

## MODERNIZING POLISH AGRICULTURAL ECONOMICS TEACHING AND RESEARCH: AN EVALUATION OF ACADEMIC COOPERATION

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### ABSTRACT

Twenty-five years ago in response to the collapse of communism in Poland, an academic consortium was formed around two Polish Universities of Life Sciences (formerly Universities of Agriculture) for a Tempus project. The consortium has expanded from a project to revise curricula in agricultural economics within a market economy to much wider educational and research interests. The consortium's main achievement has been in the organisation and accreditation of MBA programmes which has subsequently been augmented by a network for other educational and research programmes in a number of countries (AGRIMBA). This article explores the social net benefits of this example of investment in human capital relying on the concepts laid down by the Nobel Prize winners Theodore Schulz and Gary Becker.

**Key words:** Tempus, MBA, Human Capital, AGRIMBA, Cost Benefits of Education

### INTRODUCTION

Shortly after the rise of the Solidarity movement in Poland, which led to the collapse of the communist regime and the adoption in 1989 of a market economy, initial discussions took place between the agricultural economics departments in the Scottish Agricultural College (SAC) at Aberdeen in Scotland and in the Warsaw University of Life Sciences – SGGW together with Lublin Agricultural University. Eventually, a larger European Union wide group was formed including the University College Cork in Ireland, Giessen University in Germany and Wageningen University in the Netherlands. This group submitted an application for an EU funded project within the Tempus program with the objective of assisting in the design of new curricula for Agricultural Economics teaching in the emerging Polish market economy. Over time this group expanded within Poland, to other Member States and to other (then) applicant countries, in the first instance the Czech Republic and Hungary.

The successful completion of the Tempus project, which began in 1992, was the foundation for several successive projects, which grew from earlier experiences over 25 years of co-operation in educational and research activities by both the initial and augmented consortia.

After 25 years of working together the consortium is in a unique position to evaluate what has been achieved for both students and staff – evaluation of the achievements grounded on the successful co-operation of the large academic consortium is the main objective of this paper. Since a large proportion of the consortium's activities

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was related to teaching, we also attempted in the paper to estimate payoffs for graduates of the Warsaw University of Life Sciences and MBA alumni.

A 25 year' long perspective makes it possible to comprehensively capture most of the direct economic benefits of the programmes. This has been attempted for the core achievements of the original Tempus Programme and the MBA at the Warsaw University of Life Sciences using the Nobel Prize winning concepts of investment payoffs in human capital by Schultz [1961] and Becker [1962]. Schultz postulates that the amount of investment by individuals and societies in education (and research) can be explained by the demand for new knowledge set against the extra costs of acquiring it [Schultz 1971]. The net payoffs have been used to estimate the extra earnings of students compared with the costs of provision by both the University and the students themselves. Becker's methods of estimating the financial returns from investments in college and high-school education in the United States are similar [Becker 1962, p. 9].

The benefits of hindsight over a long time period also make it easier to identify spin off and multiplier effects of the various programmes albeit in a mostly qualitative but nevertheless real way. These include the growth in the capacity of the staff in the consortium some of whom have had careers of great distinction, the replication of the MBA and the sharing of specialised knowledge. Cross-country research programmes have produced results of strategic importance.

## **THE JOURNEY FROM TEMPUS TO AGRIMBA<sup>1</sup>**

The historical sequence of the achievements in the initiatives that followed the initial Tempus project is described in Table 1.

The 1992 Tempus supported project was concerned with the teaching of Agricultural Economics and Agribusiness Management in Polish agricultural universities. This was achieved by the project facilitating more than 60 staff members and some students from all partner institutions participating in an exchange program as an aid to the discussion and revision of all the curricula in Agricultural Economics faculties in Warsaw and Lublin Agricultural Universities. Teaching in both of these centres was modernized by both, revising course content and course delivery methods.

At the wrap-up meeting of the first Tempus project in 1994 the providers realised that they had created over three years a team of people from different parts of Europe who had proved that they could successfully and advantageously work together. Accordingly, to sustain this network the unanimous idea was to develop and run an International MBA in Agribusiness Management. At the time, the network was comprised of academics and committed educationalists from several different countries and the MBA concept fitted their collective experience and shared goals. They also believed that EU enlargement would create additional demand for skills of existing agribusiness managers that could be developed within MBA studies. This goal to launch the MBA degree program would later be called the "Big Idea"<sup>2</sup>.

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<sup>1</sup> For more information on the International Network for the MBA in Agribusiness and Commerce (AGRIMBA) see <http://agrimba.net/>

<sup>2</sup> The Big Idea, as it is called now, came about at the meeting ending the Tempus project in a small guest house in Kaziemierz Dolny, away from our busy places of work before we had mobile phones and email. We had few distractions and so we had time for thought. A rare event? We were not chief executives or high fliers – ordinary teachers and researchers sufficiently confident that the institutions which employed us would back us in imagining what might be possible to make things better for our potential students. The Idea was not on the main agenda of our meeting – we could say it came up under "any other business" which occurred during informal activities, as many ideas do, when participants thinking while relaxed.

**Table 1.** Important milestones: on the journey from Tempus to AGRIMBA

Project	Period	Topics / Key issues
Tempus project	1992–1994	The teaching of agricultural economics and agribusiness management in Polish Agricultural Universities
Phare-TESSA <sup>a</sup> project	1994–1996	Training and education in strategically significant areas
Executive MBA programme launched at WUL-SGGW	1995/1996 February 1996	First group of students recruited – the International MBA Board established
Phare-ACE <sup>b</sup> research project	1995–1998	Evaluation of farm impacts of agricultural policy developments in the process of further integration in selected Visegrad and EU countries
MBA model introduced in other centres	1996	Modified MBA model introduced to other centres after curriculum adjustments (Prague Agricultural University, Kiev State Agrarian University)
Phare-FAPA <sup>c</sup> project	Year 2000	Coordination of the “Component A: Support to the MARD <sup>d</sup> in shaping the agricultural policies through the economic analyses”
AGRIMBA	2004–2007	Establishing a platform for future co-operation
Leonardo da Vinci Project <sup>e</sup>	2004–2006	Developing teaching materials and Quality Assurance Standards for the Network of MBA Programs in “Agribusiness Management”
AGRIMBA	Till present	Growth and broadening the scope of activities

<sup>a</sup> Assistance programme for restructuring the economies of Poland and Hungary and other eastern European applicant States to the EU.

<sup>b</sup> EU support for Actions for Cooperation in Economics.

<sup>c</sup> Foundation of Assistance Programmes for Agriculture.

<sup>d</sup> Polish Ministry of Agriculture and Rural Development.

<sup>e</sup> EU lifelong learning programme for vocational education and training.

Source: Own elaboration.

The first step in the development of the idea was supported by the Phare-TESSA programme, which funded the development of vocational curricula and teaching materials. The next step was to formalise the oversight of the MBA diploma by establishing an International Board in February 1996<sup>3</sup> which grew in importance for the purposes of validation and extending the number of centres offering an MBA in Agribusiness Management.

The idea of launching an MBA program focusing on the agri-food sector that was affordable for a large group of managers has also appealed to other life science universities in Central and Eastern Europe. Starting with the core group of executive MBAs in Warsaw, Debrecen and Prague the AGRIMBA network has expanded currently to 11 live high quality MBA programs under AGRIMBA’s umbrella. The international input of the programs is taken care of by colleagues of partner universities. The quality is guaranteed by AGRIMBA’s unique accreditation procedure, with the standing committee of the ICA<sup>4</sup> that makes the organisation a credible partner for Life Science Universities.

<sup>3</sup> The Board was composed of the following members: Graham Dalton and Garth Entwistle (SAC Aberdeen), Denis Lucey and Mary McCarthy (UCC Cork), Willem Heijman (Wageningen University), Robert Kowalski (CRDT, University of Wolverhampton), Stanislaw Gędek (Lublin Agricultural University), Stanislaw Stanko and Edward Majewski (SGGW (Warsaw University of Life Sciences)).

<sup>4</sup> ICA: Association for European Life Sciences Universities.

For the future, increasing the number of MBA students through better marketing is one of AGRIMBA's priorities. There are plans to extend the network to other countries where large numbers of students with limited budgets are seeking high quality education at relatively low costs. Such a development may also create good opportunities to extend scientific cooperation within the network and add to the multiplier effects within an augmented AGRIMBA consortium.

In the past 25 years the AGRIMBA network has increasingly becoming a platform for the exchange of ideas. Since 2009 a bi-annual congress AGRIMBA-AVA has been held for scientists and students to present their work. Achievements have been made known to a broader public by means of a new quarterly journal APSTRACT, published in the University of Debrecen (Hungary) with an international editorial board.

The Leonardo da Vinci programme granted funds for vocational education and training in 2004. The funds were used for further development of teaching materials and quality standards for a network of MBA programs in agribusiness management in different countries. Subject workbooks, case studies and exercises were all developed and were put on shared websites for access by teachers and students from all academic institutions participating in the project.

The Phare-ACE project added to the research capacity of the respective University Agricultural Economics Departments in a new European era post the Berlin Wall and in preparation for EU enlargement. The main challenge for the whole of the agricultural sectors of all the applicant countries was to adapt to a more market led economy either in or out of the EU. These changes created new sources of competition in commodity and food markets as well as investment opportunities for firms and farms specifically but not exclusively in the existing Member States.

Three new partners were included in the ACE consortium (Szent Istvan University Gödöllő, the University of Bonn and Slovak University of Agriculture in Nitra). The common modelling approach assessed the potential impacts on models of typical farms of different types from extending and modifying the Common Agricultural Policy (CAP) for different assumed scenarios of macro-economic conditions and agricultural market prices for a larger group of countries after the 2003 EU enlargement.

The Phare-FAPA project supported the Polish Ministry of Agriculture and Rural Development (MAFE) by economic analyses of agricultural policies in a more direct way than ACE. Polish agriculture and the food and rural sectors were seen in the 1990s as one of the greatest obstacles to EU accession. One view of the best way to accede to EU membership was simply to harmonise domestic arrangements with the EU *acquis* without seeking amendments and accept whatever variant of the CAP was to be offered. This large project in contrast attempted to answer more fundamental questions about how the Polish agricultural, food and rural sectors could be more assured of prosperity under different policies or strategies. These strategies were evaluated within different contrasting scenarios which represented possible but uncertain future states of affairs such as exchange rates, economic growth rates, the terms of accession and ongoing changes in the CAP to meet World Trade Organization (WTO) and other conditions prior to and beyond accession. The main output presented at a large conference was a 568-page book with 50 contributions from Polish authors complemented by others from across the EU. It brought together the very best information and analyses that were then currently available using all the accumulated knowledge and European wide contacts known to us. Detailed market analyses of most of the main agricultural products produced in Poland were included.

Both, the Phare-ACE and Phare-FAPA projects contributed to the accession preparations and negotiations by providing strategic information about the sensitivity of quota levels, base areas and the extent of Less Favoured Areas (LFA) within the CAP. The potential impact of support arrangements by farm type and size were equally valuable.

Methodological advances including models of typical farms and algorithms to quantify the responses to new agricultural policies and market opportunities was also an outcome of this work. Younger researchers, including MSc students increasingly took part in important EU wide strategic studies where they benefited from wider

contacts, exposure to new ideas and methods and the opportunities for travel and new cultural experiences [Majewski 2010]. The benefits of student research projects were also apparent in Phare and follow on EU Framework projects. This experience chimes with the findings of Ishiyama [2002] and Walkington [2015].

## ASSESSING THE IMPACT OF THE TEMPUS PROJECT

A historical evaluation over the 25 years since Tempus began is constrained by the existence and availability of appropriate data. This viewpoint has, nevertheless, the major advantage of highlighting real achievements including several unexpected outcomes and in some cases experiences that were not even considered. Today, for example, in the newly named Faculty of Economic Sciences at WULS-SGGW, four diploma programmes are taught (Economics, Management, Finance and Banking and Logistics) to about 4,500 students. The initial Tempus project was also the foundation for the international network of MBA programs, AGRIMBA, and for subsequent applied economic research.

A consortium life of 25 years has multiplied up most net benefits by far more than was ever envisaged. The providers have incurred the costs of provision, but from a more social perspective there were considerable enhanced capacity benefits over and above teaching and research functions. One of the main sources of this growth in capacity has been the willingness to share experiences among institutions and individuals within them and so achieve many benefits of specialisation for example, on the workings and impacts of the CAP in countries already members of the EU. There were also benefits in a reverse direction through analyses of the trajectory of CAP policy in an enlarged EU as well as assessments of the relative changes in competitiveness of agricultural and food sectors in all Member States as a result of EU enlargement.

The most direct outcome of Tempus has been more rewarding careers for students. Conceptually, quantitative estimates of aggregate net extra earnings of each year's cohort of Agricultural Economics students are required to work out the returns. A difficult task as we do not know what the pattern of base earnings would have been without the Tempus project and the largest cost of education, namely the earnings foregone while studying. A further complication is that according to the theory of "merit goods" the private perceived benefits of education are likely to be lower than they actually turn out to be and the external effects of more knowledge generate both short and long term spin offs and multiplier effects. Without the Tempus programme grants, higher costs and thus fewer students would have reduced both the degree and rate of adjustment by the faculty.

Economic evaluation consists of the comparison of the aggregate benefits with the incremental costs of Tempus itself both from a private and social point of view. A comprehensive evaluation has not been attempted because of the lack of all necessary data, but an examination of some of the main variables in a simple model provides some convincing insights.

Consider the first student cohort influenced by Tempus of 25 years ago: the total benefits are the number of students ( $N$ ) multiplied by an estimate of their extra mean earned income per annum ( $R$ ) since graduation<sup>5</sup> (for the 1992 cohort for 25 years and 1 year less for each subsequent year's cohort).

The sum for all cohort-years for 25 years is  $\frac{C(C + 1)}{2} = 325$ .

If this model is simplified as far as possible so that  $R$  and  $N$  are taken as constant, the Present Value or Social Benefit ( $B$ ) achieved so far, for all 25 years of student cohorts ( $C$ ) can be estimated as follows:

$$B = \frac{C(C + 1)}{2} RN$$

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<sup>5</sup> The marginal income for a student graduating with an agricultural economics degree after Tempus (i.e. the change in income from an agricultural economics program without Tempus to a program with Tempus).

The total number of students benefiting from Tempus supported courses for the past 25 years was about 13,000 (counting only once those who completed studies on both, the BSc and MSc levels) or a mean ( $N$ ) of 520 per year. Assuming an extra mean earned income per annum ( $R$ ) was 15 PLN·year<sup>-1</sup>, the total value of benefits (ignoring changes in money value in time) is 2,535,000 PLN.

To estimate the Net Benefit ( $NB$ ) the costs for the providers ( $PC$ ) and students opportunity costs ( $OC$ ) should be deducted. Simplifying, assuming the Tempus grant is a proxy for the provider's additional costs ( $PC$ ) and assuming the students opportunity costs of studying are zero in the assessment of Tempus impacts (the students would have been studying anyway) then the net benefit becomes:

$$NB = B - PC$$

Thus, after deducting the value of the Tempus grant of 600,000 PLN the Net Benefit equals 2,085,000 PLN.

It is to be expected that annual additional earnings would not have been constant over each part of each career and some students may have failed altogether over the years. We might expect a decay of the influence of Tempus with time and a skewed distribution of earnings<sup>6</sup>. The NB in real terms would need to be adjusted for inflation and the time value of money over 25 years.

To make the above simple calculations more realistic, the assumptions were relaxed accordingly:

- The extra incomes of the graduates over time ( $R$ ) estimated at 15 PLN in the first year after graduation were decreased in geometric progression. It was assumed arbitrarily that the benefits to graduates were reduced by half of the initial value by year 7 and to zero by 12 years after graduation.
- The annual rate of average wage increase in the Polish Economy in the subsequent years over the 25-year period were used to estimate real extra incomes relative to the baseline year (1992). The value of this annual rate of average wage increase is 8.88%.
- Subsequently, for the estimated benefits accrued by the graduates, the amount spent on the Tempus project of 600,000 PLN was deducted in the first three years of the analyzed period.
- Next, for the entire 25-year period the Net Present Value (NPV) was calculated at 2017 values using as the discount factor the average annual rediscount rate of bills in the National Central Bank. The discount factor has a value of 12.05% (such a relatively high discount factor results from the fact that in the years 1992–1996 the inflation rate in Poland was at the level of about 30% on average).

Under such assumptions, the net aggregate benefits produce an NPV of 6.3 mln PLN at 2017 values, despite the fact, that the initial grant was discounted in first three years at a very high rate. Even though individual income benefits were set at a very low symbolic level, a large number of graduates generated the high, total aggregate. The break-even value of  $R$  which produces a zero NPV was estimated to have been 7.4 PLN.

The extra earned incomes due to the Tempus investment can be classified as the private benefits the graduates achieved as a result of an initial public investment. The assumed rate of annual earnings increase of 15 PLN which produces a high Net Benefit (despite very high discount rates in the 3 years of Tempus investments) is still a small amount in relation to base earnings and adds confidence to the overall conclusion of a positive payoff from the programme.

A 25 year perspective of Tempus shows up other unexpected or multiplier effects which, if they could be quantified would further offset some of the costs to the provider. Some staff have been able as a result of their Tempus experiences to move on to leadership roles in other accession related jobs. They include posts in the Ministry of Agriculture, in EU institutions and other academic centres and have thus contributed to the whole of society (both Polish and EU).

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<sup>6</sup> In some very rare circumstances an outstanding individual could generate enough extra income to pay for the whole programme.

## THE SPECIFIC POTENTIAL PAYOFF OF MBA

The Executive MBA course provides specialist teaching for fewer students. A larger increase in additional student earnings than in the Tempus project was needed to cover its costs, which was what the course was designed to do. The course reflected a qualitative appreciation of the financial situation of established agribusiness managers who it was assumed would not be able to afford giving up their employment for full time residential study. The delivery methods of distance and web based learning provision contained these costs. The benefits of meeting fellow students through networking and discussions were captured in short weekend courses and in study tours.

Worldwide the global perspectives for MBA Graduates are positive. Based upon a survey among 5,754 employers in 2014, the GMAC (Graduate Management Admission Council), a global non-profit education organization of leading graduate business schools, expected more than a doubling of nominal pay for the majority of MBA graduates in 2015. What is even more important, 72% of the respondents planned to hire MBA graduates in 2015 [Heijman 2016]. Similar general results to these have been recently found for Agri-MBA graduates (Table 2). Sample surveys of 48 former MBA students were conducted twice in the years 2008 and 2012.

**Table 2.** Graduate's assessment of satisfaction from completing Executive MBA program and salary increase ( $n = 48$ )

Item	Satisfaction from achieving MBA diploma	Acquiring new knowledge	Helpful for promotion	Increase from pre-MBA salary (%)
Mean on a scale of 1 to 4	3.34	3.48	2.52	106.5
Standard Deviation	0.96	0.95	1.17	150.1
Coefficient of Variation	29%	27%	46%	141%

Reference: Own elaboration based on the survey results.

A previous study showed that pre-MBA salary, jointly with the quality rank of the programme are key determinants of post-MBA salary and hence of the net benefits [Elliott and Soo 2016]. Likewise, the survey results (Table 2) show that a doubling of pre-MBA salaries is strongly associated with high satisfaction ratings of the overall course, the acquisition of new knowledge and to a lesser extent promotion prospects.

The same approach as in the calculation of the NPV for the Tempus project was used to estimate the economic payoff of the MBA. The key MBA program specific parameters were a 20-year period and total number of 166 students.

Our estimate of the benefits of the MBA degree assumed a mean pre course salary of 1,000 PLN in 1997 (3,877 at 2017 values) doubled in value over an 8-year period over and above the general increase in wages [GUS 2016]. This was achieved by compounding at a rate of 10 percentage points above the rate of increase in wage rates which was consistent with the survey result of an increase of pre-MBA salaries by 106.5% (Table 2).

The NPV of the additional earnings is 3.5 million PLN, having deducted the institutional costs of launching the degree, indicating a substantial social return which was further corroborated in more recent years when all the running costs of the course were financed by student fees.

## CONCLUSIONS

The available evidence points to high private and social net returns to the original Tempus and the following AGRIMBA project. These projects demonstrate how large student numbers over a long time period need only attain small incremental private benefits to be considered valuable investments. Replication of projects and the MBA with departments in other countries added to the scale effects.

The robustness of our main conclusion is supported by reported extra earnings from MBA studies in the literature of around double base earnings together with evidence that the perceived high quality of the AGRIMBA programme will have contributed to the amount of additional earnings.

The distinction between a private and social perspective is most important in the feasibility of putting on a course. Providers have at least to cover their direct private costs and this was assisted by successful bids for EU grants to develop teaching material and methods so reducing required fee rates. Affordable private fee rates enabled students to join the course which may not have otherwise occurred despite their high potential returns to society.

Although estimates of the opportunity costs of study time were not included in the calculations of the net benefits, they were taken into account in the design of a part time MBA using distance learning techniques. Residential courses would have been infeasible for most potential students.

Even if the direct Tempus outcomes were small and qualitative in nature (which was probably not the case) follow-on strategic research projects with large potential consequences came later. The knowledge gained by both beneficiaries and providers was also utilised in other ways. Tempus is thus even more likely to have had a large ongoing net social benefit.

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## **MODERNIZACJA NAUCZANIA I BADAŃ W OBSZARZE EKONOMIKI ROLNICTWA W POLSCE: OCENA WSPÓŁPRACY INSTYTUCJI AKADEMICKICH**

### **STRESZCZENIE**

Dwadzieścia pięć lat temu w odpowiedzi na tzw. upadek komunizmu utworzono akademickie konsorcjum z udziałem dwóch polskich uczelni rolniczych celem realizacji projektu Tempus. Z czasem konsorcjum, w zwiększonym składzie poszerzyło swoje zainteresowania, przechodząc od projektu, którego celem była zmiana programów nauczania przedmiotów z obszaru ekonomiki rolnictwa do projektów badawczych i ogólniejszych projektów edukacyjnych. Głównym osiągnięciem konsorcjum była organizacja i akredytacja programów MBA, tworzących obecnie sieć AGRIMBA, składającą się z 11 programów MBA „Zarządzanie w agrobiznesie” prowadzonych w kilku krajach. Artykuł przedstawia analizę społecznych korzyści netto wynikających z tych przykładów inwestycji w kapitał ludzki według koncepcji określonych przez laureatów Nagrody Nobla Theodore’a Schulza i Gary’ego Beckera.

**Słowa kluczowe:** Tempus, MBA, kapitał ludzki, AGRIMBA, koszty i korzyści z edukacji