even more, since they refer directly to personnel (relations, emotions, co-operation, collective values, behaviours, viewpoints, values as 'softer', less visible factors in comparison to objectives, structures, markets, finances, techniques as 'harder', more visible factors – Perlitz et al. 1996, 342). One must not neglect the point that employees (HR, personnel) are viewed today as the greatest potential of a corporation. Restructuring in the HR area is also a possibility for establishing a new organisational scheme, a new systemisation of tasks and a new system of rewards.

The HR area is inseparably connected to the organisational structure of the corporation, although one rarely speaks of organisational restructuring, since these changes are a consequence of programme-market, manufacturing-technological and personnel changes. It would be completely senseless to set the change of the organisational structure as the primary objective, regardless of the fundamental orientations of the corporation, its developmental level, programmes, methods of management

and available resources. On the other hand it is also true that changes to other areas cannot be carried out without modifying the organisation.

Lately, restructuring or renewals of informational systems are fairly common as consequences of altered circumstances of a corporation's functioning, extremely dynamic events in a corporation's environment and general headway in the area of informational systems, processes and hardware. Therefore, in a corporate milieu, the term informational technology is more commonly used and refers to the suitability of computer hardware, also software, in the widest possible sense. It is also true that projects of reengineering in this area prevail, focusing on the process and the predominating significance of the informational technology.

Changing external resources of financing from less favourable (short-term, more expensive) to more favourable (long-term, less expensive) ones, is usually a highly desired measure in financial restructuring but is accompanied by abundance of difficulties in praxis due to the unwillingness of banking creditors to encounter setbacks in regard to their placing and needs for ensuring available resources which would replace the preceding. The remains of liquid resources, which are a consequence of all other measures, must be placed to those areas where the effect would be the greatest. Measures, classified into this group, can be: postponement of due liabilities (reprogramming, prolongation, moratorium); replacement of existing loans with new ones (refinancing); writing-off calculated interest; debt to equity swap; procurement of additional external developmental resources of financing (equity) while accounting for the financial lever; decreasing investments having long-term effect and advancing smaller investments having rapid effect – these can be market-, technology- or personnel-orientated.

In comparison to restructuring, whose primary objectives are modifications of various structures in a corporation, reengineering brings about 'a fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service, and speed' (Hammer and Champy 1994, 32).

Reengineering, just like restructuring, is a method of revolutionary change and, therefore, embodies all general features of such radical changes. Reengineering and restructuring are not mutually incompatible methods although they derive from different starting-points, since in a corporation they can run parallel to one another or even be intertwined.

TABLE 2 Cost savings delivered by mergers and acquisitions

Sector	Percentage of answers
Head-count reduction	66
Buying and merchandising	60
Supply chain	60
Procurement	48
Manufacturing	35
Warehousing/distribution	32
New product development	32
Outsourcing	25
Research and development	24

Source Devine 2002, 166.

With regard to the definition and contents of reengineering, one could indicate its essential ingredients: focus on corporate processes, radical changes, dramatic improvements and a multidisciplinary approach. Instead of organisational structure or function, a reengineering project focuses on corporate processes which can be interpreted as a set of connected activities which engage an input (from suppliers), transform it and produce an output (for the customer). The corporate process, therefore, includes those activities which are crucial for an agile delivery of products and services to the customers and simultaneously contribute to greater quality and low costs. The processes can be classified as core, main or sub-processes and also as partner-orientated, internally- or customer-orientated. Corporate processes are not the responsibility of an individual function but include a range of activities, dispersed over individual areas.

Due to anticipated and needed changes, which have to be carried out in a rapid and consistent manner during the post-integrative period if to achieve the planned synergy effects, a take-over can often prove itself as insufficiently flexible to achieve developmental objectives and is frequently succeeded by merger or acquisition.

An investigation into integrative processes of Slovenian corporations (e. g. Lahovnik 2001) finds that measures during the period consequent to alliance mostly refer to various profound transformations (table 3).

Thus, while linking two or more corporations, various modes of restructuring take place which are also visible in the relocation of previous activities, processes and tasks.

TABLE 3 Most frequent measures during the period consequent to integration in the case of Slovenia

Measures during post-integrative period	Percentage of answers
Reorganisation of marketing activities	84
Reorganisation of supply activities	84
Management training programmes	82
Introduction of new sales programmes	76
Financial consolidation	64
Selling of non-core business assets	58
Management reorganisation	58
Replacements of members of the top-management team	51
Reducing the number of employees	40

Source: Lahovnik 2001.

Strategic Alliances and Resolving and Preventing Crisis

For various corporations, or even branches, entering into strategic partnerships at a particular developmental level is not merely a strategic possibility and opportunity but a business necessity, since it will be the only possible way to preserve one’s competitive position and prevent crisis⁸ in the future. On the other hand, strategic business alliances and equity linkages enable (re)solving corporate crisis, while the process of re(solving) includes all available assets of partner corporations and a simultaneous search for synergy effects.

Strategic equity and non-equity alliance is, therefore, significant both during the period of preventing crisis and also during the period of resolving crisis.

The objective of today’s strategic alliances, which have not occurred due to major difficulties in one or even both partner corporations, is an increase of collective (global) competitiveness which actually represents preventing a crisis from emerging. A corporation, which otherwise develops relatively successfully, will start to lag on a certain developmental level behind its competitors which have integrated their own forces and achieved the synergy effects that cannot be achieved by an ‘independent’ corporation.

In cases of strategic business or equity alliance when one of the partners is facing crisis, such an alliance can bring about the solution of crisis for the corporation in question. Since in this case the alliance combines an economically stronger partner with a weaker one, the latter cannot

TABLE 4 Mergers and acquisitions by acquiree situation in the case of 170 analysed companies in the period 1985–1990

Situation	Percentage of cases
Strategically troubled	25
Financially troubled	16
Joint growth opportunities	13
Dependent on related company	12
Divesting non-core business	12
FAC pullout	8
Target of aggressive move	7
Others	7

Source: Bleeke and Ernst 1993, 116.

await an equal position in regard to integrative processes which actually represent a sacrifice for the corporation in question. The same is true for all cases of crisis resolving.

The reason behind a stronger partner linking with a weaker one facing acute crisis, while there is a possibility of a chain crisis reaction, is that the corporation facing crisis possesses:⁹

- a verified manufacturing-sales programme which – due to all other required potentials (financial, personnel, technological, etc.) being absent – cannot be appropriately developed and introduced to the market;
- suitable technology which cannot be optimally exploited due to difficulties in the marketing-sales area;
- an excellent team of experts who cannot assert their knowledge and skills since the corporation faces unsurmountable financial or other problems;
- such assets which can be utilised in order to gain much greater efficiency and profitability by the partner;
- a differentiated domestic or/and foreign distributive network, but cannot maintain it due to financial difficulties.

In order to successfully avoid the dangers, which derive from linkage with a corporation in crisis, pre-integrative processes take place in practice which utilise, when required, the introduction of radical resolving activities in the corporation facing crisis (voluntary or compulsory agreement; disinvestments; ‘cleaning’ balance sheets; even programmed

– controlled bankruptcies, etc.) or less risky methods (e. g. take-over by acquisition of assets).

Difficulties and Traps of Alliance

Although strategic alliances represent one of the most significant modern forms of international business, the rate of their successfulness i. e. survivability is not high, since, on the average, it ranges merely from 30 to 45%. By unsuccessfulness of the integration we do not only mean that the linked corporations fail or go bankrupt (which is otherwise completely possible), but by the same token, we designate such a partnership that has not achieved the pre-set synergy objectives (an alliance is unsuccessful also in those cases when the potentials of two corporations are merely summed up i. e. the outcome is ‘ $2 + 2 = 4$ ’).

Such, a relatively low rate of successfulness can be ‘justifiable’, since strategic alliances are the most demanding form of organisational relationships where one can consider that co-operation is actually another form of competition, that harmony is not the most crucial criterion of successfulness, that co-operation has its limitations when corporations must address competition compromises, and that reverse learning is most important (Hamel by Ramu 1997, 74).

If we summarise the findings of various research studies and cases on unsuccessfulness of alliances, then we can gather the causes into the following groups:

- short duration and lack of systematic and planned preparations during the period prior to closing the deal (deals with no prior analysis and assessments and incorrect selection of the partner, i. e. target corporation);
- overestimated (overoptimistic) assessments of effects (unrealistic synergy effects);
- incorrect (overestimated) price or a ‘bite to large’ (combined with overestimated effects, an exhausted (dried-up) corporation);
- unaccomplished complementarity of manufacturing, programming and marketing structures;
- disorganised, weak and difficult communications (external and internal);
- managing difficulties and lack of systematic supervision (inexperience at integrating, insufficient monitoring of the integration);
- disharmony of cultures and management styles;

TABLE 5 Varying of integration successfulness

		Partner A	
		Advantages	Disadvantages
Partner B	Advantages	2 + 2 = 5 synergy integration	2 + 2 = 3 or 4 counterproductive integration
	Disadvantages	2 + 2 = 3 or 4 counterproductive integration	2 + 2 = 0 destructive integration

Source: Büchel et al. 1998, 47.

- internal opposition to changes (also departures of key personnel);
- integration being too late and too slow (poor operational implementation);
- difficulties at transfer of knowledge and skills between partners;
- underestimated competition (competition reacts to equity transactions by its own strategies and does not allow others to achieve synergy effects at their expense);
- changes in the environment or in partner corporations (demand modifications of strategies and management or sell-out of the ownership stake).

On the average, alliances are more successful when the environment is more turbulent (Bucklin and Sengupta 1993), while on long-term equity linkages can prove more successful.

Since both equity and non-equity alliances, worldwide and domestic, have a high rate of unsuccessfulness, as already mentioned, their preparations should be approached in a planned, sufficiently analytical and systematic manner, which is also visible in the fact that integrations do not come into existence 'overnight' but only after a longer period of pre-testing of partners during 'usual' co-operation. Integrations implicate dual risks: a possibility of the alliance failing and a possibility of linking corporations failing.¹⁰

As easily as strategic alliances arise, so too they can also end, since they have their own life cycle¹¹ which is only partially dependant on each individual life cycle of participating corporations. Non-equity alliances can result into:

- equity merger, acquisition or take-over;
- demerger;

- reorganisation or restructuring of one or both partners.

It is obvious that successful partnerships compensate for the disadvantages of unsuccessful ones, since otherwise it would not be so popular as a strategic tool in the global environment. Certain data indicate that alliances accumulate 18% of all incomes of the 500 largest American corporations (*The Economist* 1998).

Successfulness of a particular alliance is often assessed merely through financial indicators, such as increased market value of shares, dynamics of share value of the participating partners in a certain period prior and consequent to take-over, etc.

However, financial criteria are just one aspect of examining the successfulness of an alliance, whereas other indicators should be taken into account for determining the successfulness of integrated corporations. Assessment of alternative paths for each of the participating entities is significant by all means and answers the following questions: would any of the particular corporations survive in a medium-term period?; what would be the value of its shares by that point in time?; what would be the value of future profits by that point in time?, etc.

Successfulness of a particular alliance cannot be assessed merely by financial indicators, but one can speak of four groups of criteria (economical, strategic, behavioural and learning aspects; Büchel et al. 1998, 198), whereas from the professional literature it emerges (Ittner and Larcker 2001, 388) that a huge discrepancy exists between the significance of strategic alliances and qualitative criteria for assessing their successfulness.

One should also stress that the results of alliance probably will not be identical for both (all) participants, but it is important that these should be proportional in regard to pre-set objectives, which can differ from one participant to another.¹²

Triple Role of Restructuring

Restructuring has a triple role from the aspects of threat and perspective of the corporation's position:

- crisis solving,
- crisis preventing,
- development of the corporation.

Resolving of crisis by itself demands a range of integral area restructurings (programme-market, organisational, financial . . .), whose purpose

is to initially halt negative developments. Therefore, restructuring at this stage is rapid, less extensive and non-integral, as short-term effects are being sought. Only at the second stage, when establishing of developmental foundations along with profitable operations is being addressed, are integral and long-term restructuring projects being carried out, having medium- and long-term effects. Therefore, the role of restructuring during the first stage of crisis solving (halting negative developments) is less stressed, while later it has priority.

Restructuring has even a more significant role for preventing crisis and development, either as internal (organic) growth or growth by the helping hand from partners, in comparison to acute crisis solving itself, when measures having short-term positive effects take priority. Although development contains activities, which simultaneously represent preventing of crisis arising, various restructurings can take place merely in order to adjust the corporation to new circumstances in the environment along the process, using less extensive modifications and, by doing so, prevent the emergence of a latent or acute crisis, since the corporation does not develop as rapidly as its environment (competition, altered consumer behaviour, etc.). On the other hand, the corporation can improve its competitive position and developmental possibilities through appropriate strategic planning, by the internal structures being continually renewed.

It is not possible to expect long-term success without an appropriate, pre-planned approach during analysis of the actual environment and potential partners, which would be based on assessment of the possibilities for fulfilment of mentioned conditions within the strategic partnership. Many successful integrations have arisen from long-term co-operation due to exactly this, since a thorough assessment of the partner's suitability for a further strategic equity linkage or a mere business alliance, was possible during this period.¹³

Entering into alliances must, as aforementioned, be well deliberated and planned and must be a part of an integral corporate strategy taking into account all stated conditions for a successful strategic alliance. It is not possible to anticipate all events and conflicts during the preparatory period, whereas success cannot be ensured through precisely defining rules. Here one can state the following recommendations:

- the process of integration must commence prior to signing the contracts;

- it is recommended to appoint the responsible manager having exclusively these tasks and addressing only the process of integration;
- in the integration period the process of restructuring is to commence as soon as possible,
- integration does not refer merely to business activities but also to the cultures of the partners.

Corporate linkage must have sufficient flexibility in order to respond to changes either in its environment or in the life cycle of the alliance itself, in other words, the principles of co-operation, which had been set prior to establishing the integration, should be repeatedly reassessed.

Strategic equity and non-equity alliance has become, regardless of our will, an integral part of modern strategic thinking and acting. It is obvious that equity and non-equity alliance, despite the many obstacles, traps and difficulties which hinder the rate of successfulness of alliances, has many advantages and benefits pointing the trend steeply towards continuation. According to certain findings, more than a half of all corporations worldwide already participate in various forms of alliances, and the proportion is still increasing, since the rate of success should grow by increased experience and scientific research into alliances.

Objectives, which had been set-up prior to establishing the alliance in order to justify the investment (in a financial, time, effort sense, and opportunity possibilities), frequently will not be possible to achieve if during the integrative period revolutionary methods of change are not applied, to which one can classify restructuring and reengineering. Therefore, it is essential to be successful, not only in the rules and principles of strategic alliances but also in the methods of radical changes – such are restructuring and reengineering – in order to successfully prepare and implement a strategic partnership which will give rise to synergy effects and not result in a failure, since otherwise we remain far away from the planned objectives.

Conclusion

Globalisation has intensified competition to such an extent that the corporations, merely with one's own resources, cannot achieve acceptable success any longer. Objectives, which had been set-up prior to establishing the alliance in order to justify the investment, frequently will not be possible to achieve if during the integrative period revolutionary methods of change are not applied, to which one can classify restructuring and

reengineering. Entering into equity and strategic business non-equity alliances is a highly demanding procedure, which involves a set of tasks, duties and procedures as such, which can be classified into three time periods, in regard to the course of emerging of a particular alliance: period prior to entering into alliance, period of entering into alliance and period consequent to entering into alliance.

During the post-integrative period the anticipated and needed changes have to be carried out in a rapid and consistent manner in order to achieve developmental objectives and planned synergy effects.

In this article the following recommendations have been stated: the process of integration must commence prior to signing the contracts; it is recommended to appoint the responsible manager having exclusively these tasks and addressing only the process of integration; in the integration period the process of restructuring is to commence as soon as possible; integration does not refer merely to business activities but also to the cultures of the partners.

Notes

- 1 Lynch (1993, 18) states that well-known strategic alliances should be complemented by at least as many alliances which remain covert as hidden competitive advantages. Well-known consultant houses (Booz, Allen & Hamilton) estimate a formation of more than 32,000 strategic partnerships in the period 1996–1998.
- 2 Characterised as international capital transactions are those which combine equity of incorporated entities from two or more countries. According to certain estimates (UN 2000, XIV) the international equity mergers and take-overs represent 25% of all mergers, acquisitions and take-overs, while the trend points to increasing.
- 3 More on various aspects and descriptions of strategic co-operations and integrations can be found in the following papers: e. g. Aiello and Watkins 2001, 39–40; Bleek and Ernst 1993, 45; Büchel et al. 1998, 52; Connell, LaPlace, and Wexler 2000, 7.
- 4 According to Devine (2002, 106), the process of integration has four stages, also designated as the '4c': putting commitments into effect (commitments): openness and trustfulness; defined roles, objectives, milestones, managerial structure ... (coordination); gathering information and ideas, listening, SWOT analysis (co-operation); joint activities, wider inclusion (collaboration).

- 5 Ramu (1997, 87) distinguishes among the following types of integration: strategic integration, tactical integration, operational integration, interpersonal integration and cultural integration.
- 6 Different associations use a most diversified range of terms for expressing radical changes as a managerial method which, on the other hand, often lack definitions of its contents and a critical and principled approach.
- 7 By the developmental restructuring one usually bears in mind restructuring of the entire corporation along with introduction of all required areas in order to achieve (more rapid) development of the corporation as an integrity. We are using the term here to discuss restructuring in the area of development (the developmental corporate function) as a section of a corporation.
- 8 Crisis is a short-term, less favourable, undesired and critical state in a corporation which has arisen due to both external and also internal causes and directly endangers the future existence and development of the corporation (Dubrovski 2000, 2).
- 9 In regard to this, acquisitions and take-overs are divided into two groups: those, which represent an opportunity (opportunity driven), and those which are driven by problems in target corporations (problem driven) (Lynch 1993, 71).
- 10 Since integrations in Slovenia frequently took place as a matter of fashion or a matter of corporate necessity, involving excessive activity of share takeovers and purchase of shares, various forms of competition over acquisition of a particular corporation and other equity transactions in order to achieve even non-business or non-economical interests, while development or even urgency for crisis solving in one's own corporation has been neglected. Thus, obsession with takeovers can have negative consequences which are visible by: the exhaustion of the corporation (appropriate resources should be procured for takeovers); shift of focus from one's own difficulties to others'; redirection of developmental investments (resources devoted to takeover activities instead of investments into one's own technology, HR and markets); inappropriate approach to crisis solving (resolving of crisis being sought through takeovers instead of carrying out profound internal measures).
- 11 Examples of life cycles for some alliances can be found in the literature by Spekman, Isabella, and MacAvoy (2000, 133–7).
- 12 A study on key factors of successful management of integrated corporations (interviews with 50 corporate representatives) classified clarity of purposes and objectives as the primary factor, followed by ap-

pointment of a quality management and planning in advance (Hamill 1993, 3).

- 13 A research into 45 acquisitions in Slovenia (Lahovnik 2001), based on questionnaires and interviews, found that 47% of partners had not cooperated prior to linking.

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Key Sector Analysis: A Case of the Transited Polish Economy

Henryk Gurgul
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The transition process from a centrally planned economy to a market economy started in Poland at the beginning of the 1990s. In this paper we try to answer the question in which direction has the structure of Polish economy changed, if indeed it has. By means of the key sector analysis applied to the Polish input-output tables that come from the period 1990–2000, we find that the structure of the Polish economy still remains characteristic of a centrally planned economy rather than a market economy. Although, in the last year of the period under study, the first improvement symptoms could be observed (the increased significance of services in the Polish economy) but there is still a lot of work to be done. An inefficient operation in the case of some sectors reaches a considerable level. This is reflected by the structure of the most important input-output coefficients, of which, the most important inputs are located on the diagonal of the sensitive matrix.

Key Words: input-output tables, transition, key sector analysis

JEL Classification: C67, P21

Introduction

In the early 1990s the centrally planned Polish economy started transforming into a market economy. Without any economic theory on how to carry out such a process, this task appeared to be very difficult. In the first stage of the transition, the economy in Poland suffered from the two opposing trends in the macroeconomic statistics. On the one hand, industrial output, wages and salaries dropped considerably and on the other, inflation and unemployment rose. Although, Balcerowicz's plan based on the three nominal anchors allowed inflation to be kept under control, the other macroeconomic statistics still remained below an advisable level. The first improvement symptoms could be observed in

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trade, and later also in services. Manufacturing, especially in the case of heavy industry, appeared to be extremely resistant to change.

The transition process did not avoid the basic principles used by the Central Statistical Office in Poland when preparing the input-output tables. For example, the Polish input-output table from 1990 was compiled according to the material product system (MPS), while the table for 1995 and later was made according to the system of national accounts (SNA). Therefore, the first task was to transform the input-output matrix from 1990 into the SNA system to assure the comparability of the matrices coming from different periods and the results of the computations based on these matrices.

Under this study, we decided to analyse the changes of the economic structure by means of methods based on the entropy theory (key sector analysis).

In 1967 Theil published his work on the entropy decomposition analysis, which provided a useful way of examining errors or changes in input structures. Theil (1967) suggested that a change could be decomposed into a set of additive components and he formulated a maximum entropy principle. On the basis of this principle, so-called key sector analysis can be performed. Key sector analysis provides empirical evidence regarding the economic structure of sectors within an economy (Chenery and Watanabe 1958; Hewings and Romanos 1981; Hewings 1982; Defourny and Thorbecke 1984; Białas and Gurgul 1998). The main aim of the key sector investigations is to find the sectors whose structure has the greatest impact on the rest of the economy. A key sector analysis of backward and forward linkages is related to the so-called multiplier product matrix (MPM). This matrix is based on the maximum entropy criterion. By means of this matrix, the probable future course of economic development can be identified. The interaction of the different firm strategies towards innovation explains the dynamics of the entries in the input-output matrix. Rasmussen (1956) introduced to economics the notions of backward and forward linkages. These two indices allow us to find the key sectors of an economy.

The Entropy Decompositions

A static IO model (Ćmiel and Gurgul 1996a; 1996b; 1997) is given by the equation

$$y = (I - A)x, \quad (1)$$

where A denotes the IO matrix, x the output vector, and y the final demand vector.

Therefore,

$$x = (I - A)^{-1}y = By. \tag{2}$$

Define

$$B_{i\bullet} = \sum_{j=1}^n b_{ij}, \tag{3}$$

$$B_{\bullet j} = \sum_{i=1}^n b_{ij}, \quad \text{and} \tag{4}$$

$$V = \sum_{i,j=1}^n b_{ij}. \tag{5}$$

The input-output multiplier matrix (MPM) (Sonis and Hewings 1989) is given by the formula:

$$M = \frac{1}{V}[B_{i\bullet}B_{\bullet j}] = \frac{1}{V} \begin{bmatrix} B_{1\bullet} \\ B_{2\bullet} \\ \vdots \\ B_{n\bullet} \end{bmatrix} [B_{\bullet 1}, B_{\bullet 2}, \dots, B_{\bullet n}] = [m_{ij}]. \tag{6}$$

Thus, the structure of the MPM is essentially connected with the properties of the sectoral backward and forward linkages defined below.

Assuming that $B_{\bullet j_0}$ stands for the largest column multiplier and $B_{i_0\bullet}$ for the largest row multiplier, then the element located at (i_0, j_0) is given by the formula:

$$m_{i_0j_0} = \frac{1}{V}B_{i_0\bullet}B_{\bullet j_0}, \tag{7}$$

which is called the largest cross. If this cross is excluded from M , then the second largest cross can be found. After the exclusion of row i_0 and j_0 , the second largest cross $m_{i_0j_0}$ can be found and so on. The number of crosses is equal to the rank of the matrix MPM. Following Rasmussen (1956), there are two types of indices of the Leontief inverse, which are called backward linkages

$$BL_j = \frac{\frac{1}{n} \sum_{i=1}^n B_{ij}}{\frac{1}{n^2} \sum_{i,j=1}^n B_{ij}} = \frac{nB_{\bullet j}}{V}, \tag{8}$$

and forward linkages

$$FL_i = \frac{\frac{1}{n} \sum_{j=1}^n B_{ij}}{\frac{1}{n^2} \sum_{i,j=1}^n B_{ij}} = \frac{nB_{i\bullet}}{V}. \tag{9}$$

A backward linkage greater than 1 ($BL_j > 1$) means that a unit change in final demand in sector j will create an above average increase in activity in the economy, and analogously if forward linkage is greater than 1 ($FL_i > 1$), it is taken for granted that a unit change in all sectors of the final demand will create an above average increase in sector i .

Definition 1. Sector k is called key sector if both indices are greater than 1.

Definition 2. Sector k is forward linkage oriented if FL is above 1 and BL is below 1.

Definition 3. Sector k is backward linkage oriented if FL is below 1 and BL is above 1.

Definition 4. Sector k is called weak oriented if both indices are less than 1.

Assuming $B = (I - A)^{-1} = [b_{ij}]$ to be Leontief inverse, also known as the matrix of total inputs. For each location (i_0, j_0) we define a matrix $F(i_0, j_0)$ (Sonis and Hewings 1989; 1992) of the form:

$$F(i_0, j_0) = \begin{bmatrix} B_{1i_0} \\ B_{2i_0} \\ \vdots \\ B_{ni_0} \end{bmatrix} [B_{j_01}, B_{j_02}, \dots, B_{j_0n}] = [b_{ii_0} b_{j_0j}]. \quad (10)$$

This matrix is referred to as the *first order field of influence of change*. The economic interpretation of this matrix is related to the Sherman-Morrison (1950) formula. By using this formula, changes of entries in matrix B can be investigated. If the change e is located in position (i_0, j_0) in matrix A , following the above mentioned Sherman-Morrison formula, we have

$$b_{ij}^{e(i_0, j_0)} = b_{ij} + \frac{b_{ii_0} b_{j_0j} e}{1 - b_{j_0i_0} e}, \quad (11)$$

or in matrix form

$$B^{e(i_0, j_0)} - B = \frac{e}{1 - b_{j_0i_0} e} F(i_0, j_0). \quad (12)$$

The sum of all components of the matrix $F(i_0, j_0)$ is given below:

$$S(F(i_0, j_0)) = \sum_{i,j} b_{ii_0} b_{j_0j} = B_{\bullet i_0} B_{j_0 \bullet} \quad \text{and} \quad (13)$$

$$M = \frac{1}{V} [S(F(j, i))]. \quad (14)$$

These formulas allow us to investigate the importance of direct inputs, which means the impact of the coefficients of A on $B = (I - A)^{-1}$.

Below we demonstrate that MPM has the property of maximum entropy (Shannon and Weaver 1964; Theil 1967; Kullback 1970).

Let $Q = [Q_{ij}]$ be a positive matrix and

$$\sum_j Q_{ij} = B_{i\bullet}, \quad \sum_i Q_{ij} = B_{\bullet j} \quad \text{and} \quad \sum_{ij} Q_{ij} = V. \tag{15}$$

Consider the probability spaces $(\mathcal{X}, \mathcal{F}, P_i)$ $i = 1, 2$, that is a basic set of elements $x \in \mathcal{X}$ and a collection \mathcal{F} of all possible events (sets) made up of elements of the sample space \mathcal{X} for which a probability measure P_i , $i = 1, 2$ has been defined. Assuming that the probability measures P_1 and P_2 are absolutely continuous with respect to one another, then there exists a probability measure μ (for example $\mu = (P_1 + P_2)/2$) and functions $f_i(x)$, $i = 1, 2$ called the generalized probability densities (Radon-Nikodym derivatives), unique up to sets of probability zero in μ , measurable in μ , $0 < f_i(x) < \infty$ almost everywhere in μ such that, for all $A \in \mathcal{F}$, $P_i(A) = \int_A f_i(x) d\mu(x)$, $i = 1, 2$.

Applying the Taylor expansion

$$\log x = x - 1 - \frac{1}{2c^2}(x - 1)^2, \quad c \in (\min\{1, x\}, \max\{1, x\}),$$

one can see that

$$\begin{aligned} & \int_{\mathcal{X}} f_1(x) \log \frac{f_2(x)}{f_1(x)} d\mu(x) \\ &= \int_{\mathcal{X}} f_1(x) \left\{ \frac{f_2(x)}{f_1(x)} - 1 - \frac{1}{2c^2} \left(\frac{f_2(x)}{f_1(x)} - 1 \right)^2 \right\} d\mu(x) \\ &= \int_{\mathcal{X}} (f_2(x) - f_1(x)) d\mu(x) - \frac{1}{2c^2} \int_{\mathcal{X}} f_1(x) \left(\frac{f_2(x)}{f_1(x)} - 1 \right)^2 d\mu(x) \\ &= \int_{\mathcal{X}} f_2(x) d\mu(x) - \int_{\mathcal{X}} (f_1(x) d\mu(x) \\ &\quad - \frac{1}{2c^2} \int_{\mathcal{X}} f_1(x) \left(\frac{f_2(x)}{f_1(x)} - 1 \right)^2 d\mu(x) \\ &= 1 - 1 - \frac{1}{2c^2} \int_{\mathcal{X}} f_1(x) \left(\frac{f_2(x)}{f_1(x)} - 1 \right)^2 d\mu(x) \leq 0. \end{aligned}$$

The inequality

$$\int_{\mathcal{X}} f_1(x) \log \frac{f_2(x)}{f_1(x)} d\mu(x) \leq 0$$

is known as the basic information inequality.

Applying this inequality to the two dimensional distributions with the density function $f_{XY}(x, y)$ and the product of one dimensional distribution $f_X(x)f_Y(y)$ we have

$$\int_{\mathbf{X}} f_{XY}(x, y) \log \frac{f_X(x)f_Y(y)}{f_{XY}(x, y)} d\mu(x, y) \leq 0,$$

and as a consequence

$$\begin{aligned} & \int_{\mathbf{X}} f_{XY}(x, y) \log f_{XY}(x, y) d\mu(x, y) \\ & \leq - \int_{\mathbf{X}} f_X(x) \log f_X(x) d\mu(x) - \int_{\mathbf{X}} f_Y(y) \log f_Y(y) d\mu(y). \end{aligned}$$

The above inequality can be written in the form

$$H(X, Y) \leq H(X) + H(Y),$$

where

$$H(X) = - \int_{\mathbf{X}} f_X(x) \log f_X(x) d\mu(x)$$

is called the entropy of random variable X (or its distribution).

Similarly

$$H(X, Y) = - \int_{\mathbf{X}} f_{XY}(x, y) \log f_{XY}(x, y) d\mu(x, y)$$

is called the entropy of a two dimensional random variable (X, Y) (or its distribution).

For the discrete two dimensional distribution we have (in a special case) the inequality

$$\sum_{i,j} p_{i,j} \log \frac{p_{i\bullet} p_{\bullet j}}{p_{ij}} \leq 0.$$

Hence

$$- \sum_{i,j} p_{i,j} \log p_{i,j} \leq - \sum_i p_{i\bullet} \log p_{i\bullet} - \sum_j p_{\bullet j} \log p_{\bullet j}. \quad (16)$$

Applying this result to the probabilistic distribution $Q(p_{ij} = Q_{ij}/V)$ and the product M of its marginals ($p_{i\bullet} = B_{i\bullet}/V$ and $p_{\bullet j} = B_{\bullet j}/V$) and taking into account

$$H(Q) = - \sum_{i,j} p(i, j) \ln p(i, j) = - \sum_{i,j} \frac{Q_{i,j}}{V} \ln \frac{Q_{i,j}}{V} \quad (17)$$

we have

$$H(Q) = - \sum_{i,j} \frac{Q_{i,j}}{V} \ln \frac{Q_{i,j}}{V} \leq - \sum_{i,j} \frac{B_{i\bullet} B_{\bullet j}}{V^2} \left(\ln \frac{B_{i\bullet}}{V} + \ln \frac{B_{\bullet j}}{V} \right)$$

$$= - \sum_{i,j} \frac{B_{i \bullet} \cdot B_{\bullet j}}{V^2} \ln \frac{B_{i \bullet} \cdot B_{\bullet j}}{V^2} = H(M). \quad (18)$$

The multiplier product matrix M depends on the column and row multipliers. Therefore, M_{PM} does not take into account the interactions of each sector with other sectors. From (18) it follows that M_{PM} has the property of maximal entropy in the class of all matrices with fixed marginals. For the case where simultaneous changes occur in two places (i_0, j_0) and (i_1, j_1) in a direct inputs matrix, a formula similar to (11) can be derived (see Hewings and Romanos 1981).

Notice that the sum of all the elements of M is equal to the sum of all the elements of B .

Matrix M represents the maximum entropy tendency. Thus, matrix M may be considered to represent the most homogenous distribution of the components of the column and row multipliers of the Leontief inverse B (which represents total inputs). From the economic point of view, the M_{PM} matrix stands for the equalisation tendency of total inputs in an economy (i. e. in all industries the same – in monetary approach – output needs approximately the same input).

Define

$$D = \text{diag}(B - M) \quad (\text{diagonal}),$$

$$R = B - M - D,$$

$$S = 2^{-1}(R + R^T) \quad (\text{symmetric with null diagonal}),$$

$$S_a = 2^{-1}(R - R^T) \quad (\text{asymmetric with null diagonal}).$$

Therefore,

$$R = 2^{-1}(R + R^T) + 2^{-1}(R - R^T) = S + S_a.$$

Thus

$$B = M + D + S + S_a,$$

where M represents the maximum entropy tendency and the diagonal matrix D stands for the so-called additional sectoral scale effects. The symmetric matrix S and asymmetric matrix S_a represent the symmetric and asymmetric tendency.

Application to the Polish Input-Output Tables from the Period 1990–2000

The statistical data used here come from the Polish Statistical Yearbooks (published by The Central Statistical Office) covering the period 1990–2000. Since input-output tables are published on a basis of a five-year-period in Poland, we focus our attention on the three years in the period

TABLE 1 Key Sector analysis of the Polish economy over the period 1990–2000 (aggregation 6×6)

Sector	1990		1995		2000	
	FL	BL	FL	BL	FL	BL
1. Manufacturing	2.295	1.070	2.646	1.258	1.556	1.038
2. Construction	0.536	0.988	0.526	1.087	0.731	1.081
3. Agriculture and forestry	0.852	1.122	0.854	1.045	0.854	1.167
4. Transportation and communication	0.736	1.057	0.691	1.022	0.832	0.980
5. Trade	0.687	0.894	0.536	0.780	0.979	0.853
6. Service	0.894	0.869	0.747	0.808	1.047	0.881

of interest, namely: 1990, 1995, and 2000. We began by using an aggregation 6×6 . Using a notion of backward and forward linkages, the taxonomy of the Polish economy is carried out. This taxonomy characterises changes in the economic structure over the period under consideration (Sonis and Hewings 1981; Durand and Markle 1984). The results of key sectors analysis are summarised in table 1 and figures 1, 2, and 3.

Over the whole analysed period, the key sector was manufacturing. This indicates that a unit change in final demand in this sector will create an above average increase in activity in the economy, and unit change in all sectors of the final demand will create an above average increase of output in this sector. It is worth noting that both the backward and forward linkages of this sector tend to increase only in the first half of the analysed period, while in 2000 their level is even below the one observed in 1990. This means that the influence of the changes in the final demand of this sector on the whole economy was initially becoming stronger with time, but then the trend was reversed. It should also be emphasised that there is no forward linkage oriented sector at this level of aggregation except for services in 2000. The backward oriented sectors were agriculture and forestry as well as transportation and communication, but in the case of the second one, only over the first half of the analysed period. Also, construction could be considered as a backward linkage oriented sector since 1995, when its *BL* reached the greatest value. Apart from the key sectors, it is also interesting which of the selected sectors can be categorised as a weakly oriented sector. It results from our computations that trade alone is a weakly oriented sector over the whole period under consideration.

FIGURE 1 Visualisation of the results of key sector analysis for 1990

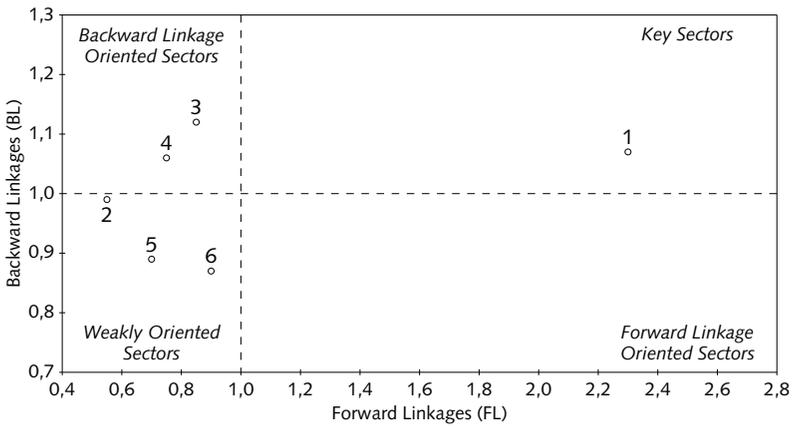


FIGURE 2 Visualisation of the results of key sector analysis for 1995

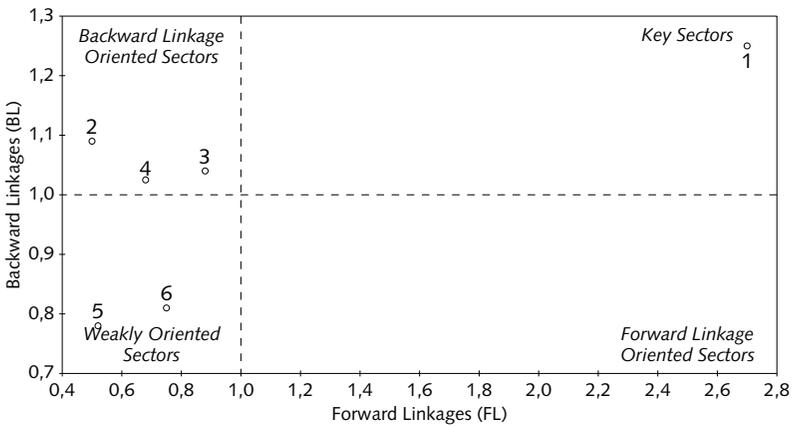
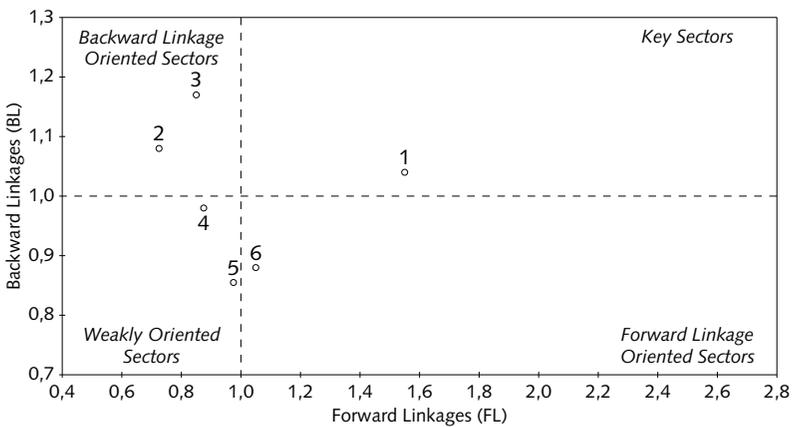


FIGURE 3 Visualisation of the results of key sector analysis for 2000



The investigations of the most important coefficients were performed by means of the Sherman-Morrison formula defined by (11), which gives the change in the entries of the Leontief inverse, caused by a change in one component of the direct coefficients matrix A . For any fixed position (i_0, j_0) we perturbed the corresponding element of A by replacing the element a_{i_0, j_0} by $a_{i_0, j_0}(1 + \varepsilon)$. Let us denote the direct coefficients matrix perturbed in this way by $A^{\varepsilon(i_0, j_0)}$. The number can be interpreted as the relative perturbation of a_{i_0, j_0} . Then the inverse error matrix given by

$$B^{\varepsilon(i_0, j_0)} = \left[b_{ij}^{\varepsilon(i_0, j_0)} \right] = (I - A^{\varepsilon(i_0, j_0)})^{-1} - (I - A)^{-1},$$

the relative inverse error matrix

$$RB^{\varepsilon(i_0, j_0)} = \left[\frac{b_{ij}^{\varepsilon(i_0, j_0)}}{b_{ij}} \right], \quad \text{and its norm}$$

$$\|RB^{\varepsilon(i_0, j_0)}\| = \sum_{i, j=1}^n \left| \frac{b_{i, j}^{\varepsilon(i_0, j_0)}}{b_{i, j}} \right|$$

were computed.

In the same way we computed the above elements for all possible positions (i_0, j_0) , so we finally obtained the sensitivity matrix

$$SM = \left[\|RB^{\varepsilon(i_0, j_0)}\| \right].$$

Then we assigned ranks in descending order for the elements of this matrix. Rank 1 in position (i_0, j_0) indicates that a_{i_0, j_0} is the most sensitive (according to the inverse) element of matrix A , i. e. the relative change of this element has the greatest influence on $B = (I - A)^{-1}$.

The analysis was done, in the first step, for the years 1990, 1995 and 2000 in an aggregation 6×6 . The results are presented in table 2.

One will find that the most important input-output coefficients are manufacturing products used as input by manufacturing itself, agriculture and forestry products used by agriculture and forestry itself or by manufacturing. Among the most important coefficients in the analysed periods are also the coefficients of manufacturing products used by agriculture and forestry or by transportation and communication or by services, and service products used by manufacturing, and products of trading used by manufacturing. The input coefficients whose changes are less important for the economy under study are also interesting. The least important coefficients in the considered periods were those of construction products used by construction itself or trade, agriculture and

TABLE 2 Inverse important coefficients over the period 1990–2000 (aggregation 6×6)

	1990						1995						2000					
	1.	2.	3.	4.	5.	6.	1.	2.	3.	4.	5.	6.	1.	2.	3.	4.	5.	6.
1.	1	7	8	5	11	4	1	7	4	6	11	10	1	5	7	8	17	4
2.	15	34	24	26	23	18	13	16	30	27	33	15	20	14	33	28	26	10
3.	2	33	3	36	30	35	2	35	3	36	26	34	2	36	3	35	30	34
4.	10	21	31	14	12	25	8	24	29	9	21	19	15	29	32	16	13	22
5.	6	29	20	19	32	27	12	25	31	20	32	18	6	23	19	21	25	24
6.	9	28	22	16	17	13	5	23	28	17	22	14	18	27	31	12	11	9

Note that inverse important coefficients are numbered according to importance. The ten top inverse important coefficients are in bold.

forestry products used by construction or by transportation and communication or by services.

The authors also provided the results of the decomposition of the Leontief inverse into the M (called MPM), diagonal, symmetric and asymmetric matrices in the years under consideration (see tables 3 and 4).

The additional effect greater than one can be observed in the case of such sectors as: agriculture and forestry (1990, 1995, and 2000), manufacturing (1995) and also transportation and communication (1995). The smallest effect can be identified in the case of the trade sector. From matrix S it follows that the largest (by absolute value) bilateral balances occur in the pair of sectors: agriculture and forestry and transportation and communication (1990), manufacturing and services (1995) as well as agriculture and forestry and services (2000). From matrix S_a it follows that the largest (by absolute value) bilateral imbalances were in the pair of sectors construction and manufacturing (1990–2000).

The authors also performed the computations for two different aggregations: 10×10 and 24×24 . Unfortunately, since 2000 the Central Statistical Office has published the Polish input-output tables on the basis of different schema that makes it impossible to prepare an aggregation 10×10 and 24×24 . Therefore, we have used an input-output matrix updating technique based on the sum of squared differences. More details can be found in Jackson and Murray (2004). The selected results are summarized below (see tables 5, 6, and 7).

One will notice that the superscripts of top inverse important coefficients (obtained from 100 and 576 coefficients) are strongly related to the

TABLE 3 Matrix M over the period 1990–2000 (aggregation 6×6)

	1990						1995						2000					
	1.	2.	3.	4.	5.	6.	1.	2.	3.	4.	5.	6.	1.	2.	3.	4.	5.	6.
1.	.873	.204	.324	.280	.262	.340	1.395	.277	.450	.364	.283	.394	.495	.233	.272	.265	.311	.333
2.	.806	.188	.299	.259	.241	.314	1.206	.240	.389	.315	.244	.340	.515	.242	.283	.275	.324	.346
3.	.916	.214	.340	.294	.274	.357	1.160	.231	.374	.303	.235	.327	.556	.261	.305	.297	.350	.374
4.	.863	.202	.320	.277	.258	.336	1.134	.225	.366	.296	.230	.320	.467	.219	.256	.250	.294	.314
5.	.730	.170	.271	.234	.219	.284	.865	.172	.279	.226	.175	.244	.406	.191	.223	.217	.256	.273
6.	.709	.166	.263	.228	.212	.276	.896	.178	.289	.234	.182	.253	.420	.197	.230	.225	.264	.282

TABLE 4 Matrix $[S_n \setminus D \setminus S]$ over the period 1990–2000 (aggregation 6×6)

	1990						1995						2000					
	1.	2.	3.	4.	5.	6.	1.	2.	3.	4.	5.	6.	1.	2.	3.	4.	5.	6.
1.	.952	-.143	-.226	-.171	-.211	-.199	1.133	-.161	-.210	-.243	-.241	-.278	.915	-.144	-.173	-.207	-.190	-.200
2.	-.644	.838	-.210	-.167	-.154	-.163	-1.009	.926	-.237	-.202	-.166	-.159	-.340	.949	-.246	-.200	-.175	-.184
3.	-.546	.062	1.096	-.248	-.195	-.217	-.684	.128	1.107	-.252	-.183	-.224	-.284	.017	1.071	-.240	-.167	-.245
4.	-.617	.069	-.014	.890	-.134	-.169	-.778	.081	-.047	1.011	-.156	-.157	-.182	.048	.037	.935	-.155	-.132
5.	-.431	.062	.014	.000	.845	-.150	-.564	.061	-.057	-.002	.881	-.135	-.053	.126	.159	.044	.843	-.156
6.	-.377	.128	.094	.121	.086	.899	-.456	.131	.029	.092	.050	.953	-.092	.111	.110	.130	.044	.917

Note that the diagonal elements of $[S_n \setminus D \setminus S]$ are equal to the diagonal element of D. The lower triangular elements of $[S_n \setminus D \setminus S]$ are equal to the lower triangular elements of S_n . Upper triangular elements of $[S_n \setminus D \setminus S]$ are equal to upper triangular elements of S.

TABLE 5 Key sector analysis of the Polish economy over the period 1990–2000 (aggregation 10×10)

Sector	1990		1995		2000	
	FL	BL	FL	BL	FL	BL
1. Group of industries of fuels and energy	1.372	1.061	1.420	1.027	1.073	0.893
2. Group of industries of raw material	1.711	1.048	1.922	1.170	1.050	0.991
3. Electromachine	0.963	0.994	1.004	1.169	0.753	0.958
4. Food	0.656	1.073	0.711	1.239	0.820	1.292
5. Group of light industries	0.947	1.029	1.140	1.093	0.887	0.979
6. Construction	0.561	0.960	0.545	0.984	0.797	1.054
7. Agriculture and forestry	0.968	1.091	0.911	0.955	1.026	1.167
8. Transportation and communication	0.860	1.027	0.812	0.920	0.989	0.956
9. Trade	0.839	0.871	0.585	0.711	1.299	0.845
10. Services	1.122	0.846	0.949	0.731	1.306	0.865

key sectors numbers. Therefore our conjecture is that the parameters of location of inverse important coefficients determine approximately the same key sectors as indicators BL_j and FL_i .

We also find that the most important input coefficients come from the main diagonal of the input-output matrix (large *intraindustry* flows). This means that this structure of the most important inputs was still typical for centrally planned economies (domination of raw materials and fuels). Large coefficients $a_{i,i}$ can be a signal of the inefficiency of economy (*intraindustry* flows dominate *interindustries* flows – i. e. in some branches their production is mainly devoted to their input, therefore, some branches producing final goods can experience a shortage of intermediate goods needed for their own inputs). In highly developed market economies these coefficients are lower. In the considered periods we also find some important input-output coefficients connected with *interindustries* flows, for example, agriculture and forestry products used as input by the food industry, food products used as input by trade, metallurgical products used as input by the electromachine industry. In these three cases, the importance of these coefficients is somewhat natural.

Other conclusions (analogous to the case of aggregation 6×6) are left to the reader.

TABLE 6 Key sector analysis of the Polish economy over the period 1990–2000
(aggregation 24×24)

Sector	1990		1995		2000	
	FL	BL	FL	BL	FL	BL
1. Products of the coal and fuel industry	1.826	1.116	2.067	1.014	1.261	0.797
2. Energy, gas, hot water	1.273	1.031	1.223	1.049	1.212	1.042
3. Metal ores, products from metallurgic irons and non-ferrous industry, recycling of metals	1.921	1.107	2.004	1.409	1.288	1.254
4. Products of metal industry	0.863	0.992	0.880	1.113	0.876	1.061
5. Machinery and device	1.017	0.972	1.031	1.123	0.761	1.053
6. Products of precise industry	0.554	0.921	0.797	1.199	0.716	1.023
7. Products of the transport industry and the transportation trade	0.782	1.044	0.952	0.975	0.975	1.008
8. Products of electrotechnical industry	0.833	1.063	0.624	1.148	0.599	0.880
9. Chemicals and chemical products and products manufactured with other non-metal materials	1.765	1.072	2.703	1.104	1.227	1.002
10. Products of the wood industry but not including furniture	0.944	1.056	0.700	1.089	0.813	1.100
11. Products of the paper and printing industry, data carriers, remaining products and material services	1.109	1.017	1.279	1.168	0.921	0.986

Continued on the next page

Conclusions

The main aim of this paper is to carry out a taxonomy of the Polish economy in transition. A further interest is to identify the most important input-output coefficients and also answer the question as to whether or not the structure of the Polish economy is still characteristic for a centrally planned economies.

Applying the methods based on the entropy theory, we identified the sectors which can be considered as a key, and examined the additional

TABLE 6 (continued)

Sector	1990		1995		2000	
	FL	BL	FL	BL	FL	BL
12. Textiles	0.821	1.066	0.862	1.173	0.656	0.889
13. Clothes and products manufactured from fur, skin or products manufactured with skin	0.592	1.001	0.561	1.000	0.587	0.892
14. Food	0.879	1.094	0.819	1.248	0.962	1.343
15. Production and services of construction	0.717	0.980	0.733	1.000	1.125	1.102
16. Agriculture, hunting, forestry and fishing	1.251	1.112	1.074	0.956	1.165	1.211
17. Transportation	1.264	1.085	0.975	0.958	1.130	0.976
18. Communication	0.567	0.826	0.581	0.721	0.905	1.048
19. Trade	1.368	0.890	0.544	0.692	1.859	0.870
20. Municipal services, water and its distribution	0.604	1.145	0.467	0.846	0.760	0.937
21. Housing services	0.502	0.924	0.857	0.810	0.747	0.997
22. Education, medical services, social services	0.604	0.823	0.450	0.688	0.647	0.742
23. Services for people (hotels, restaurants, tourism, financial agency, leasing of machines and services)	0.803	0.916	1.447	0.841	2.244	1.021
24. Government administration, organizations	1.139	0.745	0.369	0.675	0.564	0.766

scale effects as well as the symmetric and asymmetric tendency in the economy. The striking empirical finding based on the most important input-output coefficient analysis is that the greatest importance is associated with the input coefficients which come from the diagonals of input-output matrices. It can be concluded that the structure of most important inputs was still typical for centrally planned economies even in 2000. In addition, large input coefficients $a_{i,i}$ may be a signal of an inefficiency of the Polish economy over the period under consideration.

It is worth noting that there exist also positive tendencies in the Polish economy. For example, the increased importance of services. In our opinion, this trend will continue also in the future.

TABLE 7 Ten top inverse important coefficients

Aggregation	Year	Coefficients
10 × 10	1990	$a_{2,2}; a_{1,1}; a_{7,7}; a_{5,5}; a_{7,4}; a_{4,9}; a_{2,3}; a_{1,2}; a_{3,3}; a_{9,2}$
	1995	$a_{2,2}; a_{1,1}; a_{5,5}; a_{3,3}; a_{4,4}; a_{7,7}; a_{2,3}; a_{7,4}; a_{8,8}; a_{10,2}$
	2000	$a_{1,1}; a_{3,1}; a_{3,3}; a_{1,6}; a_{1,2}; a_{5,1}; a_{1,3}; a_{1,4}; a_{6,6}; a_{2,6}$
24 × 24	1990	$a_{3,3}; a_{1,1}; a_{9,9}; a_{16,16}; a_{11,11}; a_{16,14}; a_{1,2}; a_{12,12}; a_{14,19}; a_{16,10}$
	1995	$a_{3,3}; a_{9,9}; a_{11,11}; a_{1,1}; a_{1,2}; a_{12,12}; a_{14,14}; a_{16,16}; a_{16,14}; a_{5,5}$
	2000	$a_{3,3}; a_{23,23}; a_{16,16}; a_{16,14}; a_{14,14}; a_{1,2}; a_{3,4}; a_{7,17}; a_{13,18}; a_{9,2}$

Acknowledgments

The authors thank the anonymous referee for helpful comments. The authors also thank the managing director Artur Satora and Mrs Małgorzata Węglowska from Central Statistical Office in Warsaw for supplying data.

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Annual subscription (two numbers): individual rate 4.900 SIT (EURO 20); institutional rate 6.900 SIT (EURO 29). Prices include postage.

Printed in Slovenia

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