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## Editorial

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**Biographical notes:** Anthony Barker received his BSc in Economics degree from University of Bristol in 1991 and MSc in Economics from University of Warwick in 1992. He is currently a Director of the economic consultancy Cambridge Econometrics where he focuses on work in the areas of regional economic development, sustainable economic development, and the implications of new technologies.

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### 1 Introduction

The six papers published within this special issue present some of the key findings from a detailed study of the social and economic impact information society technologies (IST) on the European economies. The *SEAMATE*<sup>1</sup> project, was a two-year research project funded by the European Commission under its Fifth Framework Programme and undertaken by a consortium of eight organisations from across Europe<sup>2</sup> with input and consultation from many other researchers in the field.

The context for the study was that at the end of the 1990s and early in the next decade there was considerable optimism over the opportunities that the internet in particular and IST in general was to provide. However, for the most part the claims being made were not founded on considered analysis. At the same time the experience of the USA was being cited as showing the economic benefits that substantial investment in IST could bring through productivity growth. By the time *SEAMATE* was being conceived in 2001 the environment was one where the initial euphoria about what the internet could provide had disappeared alongside the collapse of the internet bubble. While it was clear that in many ways the business and social environments had changed, there was a greater sense of realism regarding the scale of change. However, there remained little in the way of solid analysis of the impact that these changes are likely to have on the economies of Europe. What studies there were typically restricted their view to the impact of e-commerce. For example, Cambridge Econometrics (2000) considered the issue of the UK and Brookes and Wahhaj (2000) looked at it from an international perspective, though not in an integrated approach.

It was this situation, of clear changes occurring in the business and social environments and at the same time little authoritative analysis on these issues to inform policy makers which provided the motivation for the *SEAMATE* project. *SEAMATE* was to make a difference; to provide policy makers with a better understanding of the nature and scale of change that IST was set to stimulate in the business and social environments.

## **2 Overview of the research**

The objective for *SEAMATE* was to analyse the overall economic impact of Information Society Technology (IST) within the context of the European Union (EU) and national policies. This objective was pursued through a structured programme of work conducted over a period of 27 months.

The project was divided in six areas of work. Research was focused on two systems: the European social system and the European business system. Acting on these systems are technological changes in IST and many other changes in the world (e.g., socio-economic and cultural changes) that are outside the control of EC policymakers. Based on an exploration of these contextual factors, one area of work produced IST outline scenarios representing changes in technology and other external factors. These outline scenarios and the parallel assessment of fundamental prerequisites and drivers of growth were provided as inputs to subsequent areas of study. Two additional areas of work refined the analysis of the impacts of IST, respectively on the business system and society at large. Each of these three initial areas of study produced their own appraisal of IST impacts and possible strategies of adapting to information technology in Europe, identifying key issues, current evidence and relevant research questions to be answered, based on the state of the art knowledge in the fields of technology, economy and society. A further area of analysis focused in detail on a microeconomic analysis of possible impacts, and this provided additional insights about the effects of selected technologies on the business system. Based on the above, a set of assumptions on the IST impacts and plausible effects of related macro and sectoral policies was determined and used, in the second year of the project, as drivers for modelling macroeconomic scenarios using the E3ME model, a macroeconomic input-output model developed to simulate structural changes of the national economies for EU 15 countries, Norway and Switzerland. The E3ME model was used to model the outcomes from combinations of social and business scenarios and in each case produced macroeconomic performance indicators. The outcomes on in the range of social, business, and macroeconomic performance indicators within E3ME in the various scenarios were compared with EC policy goals in order to identify implications for policy changes. Finally, in the process of developing the scenarios and identifying the social, business, and macroeconomic performance indicators, the need for new statistical classifications and data to be collected to track the IST changes and their impacts has been identified.

## **3 Key messages from the research**

The papers that follow provide an overview research undertaken and the findings from each of the pillars of work. Full details are provided in the accompanying project reports.<sup>3</sup> Although each pillar of work raises important issues and conclusions relating to its particular area of study (be it business impacts, social impacts or macroeconomic analysis) a number of key messages do come out that cut across some or all research areas:

- The likelihood that IST solutions are adopted is influenced as much by factors related to preparedness of the population, such as ‘culture’, attitude to risk, as factors related to opportunity (e.g., price, security) and availability of IST. For example, many companies see the main challenge in utilising IST coming from the need to establish the associated organisational and cultural change within companies that would allow information technology solutions to contribute to productivity and profitability rather than to implement technology-based solutions per se. A consequence of this is that differences in national culture (social capital) will influence adoption rates and result in international differences.
- Investment in IST will bring stronger economic growth but it will not close key disparities nor generate much net employment. The impact is unlikely to be sufficient on its own to close existing gaps in GVA per capita substantially, and because the investment in IST boosts productivity, the net impact on employment generation is relatively small, with increases likely in sectors with slow productivity growth whose products are income-elastic (e.g., catering). In some cases ‘successful’ implementation of IST is likely to mean fewer jobs in the implementing sector (e.g., e-banking), but this would be compensated by employment growth in other sectors (transfer of resources to more productive uses). The main impact of e-commerce is to lower prices and raise the standard of living of consumers, rather than to boost output and employment growth.
- The quality of data available to measure the economic impact of IST is poor. At the macroeconomic level key data gaps include skills by sector and investment in IST assets by sector. At the firm level there is still a lack of reliable empirical information about the nature of e-business development and of its impact on the value chains of sectors.
- The impact of IST would be strengthened if the level of organisational/managerial skills within companies were greater. This would enable the necessary changes in an organisation’s structure and skill set could be implemented alongside the introduction of IST. Indeed, many companies pursue a rather defensive strategy in ICT implementation. This can be in terms of the type of application they introduce (most e-commerce systems introduced are little more than e-catalogues or standardised e-mail forms which aim at improving customer service and increasing efficiency of working procedures), but recently the defensive attitude of companies is a direct implication of the previous e-business hype and the realisation that previous investments did not reap the returns that were initially expected.
- Current policy has a narrow focus and is founded on limited data. Policy has tended to focus on trying to increase the change of technologies being adopted by influencing factors relating to access and opportunity. However, the evidence base to justify, monitor and evaluate policies is currently weak. The strategy for determining priorities for data collection needs to change and should be organised according to a hypothesis-driven inductive approach, so that indicators are available to support policy development. Current data are particularly poor at addressing which types of IST result in which impacts, how effectively can policy actions steer the users’ decisions to adopt different types of IST, how observed impacts affect the users’ decisions to adopt differently and how effective is policy at steering different impacts.

## **References**

- Brookes, M. and Wahhaj, Z. (2000) *The Shocking Economic Effects of B2B*, Goldman Sachs Global Economic Paper No. 37, February.
- Cambridge Econometrics (2000) 'The UK and key technologies – biotechnology and ICT', *Report prepared for the Economic and Social Research Council*, Cambridge.

## **Notes**

- <sup>1</sup>Socio-economic Analysis and Macro-Modelling of Adapting to Information Technology in Europe, Contract Number: IST-2000-31104.
- <sup>2</sup>The consortium comprises Cambridge Econometrics (UK), Econcept (Switzerland), ISIS (Italy), BIBA (Germany), SINTEF (Norway), RAND Europe (Netherlands), SFSO (Switzerland), FGM-AMOR (Austria).
- <sup>3</sup>The reports are freely available from the project website, [www.seamate.net](http://www.seamate.net).