POSITION OF AGRICULTURE IN THE FRAME OF NEW ECONOMY: THE CR CASE STUDY

POZICE ZEMĚDĚLSTVÍ V RÁMCI NOVÉ EKONOMIKY: PŘÍKLAD ČR

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Abstract:
The term "new economy" is not a term of the 21st century: it has emerged already in the first half of the 20th century. From the agriculture viewpoint, it is necessary to analyse the shifts of the production equation from its basic shape through the equation adapted to the specific features of agriculture to that defined by R. Solow implying the impacts of technological and scientific development in the present understanding of the impact of ICTs. Specific features of agriculture which can be among other reflected by the specific form of the factor mobility pyramid, limit the space for application of these technologies, what can be documented on the example of the information flows in Czech agriculture through web sites.

Key words :
agriculture, new economy, production equation, specifics of agriculture, CR

Souhrn:
Pojem nová ekonomika není pojmem 21. století: objevil se již v první polovině století 20. Z hlediska zemědělství je třeba analyzovat posuny produkční rovnice od její základní podoby přes rovnici adaptovanou na specifické rysy zemědělství až po rovnici R.Solowa implikující dopady technického a vědeckého rozvoje v současném chápání dopadu informačních a komunikačních technologií. Specifické rysy zemědělství, které lze vyjádřit mimo jiné specifickou pyramidou faktorové mobility,vymezují i limitují prostor pro uplatnění těchto technologií, což lze dokumentovat na příkladu toků informací týkajících se zemědělství ČR na www.

Klíčová slova :
zemědělství, nová ekonomika, produkční rovnice, specifika zemědělství, ČR

1. Introduction

The term “New Economy”, however new it may seem to be, has been coined as early as in 1956 by the Nobel Price winner Robert H. Solow, who offered a novelised production equation to the traditional one by introducing technological development into it.
So, from the basic equation

$$Q = f (C, L)$$

where Q …. product
C …. capital
L …. Labour,

Solow got to

$$Q = f (C, L, e)$$

where

Q ….. product
C ….. capital
L ….. labour
e ….. technological progress.
The term is, however, used namely since the beginning of 90ies, when economic theories became insufficient for explaining the long-term success of the U.S. economy (low inflation rate, low unemployment and high productivity growth rate up to the recent time).
It is necessary to remind, that some economists (including Prof. Václav Klaus) refuse the term "New Economy" arguing that the economic development in question is just prolongation of the previous development and that science, research and the issuing technologies are connected to economic growth practically since the beginning of mankind.
For example, the U.S. economist Roger Cass recognises five „new economies" in the U.S. history, the present one connected to ICTs being only the last of them.

According to Cass, the *first "new economy"* the United States experienced was from 1789 until around 1815. This period corresponded to the Industrial revolution and ended with a recession. That recession lasted 30 some years and ushered in the next new economy.
The *second new economy* wave spanned the years of the great railway expansion from the late 1840s to the early 1870s. The over-extension of capital to finance railroad's explosive growth brought about the next collapse. Again there was a downturn of almost 25 years before the next cycle.
The *third new economy* was fuelled by basic technology growth of telephony and electrification. It ran from the last decade of the nineteenth century to the 1920s. This wave was characterised by the *Belle Epoque* we sentimentally remember as a golden era of creativity. The crisis of World War I ended this period. The consequences lasted
until the end of World War II.
After World War II, massive industrialisation and economic reconstruction
were at the center of the *fourth new economy* and ran all the way until the Middle East oil crisis of the early 1970s and brought in the current swing in fortunes that began in 1993.
Cass sees now the U.S. economy in the *fifth new economy* that has the characteristic
of communications technologies (such as the Internet) and globalization of production and consumer markets. If Cass's predicted patterns are correct, this expansion should last until 2020, when baby boomers will retire in large numbers.

2. Methodology

As the U.S. Progressive Policy Institute has articulated in its New Economy Index (NEI), the New Economy is more global, more knowledge-driven, more entrepreneurial and dynamic, and driven by digital technologies. In this New Economy, neither Keynesianism nor supply-side economics provide the right answers because today's economy is fundamentally different than the one of even 15 years ago.

The *2002 State New Economy Index* includes 21 indicators divided into five categories that best capture what is new about the New Economy:

1. **Knowledge jobs.** Indicators measure *employment of IT professionals; jobs held by managers, professionals, and technicians; the educational attainment of the entire workforce; and the education level of the manufacturing workforce.*

2. Globalization. Indicators measure the *export orientation of manufacturing and foreign direct investment.*

3. **Economic dynamism and competition.** Indicators in this category measure the number of *fast-growing "gazelle" companies* (companies with growth of 20 percent or more for four straight years); *the rate of economic "churn"* (which is a product of new business start-ups and existing business failures); and *the value of initial public stock offerings* (IPOs) by companies.

4. **The transformation to a digital economy.** Indicators measure *the percentage of population online; the number of ".com" domain name registrations; technology in schools; the degree to which state and local governments use information technologies to deliver services; Internet and computer use by farmers; Internet use by manufacturers; and access by residents and businesses to broadband telecommunications.*

5. Technological innovation capacity. Indicators measure *the number of jobs in technology-producing industries; the number of scientists and engineers in the workforce; the number of patents issued; industry investment in research and development; and venture capital activity.*

By computing the Index, it is possible to measure the New Economy level in individual countries etc. (The detailed methodology is found at www. neweconomyindex.org).

3. Results and Discussion

3.1 Position of agriculture in the New Economy

Both from the Solow's New Economy production equation and from the New economy Index, it is obvious that the specifics of agriculture define the position of the sector in the new Economy as different from other sectors of the NE.
First, production equation for agriculture usually embraces land as a specific production factor not included into capital. To be precise, it should be rather complemented by the whole complex of natural and biological features of the production, i.e. it should be defined as follows:

$$\mathbf{Q = f (C, L, NB, e)}$$

Q ….. product
C ….. capital
L ….. labour
NB ….natural and biological factors (climate, land, plants, animals..)
e ….. technological development.

Secondly, the main impacts of the ITCs as the basic part of the New economy, that is rapid changes of the time and spatial flows of information bringing about in consequence also flows of production factors and goods, are slowed down by the basic specifics of agriculture, namely:

- production process and labour tied to land, which is immobile
- long and non-suspendable production cycles
- specifics of agricultural labour, such as higher average age, lover average education, a certain "conservativism" etc.

- delayed reaction of supply to demand and prices (inverse supply curve)
- non-elastic demand for food
- limited utilisation of technological progress.

Namely, the last mentioned is closely connected to the rather limited reflection of the New Economy features in agriculture.
That means, with regard to the New Economy indicators as mentioned above, that from the four groups of indicators, i.e. *Knowledge jobs, Globalization, Economic dynamism and competition, Transformation to a digital economy, Technological innovation capacity***,** only the fourth is currently relevant (and measured as a *part of the Index) for agriculture.*
Included in the *Transformation to a digital economy feature***,** there is measured among other Internet and computer use by farmers and food manufacturers; and the access by rural residents and businesses to broadband telecommunications.

The measure of the percentage of farmers with Internet access and who use computers for business is defined in the NEI as folows : *"The degree to which farmers embrace New Economy practices and which will thus increasingly determine their competitive success."*

Its importance is underlined by the fact, that while agriculture accounts for less than 5 percent of employment in the developed countries, it still remains an important sector because of its production and non-production functions. Like most economic sectors, the New Economy is transforming agriculture. Farmers use the Internet to buy feed and seed, to check on weather conditions, to gain the latest technical information, and even to sell their livestock or crops. Farmers are also embracing mass customization, diversifying into new and varied crops and food products. The degree to which farmers embrace New Economy practices will increasingly determine their competitive success. One measure is the percentage of farmers with Internet access who use computers to run their farms.

The importance of the ITCs use, including Internet, lays in several fields:
- getting information regarding production itself (inputs, new technologies, varieties etc.)
- getting information regarding agrar policy (this becomes especially important for Czech farmers with regard to the EU accession)
- getting market information regarding demand and prices
- direct sale by Internet

With regard to the latter, a possible indicator is the percentage of agricultural enterprises with their own websites.
While it is next to impossible to find out, which percentage of Czech agricultural enterprises use computers for their management, I have performed a short survey of agricultural enterprises exhibiting own websites.

3.2 Czech agricultural enterprises on Internet

A short analysis of the main Czech Internet portal Seznam shows, that this form of marketing and commerce is getting ground, even if still rather slowly.
Besides that, there were also included results of a pilot survey done on co-operatives in the Pelhřimov district.
The data were surveyed by May 31, 2003 and it would be of interest to follow the development in future.

Further, agricultural co-operatives – as an example - were analysed with regard to the fact, whether the website offers only basical information or whether they include offers of products, price lists - in other words, whether they offer e-commerce.
The last feature evaluated was the language form of the website, i.e. whether it is offered in Czech only or also in any foreign language (English, German, other).

The chapter Production and Marketing, sub-chapter Agriculture and Forestry in the Seznam shows in total 539 entries with the following structure:

Table 1. Agricultural enterprises, in that agricultural co-operatives on Internet

Branch	**Number of www in total**	**in that co-operatives**
Plant production	72	9
Animal production	113	3
Chemicals and fertilisers	27	0
Environmental services and organic farms	78	1
Feeds, seeds, plants	94	2
Forestry	61	1
Machinery and technology	94	0
Total	**539**	**16**

It is necessary to add, that some of the enterprises are in fact operation in several field, that is both plant and animal production plus services of non-agricultural production etc., the listing in the table was therefore done according to their own choice of the Seznam sub-chapters.

The more detailed analysis for agricultural co-operatives shows, that from the 16 listed, 5 web sites are limited at supplying only the **basic information** about the co-operative – name, address, location, main specialisation, products offered in general and contacts, both by phone and Internet address. The remaining 11 offer more detailed lists of products including price lists, information about the history and development of the co-operative and, in 6 cases, also the relevant information in English and/or German, in one case also Slovak and Polish.

Even if the starting attempts at **e-commerce** are not very extensive (as mentioned already, there are more than 700 co-operatives in the CR) and private farmers and limited-liability companies are much more active in the field than co-operatives, it is to be regarded as a positive development towards the 21st century, the more so, that we have to take into consideration, that:
Co-operatives are, in comparison with family farms and ltds, much larger in area and the production volume, therefore their marketing is based more on **medium- and long-term agreements** with their customers and e-commerce is of less importance to them, it is rather a means of being known and up-to-date

Internet as a **means of information** is widely utilised – of the pilot survey of 10 co-operatives in the Pelhřimov district, 9 are using it permanently (the remaining being near to bankruptcy.
As an interesting an obviously quite successful example of the use of Internet in agricultural enterprises, we can mention the so-called **1st Šumava Internet Pigsty (První šumavská internetová prasárna).**

It is a special marketing branch of a production and marketing co-operative AGRO Kasejov in the Šumava region.
One of the newly-developed social habits in the CR, and that regarding urban as well as rural inhabitants, are the pig- and piglet-roasting parties, both in country house and recreation cottages gardens as well as at town fairs and on other occasions. Aso different kinds of pig-killing gatherings and festivals, which used to be the specificity of country pig keepers and farmers, are now more widely popular. The demand is then both for piglets up to 20 kg as for young pigs of different categories, pig halves etc.
The AGRO Kasejov has actively entered into the matter by offering different categories of pigs and piglets through Internet (live, slaughtered, halved etc.) including transport and, as far as the information obtained goes, is very successful and popular. (Part of the success is perhaps also owing to their sense of humour reflected in the name of the enterprise branch and also the grapgic form of the website is rather humorous with a lot of moving piglets etc.)

4. Conclusions

The specifics of agriculture define the position of the sector in the new Economy as different from other sectors of the NE.
Nonetheless, the degree to which farmers embrace New Economy practices will increasingly determine their competitive success. One measure is the percentage of farmers with Internet access who use computers to run their farms.
The importance of the ITCs use, including Internet, lays in several fields:
getting information regarding production itself (inputs, new technologies, varieties etc.),
getting information regarding agrar policy (this becomes especially important for Czech farmers with regard to the EU accession), getting market information regarding demand and prices and = last but not least - direct sale by Internet.
In Czech agriculture, information and communication technologies begin to play an important role mainly as a source of market and policy information, with regard to the EU accession etc. Less extensive is their utilisation in the form of e-commerce, what is partially given by the size and position of Czech agricultural enterprises.

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