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Competitiveness of agriculture in the CEFTA countries and the impact on Austria[1]

Konkurenceschopnost zemědělství zemí CEFTA a důsledky pro Rakousko

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Abstract: The article summarises main results of a study elaborated for the Austrian Federal Ministry of Agriculture and Forestry. This study deals with the problems of competitiveness of agricultural production in six CEFTA countries (Czech Republic, Hungary, Poland, Rumania, Slovakia, Slovenia) and the impacts on Austria. Methodological accesses to problems of competitiveness of agriculture based on comparison of the main economic indicators are defined. The article formulates some considerations, conclusions and expectations related to the EU enlargement with CEE countries.

Key words: competitiveness, agriculture, CEFTA countries, Austria, EU enlargement, economic indicators.

Abstrakt: Příspěvek shrnuje výsledky studie, zpracované pro Spolkové ministerstvo zemědělství a lesnictví Rakouska. Studie je věnována otázkám konkurenceschopnosti zemědělství v šesti zemích CEFTA (ČR, Maďarsko, Polsko, Rumunsko, Slovensko, Slovinsko) a důsledkům pro Rakousko. Je vymezen metodický přístup k problematice sledování konkurenceschopnosti zemědělství a na základě komparace hlavních makroekonomických ukazatelů za jednotlivé země vysloveny úvahy a očekávání ve vztahu k rozšíření EU o země střední a východní Evropy.

Klíčová slova: konkurenceschopnost, zemědělství, CEFTA, Rakousko, rozšíření EU, ekonomické ukazatele.

COMPETITIVENESS

In general, the competitiveness of an individual enterprise is a matter of its ability to maintain or increase its market share over the longer term. Expressed in different terms, competitiveness is an enterprise's capacity to remain profitable under given market conditions. The same holds true for agriculture. The factors governing the survival of an agricultural enterprise are not only the supply of fixed inputs, the productivity of the inputs applied and the input prices, but also government subsidies and taxes. The prime decisive factor, however, is the demand for the agri-food products. Apart from the manner and extent of market regulation, a major determinant whether a farm can hold its own in the face of foreign competition on foreign and domestic markets is the exchange rate which, in turn, is governed by a series of non-agricultural factors. Compared to the European Union, agricultural production in the CEFTA countries[2] features low average costs and low output prices. This has not been achieved by virtue of high standards of technology or management, but is attributable to exchange rates. With exchange rates working in their favour, agricultural enterprises in the CEFTA countries have been able to live with a relatively low level of subsidies.[3] Discussions on competitiveness thus tend to focus on cost-related competitiveness. Where the CEFTA countries are concerned, this concentration on costs is particularly marked. However, this might well be a lopsided approach. The decisive issue is market power: competitiveness in markets.

In economic terms, the first half of the 1990s was the most difficult phase for the CEFTA countries. Yet even in more recent years they have not been immune to setbacks as evidenced primarily by Romania. Measured in terms of real GDP growth, the economies of Poland and Hungary experienced a pronounced upswing. Economic growth in Slovenia was somewhat slower, yet constant and very balanced. With the government taking steps to set the country's economy on a firmer footing, Slovakia had to accept a slowdown in growth. Over the past few months, however, all CEFTA countries have registered an improvement in their economies. The boom in Western Europe has spread to the CEFTA countries, where most of the economic structures have improved to such an extent that the openings they offer can also be used to a good effect.

[1] English Summary of a 170-page study in German language, written for the Austrian Federal Ministry of Agriculture and Forestry.

[2] In 1993 four reform countries, the Czech Republic, Hungary, Poland and Slovakia, set up the Central European Free Trade Association (CEFTA). Romania and Slovenia joined at a later date.

[3] Calculated in EURO terms, input and output prices in Slovenia are closest to prices in the EU; hence the agricultural sector is more heavily subsidised.

Table 1. Main indicators 1999[1)]

	Czech Republic	Hungary	Poland	Romania	Slovak Republic	Slovenia	Austria	EU(15)[2)]
Country area, total, in ha mn	7.887	9.303	31.268	23.839	4.904	2.026	8.385	323.946
Population, average								
total, persons mn	10.3	10.1	38.7	22.5	5.4	2.0	8.1	375.9
Employment in agriculture								
persons, mn	0.2	0.3	4.0	3.4	0.2	0.05	0.1	8.2
in % of total employment	5.1	7.1	25.1	38.1	7.8	6.7	4.2	6.0
Agricultural area								
ha mn	4.284	6.186	18.443	14.800	2.444	0.491	3.462	144.918
% of total	54.3	66.5	59.0	62.1	49.8	24.2	41.3	44.7
ha/capita	0.417	0.614	0.477	0.659	0.453	0.247	0.428	0.386
Gross domestic product								
USD bn at exchange rate	53.1	48.2	154.1	34.0	18.8	20.0	208.1	8 088.1
per capita (USD at exchange rate)	5 166	4 790	3 987	1 515	3 492	10 078	25 729	21 617
per capita (USD at PPP)	13 030	11 190	8 790	5 870	10 240	15 590	23 077	20 546
Average share of household								
income spent on food %	19.7[3)]	18.8[3)]	33.7	58.8[4)]	20.8	20.4	15.9[3),4)]	

Notes: 1) Preliminary 2) 1998 3) According to SNA 4) Including beverages and tobacco

Source: WIIW database incorporating national statistics; WIFO database

STRUCTURAL CHANGES

The structure of the agricultural sector in the six CEFTA countries varies greatly from country to country, thus giving rise to markedly different starting positions in relation to entry into the European Union (Table 1). In Poland and Slovenia, the original smallholder structure was never destroyed and continues until this day. The farmers both work and own their smallholdings. In many of these family-run operations, at least one member of the family is in permanent or occasional non-agricultural employment. In Slovenia this applies to 80 per cent of the farms and has most probably been a major factor contributing to the high degree of mechanisation. In direct contrast to Poland and Slovenia, the enterprises in Slovakia and the Czech Republic are organised along co-operative or company lines, mostly involving the farming of several hundreds of hectares. In terms of land tenure, these massive expanses of land comprise innumerable small plots, each the property of different owners. Most of the latter live in urban areas and their interest in agriculture is limited to the revenue the leases yield. Yield to date has been very low and frequently irregular, or possibly not paid at all. In Hungary, where the original smallholder structure was likewise dismantled, family-run farms predominate in the meantime. They work some hundred hectares on average, some of which the family owns and some of which is leased. In Romania, land was restituted to the previous owners in a manner that has led to the dismantling of the large-scale operations. Given the generally gloomy economic situation over the past few years, many owners are interested in working their own land. However, for want of appropriate machinery and equipment, they find themselves compelled to enter into new forms of co-operation.

LAND MARKET

The farmland market in the CEFTA countries is underdeveloped.[4] Transactions only take place in those instances where farmland can or is expected to be re-zoned as non-agricultural land. At present, farmland as such has hardly any market value; banks do not accept it as collateral when farms apply for loans. Indeed, the very fact that the land market is underdeveloped leads to the dominance of leasehold in certain CEFTA countries.

To-date foreigners have not been granted entry to the land market in any CEFTA country.[5] Granting them unlimited access would lead to a diversification of land prices. In the vicinity of urban agglomerations, interest in land as an investment would increase and would lead to a rise in prices. In certain agriculturally favoured areas, foreign investor interest would heighten the interest in

[4] In those countries where the land market is slightly advanced and the factors of supply and demand come more into play, prices for farmland are primarily governed by such criteria as quality of the soil, climatic conditions, availability of water, suitability for mechanized farming operations, distance from major markets and rural infrastructure.

[5] The one exception is Hungary where in the past few years foreigners have assumed a certain role in the land market

Table 2. CEFTA-6: Farmland prices

	Average market price EUR/1 ha	Used agricultural area, total, in million hectares
Czech Republic[1)]	1 334	4.3
Hungary[2)]	1 507	6.2
Poland[3)]	1 064	18.4
Romania[2)]	386	14.8
Slovakia[1)]	500	2.4
Slovenia[3)]	11 000	0.5

Notes: 1)1998 2) 1999 3) 1997

Source: Own calculation according to data of individual countries.

agriculture, for example in the form of large-scale farming enterprises which could exploit economies of scale and use modern technology to a good effect. This would push up prices for farmland and leases would also go up in price. Farmers who both own and work their property would have far less to fear than tenant farmers who would have to live with an increase in their current costs. Presumably even after entry into the EU, the land market in the CEFTA countries will still be governed by regulations that discourage foreign investor participation – for reasons that do not necessarily have anything to do with agriculture.

Granting foreigners an unrestricted entry to the land market would push up prices and leases in the countries concerned. Landowners would profit from the market being opened up to foreigners, while tenants would suffer. In those CEFTA countries where tenant farming plays a more significant role, farming operations would face costs increases upon liberalisation of the land market. The need to save costs by applying new technologies would increase and those farms already deeply in debt would have to shut down.

Table 3. Evaluation of support, 1986–1999 (percentage share of PSE[1)])

	1986	1992	1993	1997	1998	1999[2)]
Czech Republic	66	31	27	9	21	25
Hungary	45	17	20	7	13	20
Poland	40	20	15	22	23	25
Slovakia	70	28	26	10	29	27
Slovenia[3)]		38	34	40	43	47
EU	48	46	45	38	45	49
OECD[4)]	39	39	38	31	36	40

Notes:
1) Producer Support Estimate (PSE) is defined as the ratio of direct and indirect subsidies to the value of gross farm receipts valued at farm gate prices. The Producer Support Estimate excludes some measures formerly included in the General Services category (such as research and development, marketing and promotion) which was a part in the earlier measurement called Producer Subsidy Equivalent.
2) Provisional
3) Estimate
4) Without Czech Republic, Hungary, Poland and Korea

Source: OECD (1999)

FINANCIAL SITUATION

There are several reasons for the financial difficulties that farmers face. Over the past ten years, domestic and foreign markets, or shares therein, have been lost; furthermore, agricultural subsidies have been slashed, particularly in the early years of transformation (Table 3), and given the dramatic rise in input prices, cost pressures have increased, outstripping the rise in output prices (Figure 1). In some CEFTA countries, farms are deeply in debt. In Slovakia and the Czech Republic, numerous enterprises have accumulated claims outstanding and thus find themselves unable to service their own debts in an orderly manner.

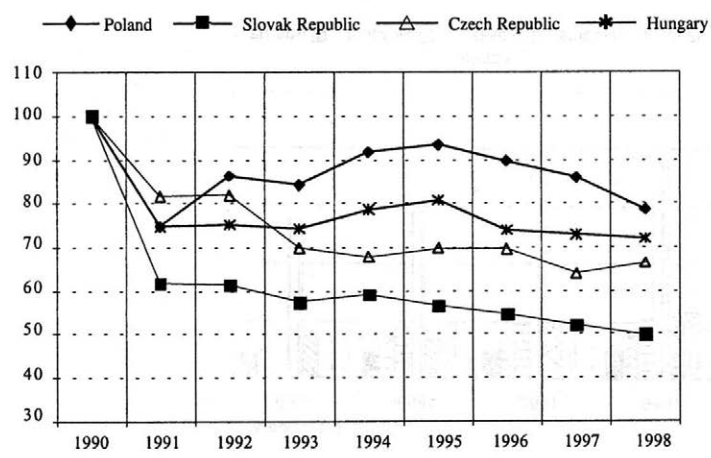

Figure 1. Agricultural terms of trade (1990 = 100)

Note: Agricultural output prices deflated by agricultural input prices

Source: WIW Database incorporating national staTISTICS

SUPPLY AND DEMAND

In the first half of the 1990s, agricultural production declined throughout the CEFTA region only to stagnate in the second half (Figure 2). Over that period, crop yields rose somewhat, but livestock production underwent a further decline. Farmers in the transition countries were affected by the global recession in agricultural markets and the drop in prices in global markets to a far greater degree than their counterparts in the West, since less support was forthcoming from their governments and they were thus nudged out of the traditional agricultural and food markets.

With the collapse of agricultural trade between the Eastern bloc countries at the beginning of the 1990s, CEFTA agricultural trade switched direction, primarily towards the European Union. The European Agreements notwithstanding, agricultural trade balances throughout CEFTA swiftly worsened (Table 4). Agricultural trade between Austria and CEFTA, expressed as a share of total CEFTA foreign trade, has dropped since the beginning of the 1990s, yet Austria's agricultural trade balance with the CEFTA-6 has improved over the same period. Only Hungary – of all CEFTA countries Austria's most important supplier of agri-food products – has been able to maintain its position as a net exporter.

After dropping markedly in the first half of the1990s, the demand for food products has since recovered. In the wake of the rise in real per capita incomes, agricultural production is once again registering increased domestic sales. According to our forecast, nominal EURO expenditure on food in the CEFTA-6 should increase by some 33 per cent to EUR 59 billion over the period 1998–2005, with the largest increase in Romania (some 60 per cent)

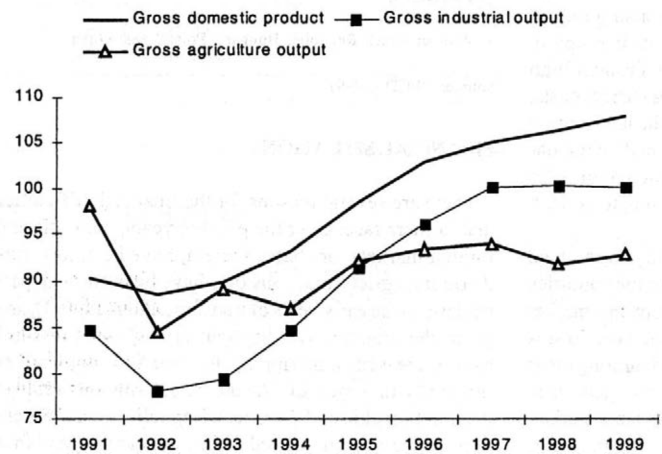

Figure 2. CEFTA-6: Comparison of growth: GDP, industry and agriculture (1990 = 100)

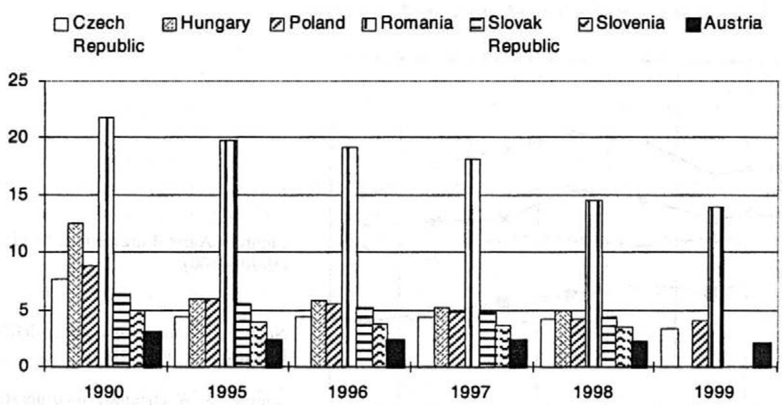

Figure 3. Share of agriculture in the total GDP

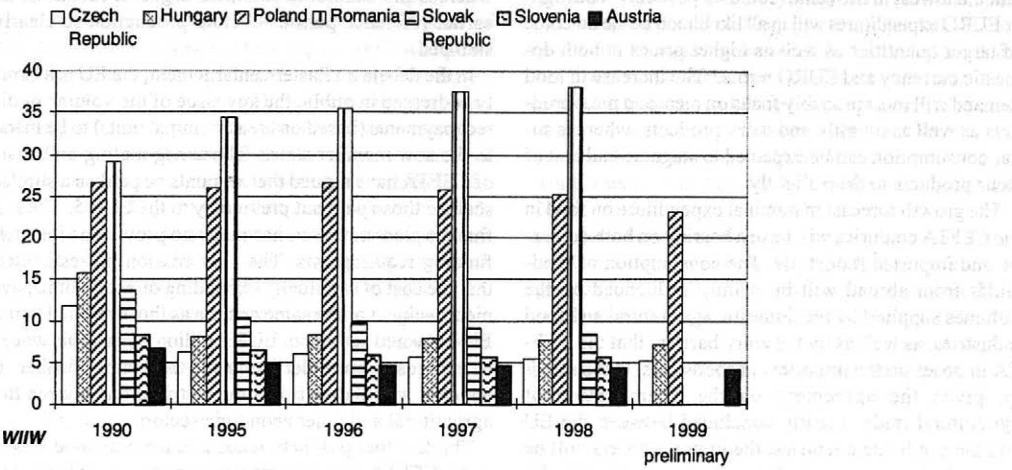

Figure 4. Share of agriculture in the total employment

Table 4. CEFTA-6: Agro-food trade* balance (USD million)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999[1)]
Balance total										
Czechoslovakia	−181	148	84	.	.	.	.	.	.	.
Czech Republic	.	94	−24	67	−319	−424	−764	−601	−548	−615
Hungary	1 511	1 841	1 833	1 057	1 120	1 846	1 654	1 663	1 492	1 210
Poland	964	−91	−15	−490	−225	−439	−976	−214	−610	−615
Romania	−1 129	−525	−707	−600	−239	−345	−107	−90	−574	−390
Slovak Republic	.	67	97	−219	−190	−203	−404	−384	−410	−352
Slovenia	−98	−35	−115	−254	−301	−415	−390	−368	−340	−307
CEFTA-6	1 066	1 350	1 069	−439	−154	20	−986	6	−990	−1 069
Balance with the EU										
Czechoslovakia	66	154	11	.	.	.	.	.	.	.
Czech Republic	.	120	−16	−64	−258	−399	−629	−485	−505	−432
Hungary	629	885	785	454	509	718	768	620	648	.
Poland	668	288	118	−118	−29	−74	−424	−361	−489	−1057
Romania	−413	−239	−321	−344	−112	−175	−178	−105	−211	−77
Slovak Republic	.	36	17	−84	−131	−171	−219	−202	−240	−193
Slovenia	.	.	10	−87	−233	−282	−271	−258	−266	.
CEFTA-6	.	.	594	−243	−253	−383	−953	−792	−1 062	.
Balance with Austria										
Czechoslovakia	17	4	−20	.	.	.	.	.	.	.
Czech Republic	.	.	.	−5	−18	−51	−56	−50	−46	−51
Hungary	73	54	57	15	15	46	69	50	62	68
Poland	−11	−49	−41	−11	21	−5	−10	0	7	5
Romania	−5	0	−7	−21	−5	−7	−30	−42	−25	−53
Slovak Republic	.	.	.	−8	−18	−24	−23	−23	−24	−24
Slovenia	.	.	−46	−54	−95	−81	−85	−94	−87	−88
CEFTA-6	.	.	−56	−83	−100	−121	−135	−159	−112	−144

Note: *) By SITC 0, 1 and 4 commodity groups, Romania 1990–1992 by HS 1, 2, 3, 4 commodity groups
1) Provisional

Source: WIIW Database incorporating national statistics; WIFO Database.

and the lowest in Slovenia (some 25 per cent). The higher EURO expenditures will in all likelihood be the outcome of larger quantities as well as higher prices in both domestic currency and EURO terms.[6] The increase in food demand will most probably focus on meat and meat products as well as on milk and dairy products, whereas sugar consumption can be expected to stagnate and that of flour products to drop slightly.

The growth forecast in nominal expenditure on food in the CEFTA countries will have a bearing on both domestic and imported foodstuffs. The consumption of foodstuffs from abroad will be mainly influenced by the volumes supplied by the domestic agricultural and food industries, as well as by the entry barriers that the CEFTA imposes on the importers of foodstuffs. Undoubtedly, given the agreement on the liberalisation of agricultural trade recently concluded between the EU and the candidate countries, the import barriers will be lowered, thus increasing the export opportunities for food producers in the West.

EU ENLARGEMENT

In March 2000, Franz Fischler, the EU Commissioner for Agriculture, advanced a new topic for debate, suggesting that immediately after their entry into the EU the new member states should be fully integrated into the CAP (Common Agricultural Policy), including direct income payments. Such a step would permit the application of control mechanisms such as production quotas and setting land aside, thus hindering an inordinate growth in production in the new member states. Furthermore, given the liberalisation of agri-food trade, the decision-makers in the EU have emphasised that the agri-food products that the new upcoming member states produce for export to the EU-15 will have to comply with the health and environmental regulations of the EU. These non-tariff barriers will continue to pose a major obstacle for CEFTA exports to the EU and the new member states will need transitional periods in which to adjust to the EU requirements.

Ultimately this strategy would equip the EU with instruments enough to keep agricultural production in the new member states under control and thus guard against the agri-food markets in the EU being flooded by agri-food products from the new member states. Agri-food revenue in the new EU countries would not increase on account of an increase in the volume of outputs, but more on account of two other factors: income payments out of the EU "pot" and an adjustment to output prices at the EU level. The latter factor would continue to have an effect as long as input prices and the cost of living in the new member states remained lower than those in the EU-15. According to EU sources, the determination of production quotas and the area of land set aside will be based on figures relating to the final years before entry whereas the candidate countries argue in favour of an earlier reference period – before production so clearly slumped.

In the debate on Eastern enlargement, the EU has hardly addressed in public the key issue of the volume of direct payments (based on area or animal units) to be made to the new member states. Those negotiating on behalf of CEFTA have argued that amounts be paid on a similar scale to those paid out previously to the EU-15. The EU finance plan, however, has made no provisions for such funding requirements. The Commission has estimated that the cost of eventually expanding direct income payments subject to the same criteria as those applied to the EU-15 would amount to EUR 8 billion a year. This would be too costly an undertaking for the Union, further to which it would distort income distribution between the agricultural and other economic sectors.

The fact that production costs in the agri-food sector in the CEFTA countries are lower than those in the EU is due to the fact that the prices of certain locally manufactured production inputs are very low in EURO terms. In the CEFTA countries prices for farmland, labour and some non-imported – or not yet imported – production inputs in particular are far below EU levels. Following the CEFTA countries' entry into the EU, however, agricultural output prices will in all likelihood rise rapidly with prices for land, labour, machinery and production material gradually following suit. In the long term the current ratio between output and input prices will be established anew or even deteriorate. First and foremost, the price ratio will most probably deteriorate for those agricultural enterprises working land held in lease. In their case, land use gives rise to expenditures that will rapidly increase, all the more so once the system of direct payments per hectare has also been introduced in the new member states. Should the new member states be incorporated in the CAP upon entry into the Union, the EU will probably press for immediate liberalisation of the land market. If this were to occur, the net result would be still higher prices for farmland and leases since cheap land in the new member states would be high in demand in the EU-15. Furthermore, for large-scale enterprises with a workforce of employees the relationship between output prices and wage rates would worsen. Only a few enterprises will be able to refurbish their plant and equipment, at relatively favourable prices for capital goods, before entry into the EU. Thus, many farming enterprises will suffer a grave shock on entry.

IMPACT ON AUSTRIA

Given the expected increase in turnover in the agricultural sector of the new member states following EU enlargement, producers of agricultural inputs in the "former" EU, including Austria, will have an opportunity to promote their market presence and investment activi-

[6] Exchange rates should have perceptibly stabilised by 2005.

ty in the new EU region. Areas upstream of agriculture are very poorly developed and demand for imports of effective (expensive) agricultural inputs could soar in the agricultural sector in CEFTA, if fundability can be assured. In this context, loan policies in the reform states take on particular importance. The market for farmland is hardly developed and mortgages as such play a minimal role, even in those instances where the legal basis has already been set up. Furthermore, the banking network in rural areas is wanting. In this area Austria has accumulated extensive know-how over many years and disposes of capital, the transfer of which into the CEFTA region would help to facilitate the purchase of agricultural technology from the EU-15, and thus from Austria as well. Eastern enlargement will offer added opportunities for the Austrian food industry and various service providers active in the agri-food sector.

At present, competitiveness in CEFTA agriculture is low. Most enterprises have not been modernised and the whole sector is fraught with structural shortcomings. In addition, for the farmers in the EU-15 and thus the farmers in Austria as well, applying the CAP regulations from the very first day of EU membership will reduce the threat of ruinous competition from the new member countries in the years to come.

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Czech food shoppers' evaluation of domestic and foreign products

Hodnocení domácích a zahraničních potravinářských produktů českými spotřebiteli

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ABSTRACT: Much research relating to country-of-origin effects has been conducted in countries of Western Europe and the U.S. where consumers have a relatively long experience with free market economies and long-standing access to products from origins all over the world. The authors examine country-of-origin effects on the perception of domestic and foreign made food products in Czech Republic where for most consumers products from Western Europe are just recently available. The study consists of four parts. First, domestic and foreign food images are identified and compared with several significant differences. Second, consumer shopping orientations are investigated through a factor analysis of responses to psychographic statements related to food shopping. Third, consumer segments are identified by clustering respondents on the basis of their scores across the shopping orientations. Fourth, each of the food shopping segments is profiled with respect to perception of domestic versus foreign food images. In the sample, the shopping orientations show significantly different evaluations of food. The study delineates implications for national and international food marketers with an interest in the Czech market.

Keywords: cluster analysis, country-of-origin, factor analysis, patriotism, segmentation

Abstrakt: Většina výzkumů věnovaných hodnocení faktoru země původu výrobku byla provedena v zemích západní Evropy a USA, kde mají spotřebitelé relativně dlouholeté zkušenosti s tržní ekonomikou a možností nákupu potravinářských výrobků pocházejících z celého světa. Autoři zkoumají, jaký má faktor země původu vliv na vnímání domácích a zahraničních potravinářských produktů spotřebiteli v České republice, kde jsou výrobky ze západní Evropy dostupné relativně krátké období. Tato studie se skládá ze čtyř částí. V první z nich je provedena identifikace vnímání domácích a zahraničních potravinářských výrobků českými spotřebiteli a zjištění podstatných rozdílů. Druhá část je věnována šetření orientace zákazníků prostřednictvím faktorové analýzy. Ve třetí fázi jsou identifikovány zákaznické segmenty získané seskupením respondentů podle nákupní orientace na základě vypočteného skóre. V poslední čtvrté části je každý ze segmentů profilován podle vnímání domácích a zahraničních výrobků. Podle nákupní orientace jsou u zkoumaného vzorku zjištěny znatelné odlišnosti hodnocení potravin. Studie vymezuje možné důsledky pro národní i nadnárodní producenty potravinářských výrobků, kteří mají zájem o působení na českém trhu.

Klíčové pojmy: shluková analýza, země původu, faktorová analýza, patriotismus, segmentace

INTRODUCTION

Within a few years, several Central European countries will be admitted as new members to the European Union (EU). Czech Republic is among those. From a food marketing perspective, the enlargement of the common EU market presents new opportunities both for national and international food producers. A major question is the consumer acceptance of food products of different origins in present and new markets. Already major food chains from EU countries (e.g. Tesco/ England, Carrefour/ France, Globus/ Germany) operate stores in the prospective new member countries bringing in broad assortments with only a fraction of products supplied by domestic food manufacturers. Consumer acceptance and attitudes towards EU-made food products play a major role in how the potential new markets can be developed.

PURPOSE OF THE STUDY

The primary objective of this study is to examine domestic versus foreign made food images in the Czech Republic, an officially recognized candidate for the enlarged European Union, on the background of behavioral and motivational aspects. The study attempts to provide decision support to and guidelines for national and international food marketers specifically by 1) investigating the importance of different food attributes, 2) identifying the image of European Union made food and domestically manufactured products in the Czech Republic, and 3) examining the role of psychographic characteristics of consumers as related to the perception of domestic versus imported products.

REVIEW OF LITERATURE

Products that consumers are not familiar with usually cannot be judged by intrinsic (basic) attributes like taste or keeping quality. Instead, buyers have to rely on extrinsic (additional) attributes that serve as surrogate quality indicators (Rao and Monroe 1989). The latter include price, brand name, store name, and quality labels (Zeithaml 1988). They also include any information on the origin of the product, i.e. the country of origin (Han 1989; Worley et al. 1995, Stich 1997). In case consumers cannot recognize intrinsic product attributes, they may try to evaluate the product by using extrinsic attributes like country of origin. Correlations between extrinsic and intrisic attributes of familiar products are transferred to products with only extrinsic attributes perceivable (Meffert and Heinemann 1990; Schweiger 1990). It is generally being assumed that an individual that is little or not at all familiar with a particular article judges this product based on his/ her experience with other products from this country. While the effects of country-of-origin have been broadly investigated and confirmed for several product classes (for an overview see e.g. Bilkey 1982 or Papadopoulos 1993), the number of publications on food products is more limited (e.g. Sattler 1991; Hopp 1992; Gierl 1993; Balling 1995). In addition, very little is known about consumer perception and evaluation of food products in countries of Central Europe (e.g. Czech Republic, Hungary, Slovakia, Poland). To our knowledge, no study has ever examined the EU and domestic food images in the Czech Republic. Furthermore, although buyers have been found to have significantly different perceptions of food products made in different countries, the issue of underlying motivational background has been largely ignored (Kornadt 1986).

METHOD

Data collection and sample characteristics

A pre-tested questionnaire was distributed by interviewers during several days and at various locations in Brno in late 1999. 300 respondents were selected randomly observing sex and age quotas (stratified random sample). Respondents of other than Czech citizenship were excluded from further examinations. Responses of individuals that indicated neither experience nor interest in food shopping were also discarded. Two hundred and seventy-five respondents returned usable questionnaires, resulting in a return rate of 92 percent. The sample profile is displayed in Table 1. Due to the quota system, the sample mirrors the population reasonably.

Table 1. Sample profile

Variable	N	Value	% sample (population) female		% sample (population) male	
Age	261	under 15 years	0.8	(8.5)	4.4	(8.9)
		15–24	13.8	(8.0)	18.8	(8.3)
		25–34	8.8	(6.8)	5.4	(7.1)
		35–44	8.0	(6.8)	6.9	(6.9)
		45–54	10.4	(7.7)	8.8	(7.5)
		55–64	4.6	(5.2)	4.2	(4.6)
		65 and over	4.2	(8.4)	4.2	(5.2)
		total	50.6	(51.4)	49.4	(48.5)

Measurements

Food Images. A pilot study was conducted in order to develop a scale for food products images. Eight items (appearance/look, environmental impact, freshness, preservatives content, health promotion, genetically modified organisms (GMO) content, price-quality-ratio, taste) were developed and measured on a five-point bipolar scale. Importance of those food image attributes was also measured on a five-point scale. Here, country-of- origin was included as an additional criterion to measure the importance of this dimension separately (Gerschau 1990). Demographic variables included age, gender and citizenship. Except for the variable age, they were measured in categorical format.

Food shopping orientation. We utilized food orientation statements from past shopping orientation research (Lumpkin 1985; Shim et al. 1998; Wirthgen et al. 1999) that were suitable to the context of comparative food images. Subjects were asked to indicate on a five-point scale how strongly they agreed or disagreed witch each statement. In order to avoid potential response bias (Gierl 1995), responses to some of the questions were reversed.

Results

Identification of food attributes importance. The considerable number of product attributes playing a role in the consumers' product choice (and store selection) represents a major task for food manufacturers and retailers when trying to match offers to consumer tastes. Czech consumers consider freshness, taste, and healthiness of food products most important (Table 2). Other attributes appear to be significantly less important, again with significant differences between them. When asked to consider the importance of the country-of-origin, consumers assigned the lowest value on this attribute.

Identification of food images. Perception of domestic versus foreign food products was significantly different for all eight selected attributes in the sample (Table 3). Except for the attributes appearance and GMO content, Czech consumers viewed foreign food products more favorably.

Table 2. Importance of selected purchasing criteria; scores ranged from 1 (not important at all) to 5 (very important)

Food attribute	Number of cases	Mean	Standard deviation	t-test[1] $p \leq 0.1$
Freshness	274	4.68	0.60	a
Taste	273	4.63	0.68	ab
Healthiness	275	4.56	0.81	b
Price-quality-ratio	273	4.28	0.86	c
Appearance / look	273	4.02	1.05	d
Environmentally friendly production	273	3.55	1.19	e
Free of preservatives	272	3.10	1.18	f
Free of genetically modified substances (GMO)	270	2.92	1.48	g
Country-of-origin	273	2.60	1.28	h

[1] attributes with different letters are significantly different

Table 3. Perception of food products

Domestic/foreign food products ...	Mean			Number of cases
	domestic	foreign	difference	
... have a very attractive price-quality-ratio.	3.49	2.64	0.84***	275
... match exactly my taste.	3.86	3.19	0.68***	275
... are always fresh.	3.73	3.27	0.46***	274
... are produced environmentally friendly.	3.16	2.73	0.43***	272
... are most healthy.	3.74	3.38	0.36***	272
... contain very few preservatives.	3.01	2.74	0.27***	271
... are 100% genetically modified.	2.24	2.77	–0.53***	274
... look fantastic.	3.14	3.93	–0.79***	275

Note: Scores ranged from 1 (strongly disagree) to 5 (strongly agree); *** $p \leq .001$, ** $p \leq 0.01$, * $p \leq 0.05$; difference = domestic – foreign; Þ Negative (positive) numbers indicate a more favorable perception of foreign (domestic) products.

Table 4. Consumer attitudes towards shopping of domestic food products (DFP)

Statement	N	Mean	Standard error
I have great trust in DFP.	275	2.93	0.84
DFP are part of our national identity.	271	2.87	0.96
DFP stand for quality.	273	2.85	0.74
When shopping for food, convenience is most important to me.	273	2.82	1.01
I buy DFP to support Czech industry.	275	2.61	1.12
I am very proud of DFP.	275	2.59	0.91
I accept a higher price for a guaranteed superior quality of food products.	275	2.59	1.08
I am willing to spend more money for DFP.	275	2.35	1.22
I am not willing to pay higher prices for DFP.	274	2.34	1.18
I will always prefer DFP to those from other countries.	275	2.24	1.11
If necessary, I visit several stores to buy a particular food prodct.	275	2.23	1.30
I buy DFP explicitly to help secure Czech jobs.	275	2.17	1.20
I do not care what country the food products that I buy come from.	275	1.97	1.22
I buy DFP to help avoid long-distance transportation.	274	1.76	1.12
I do not pay much attention when shopping for food since I want to be finished as quickly as possible.	274	1.42	1.18

Note: Scores ranged from 1 (strongly disagree) to 5 (strongly agree).

Table 5. Factor analysis of shopping orientations

Factors	Factor loading	Eigen-Value	Percentage of variance	Cronbach's α
Politics/planned behavior		4.53	30.18%	0.82
– secure domestic jobs	0.84			
– avoid long transportation	0.83			
– always prefer domestic	0.74			
– support domestic industry	0.64			
– spend more money	0.53			
Patriotism		1.50	9.98%	0.80
– great trust	0.84			
– stand for quality	0.84			
– very proud	0.75			
– national identity	0.54			
Store/time		1.37	9.12%	0.63
– visit several stores	0.76			
– as quickly as possible	−0.73			

Identification of consumer attitudes. In order to identify possible causes for the country-of-origin effects on food products evaluations, the motivational background was examined. Czech consumers' responses to corresponding fifteen psychographic statements are listed in Table 4. We found that consumer responses for the items trust along with aspects of ethnocentrism (national identity), assumed superior quality, and pride had the smallest standard error.

Identification of food shopping orientations. To identify the role of food shopping orientations in food evaluation, principal components factor analysis with varimax rotation was used to identify themes within the subjects' responses to the psychographic statements. In the process, a minimum eigenvalue of 1.0 was used as a cutoff criterion. For each shopping orientation theme, only constituent statements with factor loadings of more than 0.50 were retained. In the sample, five shopping orientation themes were initially extracted. Factors 4 and 5 (convenience, price) were discarded, however, because of their low alpha coefficients. The shopping orientation themes for Czech respondents are shown in Table 5. The three-factor model explains 49 percent of the variance. Cronbach's alphas for the factors ranged from .63 to .82. The shopping orientation factors were labeled (1) politics / results-oriented, (2) patriotism, and (3) store / time.

Table 6. Cluster analysis/identification of patriotic orientation

Factor	Cluster: indifferent	Cluster: dedicated	Cluster: patriotic	*p*
Politics	2.54 [ac]	3.58 [ab]	3.17 [bc]	0.000
Patriotism	2.70 [ac]	2.37 [ab]	3.77 [bc]	0.000
Store/time	2.56 [ab]	3.46 [a]	3.11 [b]	0.000
			multivariate	0.000
%	55	21	24	
(*n*)	146	55	63	

Note: A pair of means with the same superscript indicates a significant difference between the two groups with p ≤ 0.01. Scores ranged from 1 (strongly disagree) to 5 (strongly agree).

Identification of food shopping clusters / segments. To establish a taxonomy of food shopping segments, cluster analysis was employed to group subjects who exhibited similar shopping orientation patterns. Respondents who scored similarly on the extent to which they exhibited or did not exhibit the various orientations became part of a single cluster. For that purpose, first the single linkage method (identification of subjects that exhibited extreme values that were then discarded) then the Ward method were employed. Quick cluster analysis divided subjects into segments with low intra-group variance and high between-groups variance. To further validate the cluster solution, multivariate analysis of variance (MANOVA) and a univariate analysis (ANOVA) were conducted. MANOVA examined the overall differences in orientations among the three clusters, while ANOVA determined on which individual orientations the clusters differed. Significant statistical differences were subjected to a conservative multiple comparison test (Scheffé) to identify pairwise differences.

After a careful examination of two, three, five and six cluster solutions, it was determined that a three-cluster solution for the sample provided the most meaningful distribution of subjects. Table 6 shows the results of the cluster procedure, including the group mean for each of the three food shopping clusters-segments on each of the three shopping themes. The table also shows the results of the validating MANOVA and ANOVA procedure. Further, the results of the Scheffé paired comparison procedure indicates that numerous pairwise differences were significant (see superscripts).

The three food shopping segments differed significantly across the three shopping orientations as did the

Table 7. Profile of patriotism orientation segments

Factor	Cluster careless	political aware	ethnocentric	p
Food perception domestic vs. foreign				
* taste	−0.96 [a]	−0.84 [b]	−0.03 [ab]	0.000
* environment	−0.58 [a]	−0.53	−0.02 [a]	0.014
* freshness	−0.60 [a]	−0.62	−0.03 [a]	0.004
* preservatives	−0.51 [a]	−0.16	0.16 [a]	0.001
* healthiness	−0.69 [a]	−0.25	0.19 [a]	0.000
* GMOs	0.51	0.71	0.43	0.372
* p-q-ratio	−0.86	−1.35 [a]	−0.33 [a]	0.000
* appearance	0.64 [a]	0.73	1.22 [a]	0.006
			multivariate	0.000
Age	39.3	35.4	37.7	0.314
Shopping frequency	185	159	159	0.038
Sex	1.47	1.56	1.49	0.517
Food attribute importance				
* taste	4.61	4.71	4.59	0.587
* environment	3.63 [a]	3.15 [a]	3.65	0.026
* freshness	4.74	4.64	4.60	0.259
* preservatives	3.19	2.78	3.13	0.087
* healthiness	4.67 [a]	4.35 [a]	4.48	0.028
* GMOs	2.93	2.69	3.02	0.465
* p-q-ratio	4.24	4.22	4.41	0.360
* appearance	4.10 [a]	3.70 [ab]	4.16 [b]	0.032
* country-of-origin	2.75 [a]	2.11 [ab]	2.67 [b]	0.005
			multivariate	0.012

Note: A pair of means with the same superscript indicates a significant difference between the two groups with $p \leq 0.05$. Scores ranged from 1 (strongly disagree) to 5 (strongly agree).

three food shopping segments across each orientation. Examination of ANOVA scores reveal that patriotism was the most decisive factor in differentiating the segments in the sample ($F = 114.3$, p # 0.001). The other factors, although highly significant at p # .001, had smaller scores in the sample indicating that the differences in those factors across the segments were smaller.

The first segment included 55 percent of the subjects ($n = 146$). Since this is the largest national segment, the most satisfactory results would provide some distinctive characteristics that food marketers could use. This is only partially the case. An examination of shopping orientation mean scores and Scheffé results displayed in Table 7 shows that a majority of food shoppers represent a common denominator sort of segment. The segment had the distinctively lowest mean scores on politics ($M = 2.54$), and store/attention ($M = 2.56$). The mean score for patriotism is higher than for the second but lower than for the third segment. Thus, the segment was not motivated by political behavior nor by relations to stores or by time dedicated to food shopping. The segment's modus operandi appears to gravitate toward indifference. Therefore, the first segment was labeled "Indifferent Segment". The second segment included 21 percent of the subjects ($n = 55$). This segment had the highest score for the politics orientation ($M = 3.58$) and for the store/time ($M = 3.46$) orientation. Patriotism is of the lowest importance to them. They explicitly dedicate time to food shopping, select their stores carefully, are aware of the consequences of their shopping behavior and consider food shopping as a means of making a public statement. Therefore, this group was labeled "Dedicated Segment". The third segment comprises 24 percent of the sample ($n = 63$). This group had the distinctively highest score on the patriotism orientation ($M = 3.77$). Consequently, it was labeled "Patriotic Segment".

Profile of food shopping segments. MANOVA and ANOVA with Scheffé's test were used to profile the grocery shopping segments. The analysis made it possible to determine whether the food shopping segments differed with respect to (1) the perceived differences in domestic versus foreign food images, (2) the extent to which they differed with respect to evaluation of food attribute importance, and (3) other demographic and behavioral variables.

MANOVA results (see Table 7) reveal that the Czech food shopping segments differed with respect to the perception of domestic versus foreign food products.

They differed little with respect to the evaluation of food attribute importance and with respect to the shopping frequency (behavioral variable) but not at all with respect to demographic variables. ANOVA reveals, further, that the segments differed significantly with respect to all image criteria but the perceived GMO content. Furthermore, ANOVA results reveal significant differences between the patriotic food shoppers and the indifferent shoppers for six out of eight image attributes (taste, environmental impact, freshness, preservatives content, health promotion, and look) while the dedicated shoppers perceive foreign products significantly better with respect to the price-quality-ratio. Finally, ANOVA results (in the lower half of Table 7) show significant different importance of the food products attributes appearance, health promotion, environmentally friendly production and country-of-origin.

DISCUSSION

Consumers in the Czech market perceive foreign-made food products significantly better than domestic alternatives with respect to several important criteria. Exceptions are the attributes appearance and GMO content. This is good news for foreign food marketers in that Czech consumers in general view foreign offers quite favorably. The results of a psychographic segmentation show, however, that in the Czech Republic three viable segments exist that display distinct shopping styles. The segments significantly differed in their perception of domestic versus foreign food products. These segments did not differ significantly with respect to demographics. Managerial implications are described as follows:

The Indifferent Segment was the largest group and comprised more than half of the subjects. The group had the lowest scores on store/ time and dedication. People in this segment do not pay close attention to where products come from nor what the consequences of their purchasing behavior might be. The group was little patriotic and displayed an average perception of the better price-quality-ratio of domestic food products. These findings may be viewed as a window of opportunity for marketers in terms of devising strategies to satisfy this segment for expanding their markets by effectively luring the segment into developing preferences for foreign-made products.

The Dedicated-Food-Shoppers Segment had the highest score on the politics and on the store/ time shopping orientation. The group comprised roughly a quarter of the subjects and exhibited the lowest score on the patriotic shopping orientation. People in this group perceived foreign food products significantly best with respect to the attribute price-quality-ratio. Food marketers interested in targeting the Dedicated-Food-Shopper Segment should focus on communicating the consequences of choosing their offer (e.g. for jobs and the natural environment), supply to appropriate stores, and provide a unique price-quality-ratio.

The Patriotic Segment included roughly a quarter of the food shoppers. While not the largest group, the size of this segment is certainly sufficient for attracting the attention of food marketers. The group has great trust in domestic food production, strongly believes that domestic products stand for quality, considers domestic food a part of their national identity, and is very proud of it. They also dedicate some time to food purchasing and are aware of the effects of their behavior. Patriotic shoppers place greater value on the country-of-origin of food products and perceive domestic products significantly better. When exposed to foreign or imported food, members of this group are more likely to reject those offers. This segment is relatively difficult for internationally operating food industries to target. Food producers who are interested in acquiring the patriotic Czech consumers should focus on appropriate image campaigns, emphasizing their products being from joint ventures or direct foreign investments.

CONCLUSIONS

The results of this study demonstrate that consumers in the Czech Republic perceive foreign food products better than domestic alternatives and that patriotism plays a major role in this perception. It also shows that the food products market can be segmented on the basis of shopping orientations. These shopping orientation-based segments differed in the perception of food attributes. The study allows present national and international food retailers, distributors and manufacturers to re-examine the traditional thinking about the Central European food market.

All three of the food shopping segments produced extreme (both high and low) mean scores on various shopping orientations. This made it easy to characterize the segments. The same three groups exhibited pair wise differences on at least two of the eight profiling attributes. Thus, the groups can be addressed by using segmented approaches tailored to their shopping orientation and their profiling characteristics.

Limitations and recommendations

Although the respondents of this study possessed relatively diverse demographic characteristics, the sample was obtained in only one major city. Such a sample may differ from the target population because of non-coverage. Therefore, the site of the sample population may have biased the results (Gierl 1995).

Furthermore, the national sample was homogeneous in terms of ethnicity, with 100 percent of respondents being Caucasian. With respect to ethnicity, future studies (especially those extending on EU countries) should consider two approaches. First, data from national samples could be analyzed in a manner similar to this study. The findings would, therefore, be based on a more ethnically diverse sample representative of the European increasingly multi-ethnic makeup. Second, respondents could be broken into ethnic categories and analyzed separately. This would enable researchers and practitioners alike to determine whether ethnic segments within the EU should be treated in a different manner.

Future research should also examine other variables in the context of food images/ choice. Such factors as patriotism (Han 1988), feelings of animosity (Njissen et al. 1999), ethnocentrism (Shimp and Sharma 1987), perceived availability of domestic alternatives (Klein et al. 1998) or more easily available variables like amount spent, differences with respect to food product categories, income or education. The type of food stores patronized could also be examined to determine the types preferred by the more patriotic shoppers. Thus, respondents would indicate their preferences for traditional food stores, supermarkets, hyper-markets, specialty stores, to name a few. The inquiry could determine whether patriotic shoppers tend to patronize one type of store for their shopping (in Czech Republic e.g. traditional small stores or national chain stores like Coop and Sesam) while avoiding others (e.g. international chain stores like Tesco, Carrefour or Globus). Finally, the relation between food images and preferences and actual purchases / choice needs to be determined.

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Economic possibilities of breeding the suckling cow population in Slovakia

Ekonomické možnosti chovu nedojenej populácie kráv na Slovensku

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Abstract: The object of this work was the model analysis of breeding possibilities in the population of suckling cows in Slovakia in various production conditions. In the model calculations, we used the real prime costs (PC) per 1 feeding day (FD) from breeders in sub-mountain (S) and mountain (M) regions in Slovakia for the year 1998, or up to the first six months of 1999, into which there was reflected our estimation of the economic changes impact to July 1, 1999 (minimum increase of costs per 1 FD + 15.22%). The total economic efficiency of cattle rearing, which reflects the economic effect of individual cattle categories calculated to common denominator, was expressed by the method of extended herd turnover in which we determine the profit or loss per cow per common economic year. After the individual variants of origin of the non-milked population, production orientation and type of herd turnover, we calculated the loss per cow in sub-mountain production conditions to be in the interval from 16,950.92 SKK to 26,971.32 SKK at prices without including the subsidies granted for land (prices without SPT). After including the part of subsidies granted for land, i.e. price with SPT, the loss was within the span 8,868.43 SKK to 18,886.84 SKK per 1 suckling cow. We proposed the subsidy per cow to be from 10,700 SKK to 16,400 SKK from these calculations and to achieve zero cost profitability for this region. We estimated the loss per 1 suckling cow in mountain regions from 18,356.09 SKK to 29,533.54 SKK using the prices without SPT. After including the subsidies, i.e. prices with SPT, the loss was within the span from 4,720.88 SKK to 15,896.992 SKK. We proposed the subsidy from 6,500 to 13,500 SKK/head to achieve zero profitableness in the year 2000 in this region.

Key words: suckling cows, Slovak Pied or Pinzgau breed, fattening, categories of cattle, liveweight gains, economic profitability, prime costs, realisation prices, profit

Abstrakt: Cieľom práce bola modelová analýza možností chovu nedojenej populácie kráv na Slovensku v rôznych výrobných podmienkach. V modelových výpočtoch sme použili skutočné vlastné náklady (VN) na 1 kŕmny deň (KD) od chovateľov v podhorskej (P) a horskej oblasti (V) SR za rok 1998, resp. k I. polroku 1999, do ktorých sme premietli náš odhad dopadu ekonomických zmien k 1. 7. 1999 (minimálny rast nákladov na 1 KD + 15.22 %). Celkovú ekonomickú efektívnosť chovu dobytka, ktorá vyjadruje ekonomický vplyv jednotlivých kategórií dobytka v prepočte na spoločného menovateľa, sme vyjadrili metódou rozšíreného obratu stáda, ktorou stanovujeme zisk, resp. stratu na kravu za bežný hospodársky rok. Podľa jednotlivých variant vzniku nedojenej populácie, výrobného zamerania a typu obratu stáda sme pri cenách bez započtu subvencií poskytovaných na pôdu (ceny bez DCN) vypočítali stratu na kravu v podhorských výrobných podmienkach v intervale od 16 950,92 Sk do 26 971,32 Sk. Po započte časti subvencií poskytovaných na pôdu, t.j. ceny s DCN, bola strata v rozpätí 8 868,43 Sk až 18 886,84 Sk na nedojenú kravu. Z týchto výpočtov sme na dosiahnutie nulovej nákladovej rentability pre túto oblasť navrhli subvenciu na kravu od 10 700 Sk do 16 400 Sk. V horských oblastiach sme odhadli stratu na nedojenú kravu pri použití cien bez DCN od 18 356,09 Sk do 29 533,54 Sk, po započte subvencií, t.j. cenách s DCN bola strata v rozpätí od 4 720,88 Sk do 15 896,992 Sk. Pre túto oblasť sme navrhli subvenciu na dosiahnutie nulovej rentability v roku 2000 od 6 500 Sk do 13 500 Sk/ks.

Kľúčové slová: nedojená populácia kráv, slovenské strakaté, pinzgauské plemeno, výkrm, kategórie dobytka, prírastky živej hmotnosti, ekonomická efektívnosť, vlastné náklady, realizačné ceny, zisk

The present situation in agriculture is the resultant of the influence of economic reforms within the whole national economy. Cattle breeding was the branch most affected by the restrictive policy, liberalisation of input prices in the primary production of sub-marginal regions of SR.

In the conditions of stable national and agricultural economy, there can be expected a growing interest of breeders in the differentiation of herds aimed either at milk and meat production (milked population) or at the production of high quality beef or fattening animals (population of suckling cows) in the sub-mountain or mountain regions of SR.

LITERATURE SURVEY

Cattle breeding is in all spheres of production limited by the specific biological character of production which necessitates permanent care, i.e. without interruption, for the individual categories. The economics of cattle sector is determined by the production purposes (milk or meat), natural and climatic conditions, efficiency and reproduction parameters, and , last but not least, by human beings, their relation to production in its whole production vertical.

Only efficient economy is able to create a strong working partnership, therefore the agricultural primary production must create a part of the whole vertical, i.e. it should provide the primary production and participate in processing up to the trade. Composite authors (1991). Works by Bogdányi et al.(1996), Grega (1999), Kubánková et al. (1999), Composite authors (1999), Daňo, Huba (1999) and others deal with the situation in the economics of cattle breeding and its causes.

Blaas et al. (1999) state through the table values that the Slovak farmer had to work 2.7 times more to earn 2/3 of his pay in comparable buying power during the last eight years compared with other sectors of the national economy. The "Conception" adopted by the government of SR in September 1998 made it its strategic aim to provide suitable living standard and improvement of life quality for people living in the country, sufficient job opportunities and suitable earnings through the development of economic activities in the sphere of agriculture (Haraj 1999).

Kopecký (1981), Pflaum et al. (1992), Langr (1996), Chrenek et al. (1997), Zahrádková (1997), Kica et al. (1998), Kica, Huba, Polák, Sakowski (2000), and other were engaged in fattening of the individual categories of cattle in general. These works dealt with breeds-genotypes, different nutrition, without being aimed at specialised rearing of non-milked population.

Works dealing with the specialised rearing of non-milked population issued lately in the Slovak and Czech Republics by Bogdányi et al. (1996) and Ježková, Louda, Dvořák, Stádnik (1999), who observed twelve farms on which meat breeds were reared in various climatic conditions during the years 1995–1997. The most comprehensive work by Teslík et al. (1996) contains the summary of rearing the population of suckling cows abroad, in CR, of suitable breeds which can be reared or used as non-milked population of cows, their efficiency and reproduction parameters, principles of rearing, nutrition and economic problems of rearing and mainly realisation of high-quality beef.

DATA AND METHODOLOGY

We focused our attention on the models and the analysis of model economic results we obtained mainly from farmers keeping the milked population, and only a part from non-milked herds the creation of which was at the very beginning. As it was necessary to elaborate the possibilities of rearing such a population in the second half of 1999, we worked out economic models, which created a partial basis for the subsidy rules in SR for the year 2000.

We used the real prime costs (PC) per 1 feeding day (FD) from farmers in sub-mountain (S) and mountain (M) regions in SR during 1998 or first half year 1999 in model calculations, which reflected our estimation of economic change impacts to 1st July, 1999 (minimum growth of costs per 1 FD + 15.22%).

The total economic efficiency of cattle rearing, which reflects the economic effect of individual cattle categories calculated to common denominator, was expressed by the method of extended herd turnover in which we determine the profit or loss per dairy cow or cow per common economic year. It was necessary to determine the following input parameters to perform the calculation:

Parameter	Symbol
1. Price for born calf	P_{BC}
2. Costs of realised calf (selection)	C_{rc}
3. Costs of 8 months old calf placed on feed	C_{gc}
4. Average liveweight of 8 months old calf	W_{gc}
5. Costs of realised slaughter heifer	C_{rh}
6. Costs of realised heifer close to calving	C_{rCC}
7. Costs of realised slaughter bull	C_{rb}
8. Costs of production of primipary cow	C_{pcow}

The individual input parameters were calculated on the basis of following formulas:

1. $P_{BC} = W_{bc} \times 50 - SSK$

2. $C_{rc} = \dfrac{W_{sc} - W_{bc}}{\delta_c} \times PCFD_c$

3. $C_{gc} = (180 \times PCFD_c) + P_{BC}$

4. $W_{gc} = (180 \times \mathrm{dc}) + W_{bc}$

5. $C_{rh} = \dfrac{W_{sh} - W_{gc}}{\delta_{YC}} \times PCFD_{YC} + C_{gc}$

6. $C_{rCC} = (x_1 \times PCFD_{YC}) + [(x_o - x_1) \times PCFD_{CC}] + C_{gc}$

x_1 = age at the first calving – 330 days

$$x_0 = \frac{W_{rCC} - W_{gc}}{\delta_{YC}}$$

7. $C_{rb} = W_{sb} \times PC_{LW}$, or

$$\frac{W_{sb} - W_{gc}}{\delta_b} \times PCFD_b + C_{gc}$$

8. $C_{pcow} = (150 \times PCFD_{CC}) + (x_1 \times PCFD_{YC}) + C_{gc}$

We used the results gained from farmers and average realisation prices without supplementary price tools (SPT) valid in May 1999 to estimate and calculate the profit or losses per cow in 2000. We used also the prices with the included so called SPT, which we derived from subsidies granted for land because of worse production conditions, to reach greater objectivity. We calculated the size of subsidies according to the estimation of proportion of earnings from the non-milked population and individual cattle categories in total earnings of breeder and we added them as SPT to unit prices. More precise data are mentioned in the results. As there are used real costs per individual categories in the economic turnover of herd and not the prices of transfer, our results can be in a certain way inconsistent with the results for agricultural enterprises.

Explanatory notes :

$PCFD_c$	– prime costs per 1 feeding day of a calf
$PCFD_{YC}$	– prime costs per 1 feeding day of young cattle
$PCFD_{CC}$	– prime costs per 1 feeding day of heifers close to calving
$PCFD_b$	– prime costs per 1 feeding day of bulls in fattening
PC_{LW}	– prime costs per 1 kg live weight in fattening of bulls
W_{bc}	– average liveweight of calf at birth
W_{sc}	– average liveweight of calf at slaughter realisation
W_{sh}	– average liveweight of heifer in fattening at realisation
W_{sCC}	– average liveweight of heifer close to calving at realisation
W_{sb}	– average liveweight of bull at slaughter realisation
d_c	– average daily liveweight gain in calves
d_{YC}	– average daily liveweight gain of heifers in rearing
d_b	– average daily liveweight gain of bulls in fattening

RESULTS

In 1999, there still did not exist a reliable basis of data to evaluate the economics of rearing the cows without market milk production which we call the population of suckling cows, so we decided to perform the model calculations.

In the model calculations of economics of rearing the non-milked population of suckling cows in Slovakia, we thought of two basic alternatives, namely rearing in sub-mountain "S" or mountain "M" regions for which we defined the natural and economic parameters. Further we took into account the open or closed herd turnover and two types of production orientation. At the same time, we took into account four variants of creation the non-milked herd: purchase of a herd of meat breeds (average price 60 ths SKK/head live weight at culling – 600 kg), creation of a herd by selection of dairy cows after the 1st calving, selection after 1st and 2nd calving (50% : 50%) and selection after the 1st, 2nd and 3rd calving (34% : 33% : 33%). The length of calving interval (CI) was in all alternatives (region, herd turnover) and in all variants identical – 380 days (+ 120 feeding days – FD – after last calving).

Conditions of alternative I :
(Sub-mountain regions "S", 500–800 m above sea-level), Σ FD = 2,020

- selection of dairy cows with higher genes proportion of milk breeds
- lifetime efficiency – 6 calves, culling of cows – 16.70%
- selection criteria of milk efficiency:
  - 2 900 kg after 1st lactation
  - 3 100 kg after 2nd lactation
  - 3 300 kg after 3rd lactation
- average prime costs for the production of first-calver – 34,000 SKK
- average live weight (l.w.) at culling – 540 kg
- average realisation price of slaughter cow – 29 SKK/kg l.w.
- average depreciation of basic stock (BS) – 1.58 SKK/kg milk
- average live weight gains – calves – 930 g; – heifers – 1 000 g; – bulls – 1200 g

Conditions of alternative II:
(Mountain regions „M" > 800 m above sea-level) basic FD = 2,400

- selection of dairy cows SP breed and crosses with lower genes proportion of milk breeds
- lifetime efficiency – 7 calves, culling of cows – 14.30 %
- selection criteria of milk efficiency:
  - 2 600 kg after 1st lactation
  - 2 900 kg after 2nd lactation
  - 3 100 kg after 3rd lactation
- average prime costs for the production of first-calver – 36,000 SKK
- average live weight at culling – 500 kg
- average realisation price of slaughter cow – 29 SKK/kg l.w.
- average depreciation of basic stock (BS) – 1.93 SKK/kg milk
- average liveweight gains – calves – 850 g; – heifers – 900 g; – bulls – 1 000 g

Table 1 shows that the highest depreciations per 1 FD were at the purchase of heifers close to calving of meat breeds and the lowest ones at the selection after first to third lactation. Even lower depreciations can be achieved by purchasing selected cows intended for slaughter realisation but the reproduction disorders must not be the reason for selection. Similar results were calculated also at the creation of non-milked herd in mountain regions of SR, however, the costs were slightly lower because of one extra born calf (Table 2). The purchase of selected cows of the Slovak Pinzgau breed or their crosses can also decrease the level of depreciations per 1 FD in basic stock. Precise definition of these depreciations will depend on price for which the breeder acquires the cow and not on the size of depreciations through the milk produced already.

The model economic efficiency of individual alternatives and variants (64) of rearing the population of suckling cows was determined by the method of extended herd turnover, i.e. expressing the profit or loss per cow and year. We used the prime costs per 1 feeding day (FD) for the first half year 1999 from breeders in the sub-mountain (S) and mountain (M) region in our calculations, which reflected already thé impact of economic changes to 1st July, 1999, i.e. +15.22% as a minimum (Table 3).

We envisage two possibilities of production objectives in our calculations (young cattle for fattening 8 months, or production of good quality beef from bulls and heifers). When constructing the realisation prices for a year, we started from the prices valid in May 1999 and estimates of unit pricing increment as a manifestation of higher quality of production (start of fattening – 50 SKK/kg l.w., fattening – 45 SKK/kg l.w., selected calf – 40 SKK/kg l.w. and selected fattening – 38 SKK/kg l.w.). We used also the prices with supplementary price tools (SPT) to express the profit or loss per dairy cow in numbers. SPT were derived from subsidies granted for land because of worse production conditions, the basis being created by the need of land (permanent grasslands – PG) per 1 average suckling cow (sub-mountain region "S" – 4.21 ha, average subsidy 2,400 SKK/ha, mountain region "M" – 5.05 ha, A subsidy 3,000 SKK/ha). We suppose 80% proportion of earnings from the non- milked population in the region of uplands, 90% in highlands. The mentioned proportions of subsidies for soil were allocated to the main products (young cattle, slaughter beef) and they were added as SPT to the current prices. However, we recommend to understand the values of shares in earnings as maximum values as there do not exist conditions for strict specialisation in the broader range at present.

The calculations showed that even if the subsidies for land are added the state will have to support actively this

Table 1. Model calculation of depreciation variants in basic stock (BS) per 100 suckling cows (SC)
Alternative I ("P", 500–800 m above sea-level)

Parameter	Purchase of meat breeds	Replacement of dairy cows into SC		
		after 1st lactation	after 1st and 2nd lactation	after 1st–3rd lactation
Depreciations in BS	4 260 000	1 834 000	1 834 000	1 834 000
Ø milk production	–	290 000	445 000	603 500
Depreciations through milk	–	458 200	703 100	953 530
Depreciations through meat	4 260 000	1 375 800	1 130 900	880 470
FD suckling cows	202 000	164 000	145 000	126 380
Annual depreciation BS	7 697.85	3 062.00	2 846.75	2 542.90
Depreciations per 1 FD	21.09	8.39	7.80	6.97

Table 2. Model calculation of depreciation variants in basic stock (*BS*) per 100 suckling cows (SC)
Alternative II ("M", > 800 m above sea-level)

Parameter	Purchase of meat breeds	Replacement of dairy cows into SC		
		after1st lactation	after1st and 2nd lactation	after1st–3rd lactation
Depreciations in BS	4 260 000	2 150 000	2 150 000	2 150 000
Ø milk production	–	260 000	355 000	553
Depreciations through milk	–	501 800	685 150	1 068 641
Depreciations through meat	4 260 000	1 648 200	1 464 850	1 081 359
FD suckling cows	240 000	202 000	183 000	164 380
Annual depreciation BS	6 478.75	2 978.18	2 921.70	2 401.12
Depreciations per 1 FD	17.75	8.16	8.00	6.58

Table 3. Prime costs (PC) per 1 feeding day (FD) in non-milked population after 1st July, 1999 in SKK

Parameter	Purchase of meat breeds	After 1st lactation	After 1st and 2nd lactation	After 1st–3rd lactation
"S" cow	81.60	72.01	71.85	70.43
"M" cow	81.81	72.22	72.06	70.64
Calves			24.61	25.36
Heifers-fattening		54.21	54.40	
Bulls-fattening		53.12	52.49	
Region		"S"	"M"	

Table 4. Proposals of subsidies per one average suckling cow according to variants of origin and rate of profitability (*Rp*) in SKK/head/year

Product	500–800 m region "S" variant I	500–800 m region "S" variant IV	over 800 m region "M" variant I	over 800 m region "M" variant IV
Young cattle				
$Rp = 0\%$	14 500	10 700	10 200	6 500
$Rp > 0\%$	16 700	12 300	12 200	7 700
Slaughter beef				
$Rp = 0\%$	16 400	12 700	13 500	9 800
$Rp > 0\%$	19 000	14 600	16 200	11 700

variant I – creation of herd by purchase of heifers close to calving
variant IV – creation of herd by selection of dairy cows after 1st, 2nd and 3rd calving

production orientation in cattle breeding. The proposal of minimum subsidies per 1 suckling cow in sub-mountain (S – 500–800 m above sea level) and mountain regions (M – 800 m above sea level) to achieve zero or positive ("S" = 15%, "M" = 20%) profitability (*Rp*) in production of material for young animals or slaughter beef starts from data given in Tables 5, 6. The proposed span of subsidies per 1 suckling cow (Table 4) is an average of opened and closed herd because we think that there will prevail a mixed turnover within the period of the first five years. Similarly, it is quite probable that the production orientation will be determined by the situation in the market, i.e. by demand for commodities (young cattle, carcass beef).

Accepting the proposals of subsidies for non-milked population and sustaining the support of herds aimed at milk production the state can decide whether to subsidise the production and non-production functions through one section only (Ministry of Agriculture SR) or through the multi-sectional resources allocated by sections of agriculture, interior, social affairs, environment and partially public health.

The limiting factor of economic success in breeding the milked and non-milked cattle populations in sub-mountain and mountain regions of Slovakia or of the agricultural policy of the state will be, however, further development of the purchasing power of inhabitants in Slovakia.

In conclusion of these model calculations and proposals of subsidies, we would like to add one more relevant fact. With calculations of the gross price margin in fattening of bulls of Slovak Pied breed, or its crosses with

Table 5. Model loss per one average suckling cow after the variants of origin and type of herd turnover for young cattle Production orientation = production of young cattle in SKK/head/year

Parameter		500–800 m (region "S") without SPT	500–800 m (region "S") with SPT	over 800 m a.s.l (region "M") without SPT	over 800 m a.s.l (region "M") with SPT
var. I					
	opened	–24 680.18	–16 598.15	–25 833.75	–12 198.68
	closed	–20 305.99	–12 223.50	–21 796.10	–8 160.88
var. II					
	opened	–21 179.84	–13 097.80	–22 333.41	–8 698.34
	closed	–17 425.49	–9 343.00	–18 842.69	–5 207.47
var. III					
	opened	–21 121.45	–13 039.40	–22 275.00	–8 639.93
	closed	17 377.44	–9 294.95	–18 793.41	–5 158.19
var. IV					
	opened	–20 603.14	–12 521.10	–21 756.71	–8 121.64
	closed	–16 950.92	–8 868.43	–18 356.09	–4 720.88

var. II – creation of herd by selection of dairy cows after 1st calving
var. III – creation of herd by selection of dairy cows after 1st and 2nd calving
var. I and IV – as in Table 4

Table 6. Model loss per one average suckling cow after the variants of origin and type of herd turnover for carcass beef
Production orientation = production of carcass beef in SKK/head/year

Parameter		500–800 m (region "S")		over 800 m a.s.l. (region "M")	
		without SPT	with SPT	without SPT	with SPT
var. I					
	opened	–26 971.32	–18 886.84	–29 533.54	–15 896.92
	closed	–22 000.35	–13 917.10	–24 779.07	–11 145.57
var. II					
	opened	–23 470.97	–15 386.49	–26 032.84	–12 396.58
	closed	–19 119.85	–11 036.60	–21 825.65	–8 199.38
var. III					
	opened	–23 412.57	–15 328.10	–25 970.83	–12 334.57
	closed	–19 071.79	–10 988.54	–21 772.77	–8 139.28
var. IV					
	opened	–22 894.26	–14 809.80	–25 456.14	–11 819.88
	closed	–18 645.27	–10 562.02	–21 339.06	–7 705.56

var. II – creation of herd by selection of dairy cows after 1st calving
var. III – creation of herd by selection of dairy cows after 1st and 2nd calving
var. I and IV – as in Table 3

Holstein-Friesian breed (to 37.50%), to various live weights which originated in results of experimental fattening in RIAP Nitra, there was estimated a costs equation in form of $y = 109.2025 - 0.093709x + 0.000038x^2$. Solving the basic characteristics of this equation we found out that the maximum daily gain $x_{max.} = 1\,233$ g, and minimum of costs $y_{min} = 51.43$ SKK/kg, i.e. the gain is on the level of physiological limit of an above-average breeder in SR already but the price of beef is still lower than the minimum costs per 1 kg gain. We think therefore that only the acceptation of balanced ratio of prices 1:8 (milk/meat), which should be valid in breeding of dual-purpose breeds, could cause that the price of beef will perform its reimbursement function.

DISCUSSION

The aim of the work was the model analysis of economics of suckling cows, and theoretical proposals of subsidies for breeding the suckling cows in the Slovak Republic. However, we realised with the model analysis, as Pitel (1982) did, that between the demonstrated, i.e. determined economic reality and economic-mathematical model exists always a certain type of analogy with various degrees of objectivity. Therefore, we paid great attention to the initial analysis of costs and cost items which were included for calculations, and the results achieved by breeders during the first six months 2000 have confirmed these estimations already.

We chose the model approach first of all because the breeders, who have the non milked population for a certain period, keep only accounting for milked and suckling cows, as well. Ježková, Louda, Dvořák, Stádnik (1999), and Teslík et al. (1996) complain of the same problems with gaining objective economic data, and Kopecký (1981) pointed out their necessity for analytical calculations.

The proposed or recommended parameters of efficiency and reproductive parameters, we used in model calculations, correspond with the results of experimental fattening or breeding standards in meat as well as dual-purpose breeds. For example Bogdányi et al. (1996) mentioned that the Simmental breed in Germany, which is close to the Slovak Pied breed (S-breed), achieved even better results in tests at the station in Eiehelborn than the pure meat breeds. They give PC per 1 FD of cow – 71.07 SKK, calf – 18.50 SKK, fattening heifer – 46.81 SKK, bull – 46.22 SKK/FD in 1996. These results are comparable with our costs with regard to the development of prices. As regards the development of beef consumption per inhabitant in SR, they mention that the decrease of beef consumption and changes in the structure of meat consumption do not give the evidence of change in taste of the Slovak consumers but it is the consequence of development of purchasing power of the today's average Slovak.

The higher potential of the growth intensity in our breeds, which we took into account in our models was, reported also by Chrenek et al. (1997). In the series of experimental fattening with the bulls of S-breed at RIAP Nitra, the bulls achieved a lifetime gain 1221 g and dressing percentage 62.66%. The potential ability of S bulls was estimated as >1 600 g, Slovak Pinzgau (SP) breed >1 400 g, and of the Holstein-Friesian (HF) bulls or the milk breeds within the span 1 300–1 500 g, however, with lower carcass value. Economic efficiency of bull or heifer fattening was conditioned by decrease of relative ratio of nutrients for the maintenance from the total content of nutrients in the feed ration. After the cited author, the production efficiency of feed ration (PE), must be created at least for the daily gain 1000 g in bulls or 900 g in heifers. We envisaged the same values of gains in fattening in the mountain region (M), and higher growth intensity in sub-mountain region (S), which was, however, still under the limit of potential ability of the Slovak genetic pool.

The proposed parameters of gains in rearing of calves to 8 months, or in fattening of bulls and heifers were comparable with results found by Daňo, Huba (1999). When comparing the gains in Braunvieh breed, improved SP or S breeds, the daily gains in calves tested at RIAP Nitra were 965 g, 807 g and 1 055 g, resp., and in bull fattening 1 246 g, 821 g and 1 113 g, resp. Kica et al. (1998) tested the progeny of 4 sires of the Simmenthalised cattle breeds of native and foreign origin for meat efficiency. The average live weight gains ranged from 1 211 g to 1 297 g after the sires in four groups. These values were only slightly higher than those we envisage in our models for the sub-mountain production region (S) in SR. Kica, Huba, Polák, Sakowski (2000) evaluated in their work the meat efficiency in young bulls of beef breeds kept only in sub-mountain and mountain regions of Slovakia and they found out that the bulls of S-breed achieved in intensive breeding conditions the highest intensity of growth – 1 392 g, lower intensity was in young bulls of the Braunvieh breed 1 276 g, followed by bulls of SP breed – 1 223 g, SP improved by the Piemontese meat breed 1 218 g. All these values prove the objectiveness of the model efficiency parameters we used in our calculations. Teslík et al. (1996) give also higher efficiency parameters for individual meat breeds. They mention the Charolais breed which is kept only in small herds (25–30 cows), the cows lost 30–35 kg liveweight during the winter period. They compensated this loss during the first 70–90 days after they were let to the pasture. The gain in calves was about 1 000 g/day, in very good rearing conditions up to 1 200 g. The spring gains in calves were 1 050 g, they decreased to 850 g during the summer, in autumn it was possible to increase the gain by 10–20%, i.e. by 80–160 g/day, with additional feeding. The gains in bull fattening were over 1 400 g. The authors mentioned that the Piemont breed showed good conversion of forage, dressing percentage of bulls over 65%. They did not recommend the Blue Belgian breed which achieved carcass weight earlier, because great culling of cows (2.80 calves per cow) affected negatively the profitableness of herd. Longevity was according to the authors the basis of the economics of the suckling cows population, and according to their calculations, it is necessary to get 7–8 calves from one cow. We think that this parameter also was considered in our model calculations. The calculations given by authors were very low but the authors themselves admitted for the variability upwards. The essential difference was that they involved the price of transferred heifer close to calving (16 ths CZK) into the economics of production, and not the real costs for the production of one cow. The last beef breed, which can be the most interesting from the viewpoint of production of commercial crossbreds in SR, was the Limousine breed. We considered it as prospective in construction of models. This breed is inexpressively seasonal in fattening to 400–500 kg l.w. but in production of 7–9 months old cattle for fattening is the seasonal character of this breed inevitable. It is of great production age, i.e. 14–15 calves per life with 98% natality. Daily live weight gain in calves were to 1 000 g, in fattening of bulls 1 150–1 450 g/day, and gain in meat proportion was as much as 620 g. Relatively lower growth intensity was compensated by higher dressing percentage.

In special literature, there are predominantly mentioned only slight differences in meat quality between the breeds and various crosses. The carcass structure is important from the economic point of view, i.e. the dressing percentage and meat proportion (m.p.). Therefore, when we think about breeding the non-milked population, we think more about the production of commercial crosses than about pure breeding. The authors say that the sales price will be the primary problem which they met in other countries also. The economics of pasture is not simply possible in Europe as it is typical for the USA, Canada, and South America. This is a given fact and it should be taken into account in the customs protection and subsidy policy. The quality of beef from beef breeds and their commercial crosses is not appreciated in most national markets even today, and the breeders in EU, too, depend on the special market.

As far as seasonality is concerned, irrespective of Teslík et al. (1996), we think that seasonality in calving of suckling cow population was a dependent variable of structure in cattle breeding, concentration of cows, production orientation and form or type of ownership.

The form of ownership represents relations which are still not developed in the Slovak agriculture but they determine the final economic results through a number of factors. The first factor is a certain "inner" feeling of ownership and so a feeling of moral responsibility for maintenance and improvement not only in cattle breeding. As a farmer with a herd of 25–30 suckling cows, I would not need seasonality in calving, the bull being kept in the herd during the whole year, and the income from realisation of the breeding material, young cattle or carcass beef would be equally spread during the whole year. The second important factor is the economic consciousness which should be presented on different levels of knowledge with every worker in agricultural primary production. We dare to state with a large portion of certainty that almost ten years after the political changes in SR remained the economic thought on the level of the seventies and eighties. The economic viewpoints are being put to the fore and the biological aspect of primary production is only little respected or is not respected at all nowadays. We consider therefore the proposals of subsidies mentioned in Results to be the minimum, and we recommend to increase the present subsidies for suckling cow by 25–30% at least, in relation to the new economic measures in the year 2000 (further increase of input prices).

The subsidies to agricultural-ecological programmes, i.e. to breeding of suckling cows, should not be understood as a certain gift by the grace of the state but as an effective investment with returns through the branch of tourism. The state would preserve the cultural nature of landscape, its settlement at the same time, as it declared in various forms (Haraj 1999).

CONCLUSION

The aim of this work was the model analysis of possibilities in suckling cow breeding in various production conditions in Slovakia. We calculated the loss per cow in sub-mountain production conditions in the interval from 16,950.92 SKK to 26,971.32 SKK according to the individual variants of origin of the non-milked population, production objective and type of herd turnover with prices without included subsidies granted for land (prices without SPT). The loss was found within the span from 8,868.43 SKK to 18,886.84 SKK per 1 suckling cow after the part of subsidies granted for land were included, i.e. price with SPT. On the basis of these calculations, we proposed the subsidy from 10,700 SKK to 16,400 SKK per cow to achieve zero profitableness for this region. In mountain regions, we estimated the loss per 1 suckling cow from 18,356.09 SKK to 29,533.54 SKK using the prices without SPT, after including the subsidies, i.e. prices with SPT. There was found the loss within the span from 4,720.88 SKK to 15,896.992 SKK. For this sphere, we proposed the subsidy from 6,500 SKK to 13,500 SKK/cow to achieve zero profitableness in the year 2000.

The economics of breeding the non-milked population will be one of the most difficult product economics from the viewpoint of further study. More precise knowledge of it necessitates longer co-operation with breeders who will exactly differentiate and keep the register of individual cost items which will increase the ability of the gained results to grant more information.

The breeding of suckling cow population in Slovakia can become one of the branches of agricultural primary production in the coming period, which will revitalise the today "deserted" production facilities and soil. One part of the urban population can become the new breeders, who come from villages and are not able to bear the constantly rising living costs in towns any more. The authorities of the state administration should already be engaged in the return to agriculture as an existential basis at present.

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Regional zonality of energetic potential of crop production in Slovakia

Regionálna zonalita energetického potenciálu rastlinnej výroby na Slovensku

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Abstract: Plant production energetic level in Slovakian pedo-ecological units have been effecting both objective and subjective factors. Objectively energetic flows level has been under influence of pedo-climatical and geomorphological conditions. Subjective factors introduce selection of agricultural land resources and level of additional energy inputs into the process of manufacture. Respecting these factors by energetic flows balance in 14 pedo-ecological subregions of Slovakia, we issued from plant production structure optimization models elaborated for these subregions in the Soil Fertility Research Institute. The models are primarily oriented on landscape ecology and manufacture economics, whereby they are based on soil productivity potential. The results attained confirmed that energetic inputs level and energy generation comprised in plant production products is in Slovakian heterogeneous conditions various. Energetic balance in the level of pedo-ecological subregions showed considerable dependence of both energetic inputs (r = 0.994) and energetic outputs (r = 0.995) on soil productivity potential. Energetically more deposits per 1 ha farming land are in the level 20 GJ/ha, while in the conditions of basins of higher degree, mountains and uplands only in the level 10 GJ/ha. In lower located regions energy generation is highest as well as energetic gain. However, efficiency of energetic inputs spending is on the contrary highest in higher located regions. It is obvious that in marginal regions input intensification does not bring neither adequate energetic, nor economic effect.

Key words: energy balance, energy inputs, energy production, energy efficiency, production potential o soils

Abstrakt: Úroveň energetického potenciálu rastlinnej výroby v pôdno-ekologických podoblastiach Slovenska ovplyvňujú objektívne i subjektívne faktory. Objektívne je úroveň energetických tokov ovplyvnená pôdno-klimatickými a geomorfologickými podmienkami. Subjektívne faktory predstavuje voľba štruktúry využívania poľnohospodárskeho pôdneho fondu a úroveň dodatkových vstupov energie do výrobného procesu. Rešpektujúc a zohľadňujúc tieto faktory sme pri bilancii energetických tokov v 14 pôdno-ekologických podoblastiach Slovenska vychádzali z modelov optimalizácie štruktúry rastlinnej výroby vypracovaných pre tieto podoblasti vo Výskumnom ústave pôdnej úrodnosti. Tieto modely sú prioritne orientované predovšetkým na ekológiu krajiny ale aj na ekonomiku výroby, pričom vychádzajú z produkčného potenciálu pôd. Dosiahnuté výsledky potvrdili, že úroveň energetických vstupov i produkcia energie obsiahnutej v produktoch rastlinnej výroby je v heterogénnych podmienkach Slovenska rôzna. Energetická bilancia na úrovni pôdno-ekologických podoblastí preukázala značnú závislosť tak energetických vstupov (r = 0,994), ako aj energetických výstupov (r = 0,995) na produkčnej schopnosti pôd. Energeticky najnáročnejšie sú sústavy hospodárenia na rovinách a v kotlinách – vklady energie pripadajúce na jeden hektár poľnohospodárskej pôdy sa tu pohybujú na úrovni 20 GJ/ha, kým v podmienkach kotlín vyššieho stupňa, pohorí a vrchovín len na úrovni 10 GJ/ha. V nižšie položených oblastiach je najvyššia aj produkcia energie a tiež najvyšší energetický zisk (obr. 2). Efektívnosť vynakladania energetických vstupov je však opačne najvyššia vo vyššie položených oblastiach. Ukazuje sa, že v marginálnych oblastiach už intenzifikácia vstupov neprináša adekvátny energetický, ani ekonomický efekt.

Kľúčové slová: energetická bilancia, vstupy energie, produkcia energie, energetická efektívnosť, produkčný potenciál pôd

INTRODUCTION

Crop production belongs to limited number of national economy branches that generates more energy than consumes. This is caused by the fact that plants are capable to use solar radiation energy by photosynthesis for the synthesis of relative complicated substances from inorganic materials with low potential energy (Strašil 1987).

Energetical criteria at mass flow balance in crop production show to the fact that all agricultural system is in the energetic sense an open biological system with evident energy inputs and outputs (Repka, Danko 1991).

The level of inputs and outputs of crop production as well as the energy is comprehensibly limited by the units of site, e.g. climate, soil – that can not be significantly controlled by man, but also with the factors that man can regulate, as e.g. cropping plan, additional energy deposits, technology use, etc.

In agriculture transformation process in Slovakia, it is therefore urgent to respect also site unit suitability for crops in the process of farming systems restructuring in a such way that crops could uptake as much energy as possible and most efficiently use it. Although it can be neither system with high energetic efficiency, but by low energy flow, i.e. lower outputs (low production), nor a system high but not effective production.

In this paper, we would like to present results and findings that our institute attained at optimum cropping structure modelling, energetic flows efficiency and ecological, economical dependence of soil productivity potential use in relatively heterogeneous conditions of Slovakian pedo-ecological subregions.

MATERIAL AND METHODS

There were an objective background for analysis and plant production energetic potential topics solution, as follows:
- detailed data on characteristics and pedo-ecological units (PEJ) regionalization (Džatko et al. 1985, 1993)
- results of factorial and regression analyses of relationship between the PEJ characteristics and crops by the BMDP programs (in: Džatko, Marko 1985)
- results of agricultural system optimisation modelling and mathematical-optimisation models of production structures and their impact on economical, ecological and energetical demonstration analyses (Vilček 1994, 1995)
- special results of long-term relationship among soil properties, production and farming economics on pilot territories system within scientific-technical project N 05
- findings and maps of Slovakian pedo-ecological itemization and soil typological-production categorisation of soil suitability for main crops (Džatko et al. 1979, 1985, 1993)
- cropping plan types analyses and realistic possible crop potential in the level of soil categories (Džatko, Vilček 1993).

As at energetic flows balance in crop production with the aspect to the pedo-ecological subregion level chosen direct measurement input energetic value was almost impossible, we have chosen energetic equivalents of crops in itemisation deposits of seeds, fertilizers and agrotechnical measures for determination inputs in crop production subsystem (Nehring et al. 1970). Energetical outputs were recalculated by the values of the Plant Production Research Institute in Prague measurement (Strašil 1987). Proper balance of plant production energetical level and mathematical modelling of the plant production structures were done on the level of Slovakian pedo-ecological subregions (Džatko et al. 1985):

11 – Borská Lowland
12 – Chvojnická Hillyland
21 – Danubian Lowland
22 – Danubian Hillyland
31 – Východoslovenská Lowland
32 – Východoslovenská Hillyland
41 – lower level basins
42 – medium level basins
43 – basins of high located levels
44Z – mountains and uplands of Flysch belt (western part)
44V – mountains and uplands of Flysch belt (eastern part)
45 – mountains and uplands of volcanic Carpathians
46 – lower mountains
47 – higher mountains

RESULT AND DISCUSSION

Farming land productivity potential in Slovakia shows a considerable spatial heterogenity. This is confirmed also by the mean soil potential point values, potential presumption of production recalculated on dry matter, realistic possible farming land arability (Figure 1) and cropping plans on arable land. Potential assumptions for crop production level were determined based on mathematic modelling of soil productivity potential use. When modelling the structures, we have respected both ecology factor as well as factor of proper economics. The pedo-ecological subregions order was determined based on hundred-point soil evaluation scale. Soil point value significantly correlates with realistic possible dry mass production ($r = 0.99$) and proportional to it is also arability of soil ($r = 0.97$).

It is logical that cropping plan has marked influence not only on economics but on plant production energetical balance, too. Real possible deposits calculation and energy production of, in this way, determined soil use structures (Figure 2) are documenting objective differences in energy flow in various pedo-ecological regions, whereby also different crop production intensity level and its financial effect.

It is obvious that there is the highest need energy deposits (4.0 GJ per 1 tonne dry matter) in the most intensive regions of Danubian Lowland and Hillyland 21 and 22) and lowest energy deposits need (3.1 GJ per 1 tonne dry matter) in higher mountains. While on one soil productivity potential point in regions 21 and 22 it is necessary to spend 0.26 GJ energy, in the subregion 47 it is even 0.44 GJ. It is possible to state, that the more decreasing soil productivity potential, the more energy is necessary to spend for its including into rational production process. Generally it can be stated, that the productivity potential change of soil of 1 point means increased pretentiosity of energetic inputs in 0.236 GJ. Energetic deposits level differentiation is visible also in financial value for one GJ energetic deposits. In the subregion 21, 1 GJ energy deposits is equivalent to 662 Slovak crown (14 USD) of costs, in subregion 44V it is 421 Slovak crown (9 USD) and in subregion 47 only 343 Slovak crown (7 USD) of costs.

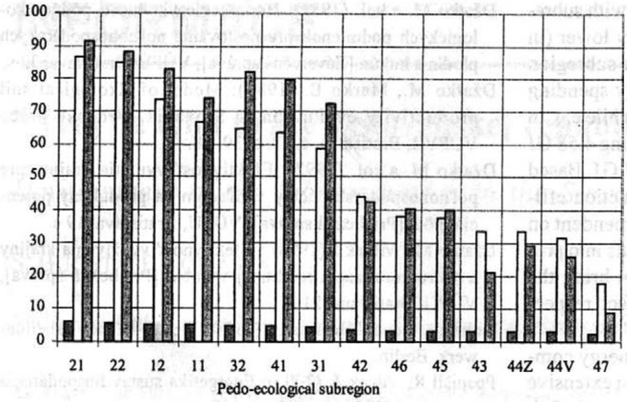

Figure 1. Soil production parameters

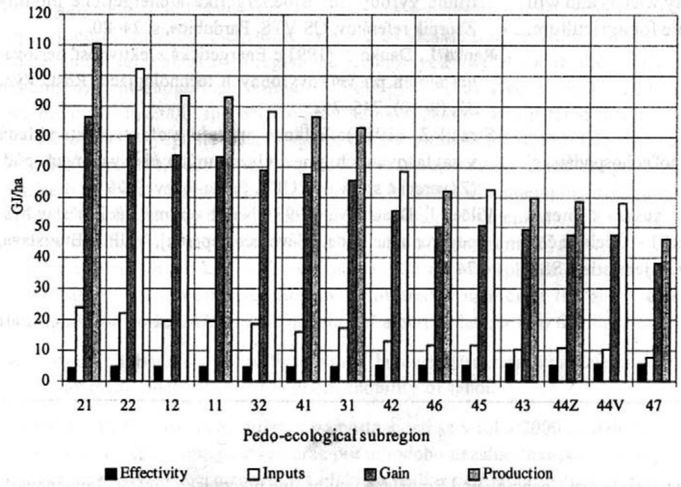

Figure 2. Crop production energetic potential

In lower located subregions, there is the highest energy generation per 1 ha farming land. With increasing altitude crop production energetic generation, is gradually decreasing (Figure 2). E.g. in the subregions of Danubian Lowland (21, 22) there is possible to generate from 1 ha farming land 52 GJ energy more than in the subregions of Flysch Belt and even 64 GJ more than in subregions of higher mountains (47). There is an opposite trend at soil productivity potential correlation and generated energy ($r = 0.995$). While in the subregion 21 one point soil productivity potential represents 1.3 GJ production, in the subregion 44 it is approximately 1.8 GJ and in subregion 47 even 2.5 GJ. This fact is conditioned by cropping plan of land use, when in higher located regions there is objectively higher share of energetically high productive crops (perennial fodders and permanent grassland). Production value per 1 GJ expressed financially in subregion 21 presents 25 Slovak crown (0.5 USD), while in the subregion 47 only 60 Slovak crown (1.3 USD).

Energetic gain is the result of inputs and outputs energetic level. It is obvious that energy gain from 1 ha proportionally decreases with soil productivity potential and dry mass produced on 1 ha area decreasing. Highest gain can be found in lowland regions and Záhorie, on the contrary lowest gain is in submountainous and mountainous regions. Financially expressed, in the subregion 21 there is 103 Slovak crown (2.2 USD) financial gain per 1 GJ, while in the subregion 44V, e.g. it is only 15 Slovak crown (0.3 USD) and in subregion 47 even 2.50 Slovak crown (0.05 USD) gain. The mentioned analysis shows to efficiency of means spending in the regions of Slovakia and also to objectively worse manufacture conditions in marginal regions of our country.

There is an interesting view on efficiency of energetic inputs spending. Energetic outputs of plant production are the highest in lower located regions, however there are also highest energetic inputs. Although in higher located regions outputs are objectively lower (e.g. in subregion 47 – 2.38 times lower when compared with subregion 21), but energy deposits more markedly lower (in subregion 47 even 3.04 times less than in the subregion 21). This fact caused that there is the energy spending efficiency higher in higher located regions. While e.g. in the subregion 21 one GJ of inputs is representing 4.58 GJ production, in subregion 47 this is even 5.87 GJ. Based on the mentioned it can be stated that production efficiency in marginal conditions is markedly dependent on optimum inputs. Increase of the energetic inputs into production in these conditions usually does not bring the required neither energetic nor economical effect, respectively.

According to Preininger (1991), ratio of energy comprised in plant production to energy input is in extensive agriculture 10–38, while in intensive agriculture only 2-4. In our subregions, this ratio ranges between 4.58 (subregion 21) and 5.87 (subregion 47), i.e. in all Slovakian subregions it is possible to consider proper production intensity. It is logical that higher intensity was, is and will be in lower located regions, more suitable for agriculture.

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Vývoj na trhu práce v Slovenskej republike v roku 2000

Development of the labour market in the Slovak Republic in 2000

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Abstract: The average yearly unemployment rate has increased from 18.39% to 19.22%. Neither the massive application of public labours for the long-term unemployed in the second half of 2000 was able to stop the yearly increase of unemployment. During the period of this institute realisation (August to December, 2000), every fourth person crossed from the unemployment registry was involved into public labours. The highest success of this tool of active labour market policy was reflected in the rural and marginal districts with a high unemployment rate and a high share of long-term unemployment, which were typical by the low urbanisation level, economic weakness and a long-term lack of vacant job opportunities. In 2000, there were as much as to 44.3% of registered unemployed in the category up to 29. The share of males in the total number of registered unemployed was 54.3% in 2000. The number of registered unemployed receiving unemployment support presented 92.2 ths persons by December 31, 2000 and formed 18.2% of the total registered unemployed. In 2000, the net monthly support paid to 1 registered unemployed person was 3,093 SK and represented 27.1% of the average nominal wage of the SR employee (11,430 SK). The total payments of the passive labour market policies amounted, excluding the public labour expenditures from the governmental budget, 94.4% and the payments of the active labour market policies only 5.6% in 2000. The unemployment rate regional polarisation decreased in 2000 on behalf of its increase in the regions with lower unemployment rate and the regionally differentiated decrease, resp. stagnation of the unemployment rate in districts with a high unemployment rate. Up to now, structural changes in the national economy have not worked in favour of the efficient workplaces creation, but rather on the opposite, there has occurred a decrease of the job opportunities and a lowered dynamics of the new jobs creation. The increased supply, namely of non-qualified labour, adds to the pushing of a part of labour into the black labour and shadow economy areas.

Key words: labour market policy, public labours, structural characteristics of unemployment, regional polarisation of unemployment, unemployment support, mobility of labour

Abstrakt: Priemerná ročná miera nezamestnanosti sa v roku 2000 medziročne zvýšila z 18,39 % na 19,22 %. Ani masívne uplatňovanie verejnoprospešných prác pre dlhodobo nezamestnaných v druhej polovici roka 2000 nedokázalo zastaviť medziročný nárast nezamestnanosti. Za obdobie realizácie tohoto inštitútu (august až december 2000) bol každý štvrtý vyradený z evidencie nezamestnaností zaradený na verejnoprospešné práce. Najvyššia úspešnosť tohoto nástroja aktívnej politiky trhu práce sa prejavila vo vidieckych a periférnych okresoch s vysokou mierou nezamestnanosti a vysokým podielom dlhodobej nezamestnanosti, ktoré boli typické nízkym stupňom urbanizácie, ekonomickou slabosťou a dlhodobým nedostatkom volných pracovných miest. V roku 2000 až 44,3 % evidovaných nezamestnaných bolo do 29 rokov veku. Podiel mužov z celkového počtu evidovaných nezamestnaných v roku 2000 činil 54,3 %. Počet evidovaných nezamestnaných poberajúcich podporu v nezamestnanosti predstavoval k 31. 12. 2000 92,2 tis. osôb a tvoril 18,2 % zo všetkých evidovaných nezamestnaných. V roku 2000 bola vyplatená jednému evidovanému nezamestnanému čistá priemerná mesačná podpora 3 093 Sk a predstavovala 27,1 % z priemernej nominálnej mzdy zamestnanca SR (11 430 Sk).V roku 2000 sa pri eliminácii výdavkov na verejnoprospešné práce, ktoré išli zo štátneho rozpočtu, vyplatilo na pasívnu politiku trhu práce 94,4 % a na aktívnu politiku trhu práce len 5,6 %. Regionálna polarizácia miery nezamestnanosti sa v roku 2000 znížila na úkor zvýšenia miery v regiónoch s nižšou hladinou nezamestnanosti a regionálne diferencovaným poklesom resp. stagnáciou miery nezamestnanosti v okresoch s vysokou mierou nezamestnanosti. Štrukturálne zmeny v národnom hospodárstve zatiaľ nepôsobia v prospech tvorby efektívnych pracovných miest, ale skôr naopak dochádza k úbytku pracovných príležitostí a zníženej dynamike tvorby nových pracovných miest. Zvýšená ponuka najmä nekvalifikovanej pracovnej sily napomáha k vytláčaniu časti pracovnej sily do oblasti čiernej práce a tieňovej ekonomiky.

Kľúčová slova: politika trhu práce, verejnoprospešné práce, štrukturálne charakteristiky nezamestnanosti, regionálna polarizácia nezamestnanosti, podpora v nezamestnanosti, mobilita pracovnej sily, agrárna nezamestnanosť

ÚVOD

Trh práce na Slovensku už dlhodobo nereaguje na ponuku určitej štruktúry pracovnej sily. Táto štrukturálna deformácia pracovnej sily je fenomén, ktorý sa dá odstraňovať len postupne, cielenými systémovými zmenami. Ponuka práce bude ovplyvnená i demografickým vývojom, cenou práce, čiernou prácou atď. Trh práce bude i naďalej presýtený ponukou menej kvalifikovaných, manuálnych profesií. Vysoká konkurencia v oblasti menej kvalifikovanej práce vytvára predpoklady pre vytláčanie časti pracovnej sily do oblasti čiernej práce. Vzhľadom na nedostatok voľných pracovných miest je v ekonomicky slabých a štrukturálne postihnutých regiónoch i znížená šanca reálne umiestňovať evidovaných nezamestnaných do trhu práce. Vývoj na trhu práce v roku 2000 a jeho niektoré konsekvencie prezentuje i tento príspevok.

METODIKA

Práca je založená na exploatácii empirických dát celoplošného charakteru z oficiálnych databáz Národného úradu práce. Aplikovali sa v nej kvantitatívne metódy spracovania hromadných empirických dát prostredníctvom štandartných štatistických techník s rôznym stupňom ich agregácie v kombinácii zo sekundárnou analýzou príslušných dokumentov a expertných štúdií o problematike trhu práce na Slovensku. Štúdia analyzuje a agreguje aj značné množstvo regionálne členených štatistických údajov, ktoré naznačujú pretrvávajúcu regionálnu diferenciáciu trhu práce na Slovensku.

VÝVOJ MIERY NEZAMESTNANOSTI

Vývoj na trhu práce v roku 2000 bol charakteristický značnou rozkolísanosťou na stále vysokej hladine nezamestnanosti. Stále pretrvával vysoký previs ponuky pracovných síl nad dopytom. Priemerný počet nezamestnaných za rok 2000 dosiahol 518 tis. osôb (medziročný rast o 28,3 tis. osôb, t. j. o 5,8 %). Priemerná ročná miera nezamestnanosti sa medziročne zvýšila z 18,39 % na 19,22 %, t.j. o 0,83 percentuálneho bodu. Priemerný ročný disponibilný počet nezamestnaných – t.j. tých evidovaných nezamestnaných, ktorí bezprostredne môžu nastúpiť do pracovného pomeru – bol 491 394 osôb a disponibilná ročná miera nezamestnaných tvorila 18,24 %. Ani masívne uplatňovanie verejnoprospešných prác pre dlhodobo nezamestnaných (ďalej len VPP) nedokázalo zastaviť medziročný nárast nezamestnanosti. Bez realizácie VPP by miera nezamestnanosti predstavovala 20,08 % (disponibilná 19,09%), tzn. že bez VPP by medziročné zvýšenie predstavovalo 1,69 percentuálneho bodu, t.j. bolo by dvojnásobne vyššie. Registrovaná miera nezamestnanosti pokračovala v prvom polroku v trende rastu a oscilovala okolo 20 %, v druhej polovici roka miera nezamestnanosti prostredníctvom masívneho uplatňovania verejnoprospešných prác klesla na hladinu 17–18 %. V decembri dosiahol stav evidovaných nezamestnaných 506 497 osôb, medziročne klesol o 28,7 tis. osôb (o 5,4 %). Miera nezamestnanosti bola v decembri 18,80 % (disponibilná 17,88 %), medziročne klesla o 1,31 percentuálneho bodu. Rok 2000 je charakteristický dosiahnutím druhej najvyššej miery nezamestnanosti (historické maximum pripadá na január 2001). V januári 2000 dosiahla registrovaná miera 20,54 % (disponibilná 19,53 %) a absolútny počet evidovaných nezamestnaných bol 553 540.

Počet dlhodobo nezamestnaných (nad 1 rok) v roku 2000 prudko rástol a v júli 2000 prekročil hranicu 270 tisíc osôb (historické maximum) a tvoril 49,9 % zo všetkých evidovaných nezamestnaných, tzn., že každý druhý evidovaný nezamestnaný bol v evidencii viac ako jeden rok. Koncom decembra 2000 klesol počet dlhodobých nezamestnaných už na 220 816 osôb a predstavoval 43,60 % z celkového počtu evidovaných nezamestnaných.

VEREJNOPROSPEŠNÉ PRÁCE PRE DLHODOBO NEZAMESTNANÝCH

Zákon NR SR č.245/2000 Z.z., ktorým sa menil a dopĺňal zákon NR SR č. 387/1996 Z.z. o zamestnanosti v znení neskorších predpisov s účinnosťou od 1. augusta 2000 zaviedol osobitnú formu realizácie verejnoprospešných pracovných miest – dohodnuté verejnoprospešné pracovné miesta pre dlhodobo nezamestnaných občanov. Cieľovou skupinou pri aplikácii tohoto nástroja aktívnej politiky trhu práce sú dlhodobo nezamestnaní občania vedení v evidencii nezamestnaných dlhšie ako 1 rok. Verejnoprospešné pracovné miesta pre dlhodobo nezamestnaných boli financované z účelovej dotácie zo štátneho rozpočtu. Okresný úrad práce poskytoval príspevok na úhradu mzdy alebo platu zamestnanca na dohodnuté verejnoprospešné pracovné miesta pre dlhodobo nezamestnaných, najviac však v sume 1,3 násobku životného minima. Okrem toho okresný úrad práce poskytoval vymedzeným zamestnávateľom príspevok na úhradu poistného na zdravotné poistenie, nemocenské poistenie a dôchodkové zabezpečenie plateného zamestnávateľom, v celkovej sume maximálne 309 Sk.

Počet umiestnených dlhodobo nezamestnaných na VPP za obdobie august–december 2000 tvoril 67 301 osôb. Tento počet predstavoval z päťmesačného počtu umiestnených do pracovného procesu prostredníctvom úradov práce 62,3 %, tzn. že umiestnenie evidovaných nezamestnaných na VPP predstavovalo drvivú väčšinu týchto sprostredkovateľských aktivít.

Umiestnenie 67,3 tis. dlhodobo evidovaných nezamestnaných na verejnoprospešné práce predstavovalo 28,8 % z päťmesačného odtoku z evidencie úradov práce (14,4 % z ročného odtoku). To znamená, že za obdobie august až december 2000 bol každý štvrtý vyradený z evidencie zaradený na VPP. Verejnoprospešné práce znížili priemernú ročnú mieru nezamestnanosti o 0,86 percentuálneho bodu. V decembri 2000 by sa stav evidovaných nezamestnaných bez realizácie VPP vyšplhal až na

555 365 osôb (miera nezamestnanosti by predstavovala 20,61 %, disponibilná miera 19,69 %).

Najvyššia úspešnosť VPP sa prejavila na vidieku, ktorý je typický vysokou sociálnou kontrolou. Naopak v mestských aglomeráciách spojených s určitou anonymitou sa aplikácia týchto aktivít prejavila v zníženej miere. Najmä vo vidieckych a periférnych okresoch s vysokou mierou nezamestnanosti a vysokým podielom dlhodobej nezamestnanosti sa prejavila vysoká úspešnosť tohoto nástroja aktívnej politiky trhu práce. Spoločný základ u týchto regiónov bol nízky stupeň urbanizácie, ekonomická slabosť a dlhodobý nedostatok voľných pracovných miest.

Zatiaľ obmedzené skúsenosti z masovej realizácie VPP pre dlhodobo nezamestnaných za relatívne krátke obdobie konca roka 2000 ukázali vysoký záujem o tento inštitút nielen zo strany samotných nezamestnaných, ako aj zamestnávateľských organizácií (predovšetkým obcí). V situácii zníženej tvorby efektívnych pracovných miest, zvyšujúceho sa tvrdého jadra dlhodobej nezamestnanosti (s multiplikačným efektom dĺžky nezamestnanosti), s pretlakom vysokej ponuky nekvalifikovaných a nízkokvalifikovaných osôb dlhodobo zafixovaných v eviden-cii nezamestnaných, etnických minorít a iných sociálne handicapovaných skupín sa javí široké uplatňovanie tohoto nástroja aktívnej politiky trhu práce v krátkodobom horizonte ako pragmatický krok znižovania regionálnej polarizácie prostredníctvom obmedzovania vysokej nezamestnanosti v najviac ohrozených regiónoch. Súčasne parciálne odstraňuje rigiditu a nízku flexibilitu trhu práce, oživuje marginalizované, nepružné sociálne a etnické skupiny v zmysle návratu do trhu práce a čiastočne zmierňuje sociálnu situáciu v najviac postihnutých regiónoch.

Z pohľadu financovania VPP je nutné konštatovať, že určitá časť prostriedkov určených na VPP by bola vyplatená dotknutým osobám (v prípade splnenia nároku) formou dávok sociálnej pomoci bez akéhokoľvek pracovného efektu. Nezanedbateľný je i výsledok týchto aktivít vo forme novovytvorených hodnôt, smerujúcich najmä do infraštruktúry vidieckych obcí. U časti dlhodobo nezamestnaných, ktorí nastúpili na VPP, sa objavili motívy prechodu zo subjektívneho (riešeného polovičnou dávkou sociálnej pomoci) do objektívneho posudzovania hmotnej núdze. Z hľadiska perspektívneho vývoja rozvoja ekonomiky nepredstavuje tento inštitút systémové riešenie dlhodobých a efektívnych pracovných miest. Na ich tvorbu bude pozitívnym spôsobom vplývať prílev zahraničného kapitálu, štrukturálne zmeny, ktoré budú vytvárať efektívne pracovné miesta a vôbec celková hospodárska politika.

ŠTRUKTÚRA EVIDOVANÝCH NEZAMESTNANÝCH

Za rok 2000 za zaregistrovalo na úradoch práce 61 338 absolventov. Koncom decembra bolo v evidencii nezamestnaných 31 260 absolventov škôl (do jedného roka od skončenia sústavnej prípravy na povolanie). Priemerná dĺžka evidencie na úradoch práce bola ku koncu decembra 2000 15,05 mesiacov. Alarmujúcou skutočnosťou je fakt, že až 44,3 % evidovaných nezamestnaných bolo do 29 rokov veku. Takmer jedna tretina (29,6 %) nezamestnaných bolo bez vzdelania alebo so základným vzdelaním. Podiel mužov z celkového počtu evidovaných nezamestnaných v roku 2000 medziročne klesol o 1,6 percentuálneho bodu na 54,3 %. Počet evidovaných nezamestnaných poberajúcich podporu v nezamestnanosti (stav ku konca mesiaca) predstavoval k 31. 12. 2000 92 217 osôb a tvoril 18,2 % zo všetkých evidovaných nezamestnaných. Tento podiel medziročne poklesol o 8,8 percentuálneho bodu. V roku 2000 bola vyplatená jednému evidovanému nezamestnanému čistá priemerná mesačná podpora 3 093 Sk. Podpora v nezamestnanosti predstavovala 27,1 % z priemernej nominálnej mzdy zamestnanca SR (11 430 Sk). Rozhodujúci vplyv na zníženie dynamiky prítoku tu zohrala novela zákona č.292/1999 Z.z., ktorá okrem iného znížila maximálnu výšku a dobu poberania podpory v nezamestnanosti. Odtok poberateľov podpory v nezamestnanosti za posledné štyri roky kulminoval v apríli, naopak najnižšie absolútne hodnoty boli v decembri. To naznačuje vplyv sezónnosti a pravidelnej cykličnosti u tejto skupiny evidovaných nezamestnaných. Priemerná dĺžka poberania poberateľov podpory v nezamestnanosti dosiahla v decembri 2000 5,74 mesiacov. Celý rok 2000 bol typický kontinuálnym medzimesačným poklesom priemernej dĺžky poberania poberateľov podpory v nezamestnanosti.

V roku 2000 predstavovali výdavky na pasívnu politiku trhu práce 6,18 mld. Sk (z toho na podpory v nezamestnanosti 4,41 mld. Sk. Výdavky na aktívnu politiku trhu práce (vrátane VPP pre dlhodobo nezamestnaných) predstavovali 1,57 mld. Sk. V prípade eliminácie výdavkov na VPP pre dlhodobo nezamestnaných by čiastka na aktívnu politiku trhu práce predstavovala len 369 mil. Sk.

Za rok 2000 dosiahol prítok 438 315 evidovaných nezamestnaných a v porovnaní s rokom 1999 klesol o –24 244 osôb (o –5,24 %). Odtok v tomto roku dosiahol 467 029 osôb a v porovnaní s rokom 1999 sa zvýšil o 111 472 osôb (o 31,4 %). Zvýšená akcelerácia odtoku sa prejavila od augusta 2000 prostredníctvom masívneho vyraďovania dlhodobo nezamestnaných na VPP. Po prvýkrát od roku 1997 sa od augusta 2000 dosiahlo pozitívne ročné saldo (rozdiel medzi odtokom a prítokom), tzn. že od augusta 2000 sa viac osôb z evidencie vyradilo ako sa zaevidovalo. Medziročný nárast odtoku by sa prejavil aj bez VPP, ale podstatne nižší (len o 44 171 osôb, t.j. o 12,4 %). Pozitívne saldo odtoku nad prítokom bolo spôsobené predovšetkým akceleráciou jesenného vyraďovania dlhodobo nezamestnaných na VPP.

Výrazný podiel slovenskej pracovnej sily je zamestnaný v Českej republike (61 273 občanov SR k 30. 9. 2000). Vývoj ukazuje mierne medziročné a sezónne znižovanie týchto počtov. Stabilita tohoto vývoja bude okrem iných faktorov závisieť na vstupovej synchronizácii obidvoch krajín do EÚ.

Tab. 1. Agrárna nezamestnanosť Slovenska v letech 1997–2000

Rok	Poľnohospodárstvo			
	priemerný ročný stav EN	priemerný ročný stav dlhodobo EN	Počet EN (stav k 31. 12.)	priemerný počet zamestnaných
1997	29 363	12 673	34 946	117 943
1998	32 592	13 843	40 120	106 161
1999	38 828	17 541	48 878	92 291
2000	39 824	18 051	44 248	79 384
Rozdiel 2000/1997	10 461	5 378	9 302	–38 559
Index 2000/97	135,4	142,4	126,6	67,3

EN = evidovaný nezamestnaný
Prameň: VÚP, ŠÚ SR

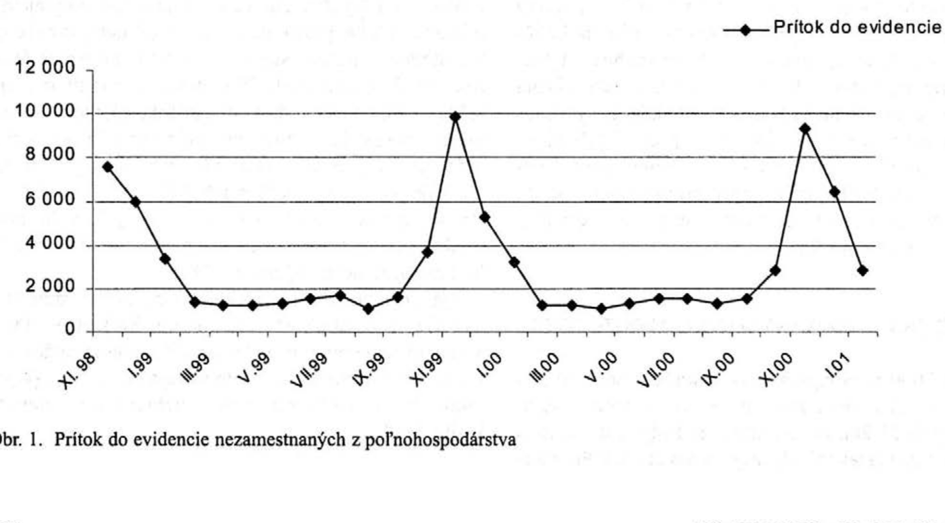
Slovenský trh práce sa vyznačuje silnou mierou rigidity trhu práce. V roku 2000 práca na menej ako 8-hod. pracovný čas bola marginálnou (zhruba 2 % pracovnej sily), rovnako marginálnymi zostali i iné formy práce. Rigidita štruktúry školstva na trh práce sa v podstate nezmenila. Disproporcia medzi produkciou vzdelávacieho systému a absorbčnou schopnosťou trhu práce stále pretrváva. Zo zhruba 90 tisíc nových absolventov škôl, ktorí vstúpili na trh práce v sledovanom roku, sa 61 tis. zaregistrovalo na úradoch práce.

SEZÓNNOSŤ PRÁCE V POĽNOHOSPODÁRSTVE A AGRÁRNA NEZAMESTNANOSŤ

V roku 2000 pracovalo v poľnohospodárstve SR v organizáciách s 20 a viac zamestnancami 79 384 osôb (priemerný evidenčný počet – fyzické osoby), z toho 63 444 robotníkov (t.j. 79,9 %). K 31. 12. 2000 pracovalo v poľnohospodárstve len 59 316 robotníkov, z toho 16 638 žien (28 %) a 1 334 robotníkov so skráteným časom (2,2 %). Zamestnanosť v agrárnom sektore medziročne klesla o 14 %. V štruktúre ekonomických odvetví sa poľnohospodárstvo svojim tempom znižovania zamestnanosti dlhodobo drží na prvom mieste.

V tomto dlhodobom období poklesu agrárnej zamestnanosti celkom logicky rástla i nezamestnanosť pracovníkov s predchádzajúcim zamestnaním v poľnohospodárstve, ktorú operacionálne definujeme ako agrárnu nezamestnanosť, t.j. nezamestnanosť osôb, ktoré mali v období, keď sa dostali do evidencie úradov práce, posledné zamestnanie v poľnohospodárstve. Vzhľadom k tomu, že ide o špecifickú pracovnú silu, ktorá je typická svojou sezónnosťou, migračnou rigiditou a nízkou rekvalifikačnou flexibilitou, bude proces znižovania agrárnej nezamestnanosti značne problematický a časovo zdĺhavý.

Priemerný ročný počet evidovaných nezamestnaných s posledným zamestnaním v poľnohospodárstve sa za roky 1997–2000 zvýšil o 10,4 tis. osôb (o 35,4 %). Začiatok akcelerácie priemerných stavov evidovaných nezamestnaných z poľnohospodárstva nastal koncom roka 1998, kedy sa počet evidovaných nezamestnaných z poľnohospodárstva dostal po prvýkrát na úroveň 40 tis. osôb a v štvrtom štvrťroku 1999 sa už približoval hranici 50 tis. osôb.



Obr. 1. Prítok do evidencie nezamestnaných z poľnohospodárstva

V tomto zvýšenom objeme evidovaných nezamestnaných z poľnohospodárstva sú zjavne identifikovateľné dve skupiny:

1. Zakonzervované tvrdé jadro dlhodobo nezamestnaných bývalých zamestnancov poľnohospodárskych podnikov. Od konca roku 1998 dochádza k prudkému nárastu dlhodobej nezamestnanosti, ktorá kulminovala v prvom polroku 2000 na hranici 20,8 tis. osôb. V treťom štvrťroku 2000 sa vďaka verejnoprospešným prácam pre dlhodobo nezamestnaných prudko znížila. Priemerné ročné počty týchto dlhodobo evidovaných nezamestnaných z poľnohospodárstva sa za roky 1997–2000 zvýšili z 12,7 tis. na 18 tis. osôb.
2. Každoročne sa zvyšujúci skupina cyklicky rotujúcich pracovníkov, ktorí „cirkulujú“ medzi krátkodobým sezónnym zamestnaním v poľnohospodárstve a opätovnou evidenciou na úrade práce. To je vidieť i z grafického zobrazenia mesačných prítokov pracovníkov z poľnohospodárstva do evidencie nezamestnaných, z ktorého vyplýva akcelerácia prítoku v zimných mesiacoch (s najvyšším počtom v novembri) a relatívne stabilnou hladinou v ostatných mesiacoch roka.

Ukázalo sa, že za roky 1999 a 2000 z priemerného počtu cca 39 tis. evidovaných nezamestnaných z poľnohospodárstva približne 15 tis. (t.j. 38,5 %) sezónne pendlovalo medzi evidenciou na úrade práce a približne 18 tis. týchto nezamestnaných (t.j. 46,2 %) bolo v kategórii dlhodobo nezamestnaných. S určitým zjednodušením môžeme tvrdiť, že v roku 2000 každý tretí evidovaný nezamestnaný z poľnohospodárstva pendloval medzi sezónnym zamestnaním v poľnohospodárstve a evidenciou v nezamestnanosti a takmer každý druhý bol dlhodobo nezamestnaný.

Pri kvantifikácii výdavkov Národného úradu práce spojených s touto skupinou nezamestnaných sme vychádzali z priemernej päťmesačnej evidencie, priemernej mesačnej podpory 3 093 Sk a priemernej odvodovej povinnosti 1 243 Sk. Celkové náklady na podporu v nezamestnanosti vrátane odvodov pre skupinu 15 tis. evidovaných nezamestnaných tvorili 325 mil. Sk. Na druhej strane pri návrate do zamestnania táto skupina zamestnancov (v roku 2000 bola priemerná mzda v poľnohospodárstve 9 076 Sk) spolu s ich zamestnávateľmi odviedla prostredníctvom príspevkov na poistenie v nezamestnanosti (za sedem mesiacov zamestnania) 38 mil. Sk. To znamená, že NÚP „netto“ financovalo zamestnanosť v poľnohospodárstve (za predpokladu odvodovej disciplíny zamestnávateľských subjektov) v tomto roku čiastkou 287 mil. Sk. Takto nastavený poistný princíp v svojom dôsledku vedie k jeho špecifickému využívaniu a plošnej sociálnej solidarite. Naznačená kombinácia pracovných a sociálnych príjmov a cyklický trend pendlovania medzi krátkodobým zamestnaním a opätovným návratom do evidencie úradov práce je typická nielen pre poľnohospodárstvo, ale aj stavebníctvo, lesníctvo a niektoré segmenty služieb. Tento stav v niektorých prípadoch napomáha i výskytu čiernej práce, najmä u individuálnych živnostníkov a malých obchodných spoločností.

REGIONÁLNA POLARIZÁCIA MIERY NEZAMESTNANOSTI

V roku 2000 pokračovala stagnácia, resp. vyššia dynamika rastu nezamestnanosti v doteraz relatívne silnejších hospodárskych regiónoch SR. Dochádzalo tak k poklesu medziregionálnej diferenciácie. Regionálna polarizácia miery nezamestnanosti sa v roku 2000 znížila na úkor zvýšenia miery v regiónoch s nižšou hladinou nezamestnanosti a regionálne diferencovaným poklesom (resp. stagnáciou) miery nezamestnanosti v okresoch s vysokou mierou nezamestnanosti. Túto skutočnosť však nie je možné považovať za pozitívny trend, nakoľko k nej dochádzalo vďaka rýchlejšiemu tempu zhoršovania sa situácie v hospodársky silnejších regiónoch za súčasnej stagnácie ostatných regiónov. Pritom stagnácia miery nezamestnanosti v regiónoch s najvyššou mierou nezamestnanosti bola spôsobená najmä realizáciou verejnoprospešných prác pre dlhodobo nezamestnaných.

V podmienkach spomaleného hospodárskeho rastu, neukončených reštrukturalizačných zmien, deficitov verejných rozpočtov, zníženej platobnej disciplíny zamestnávateľských subjektov a predovšetkým zvýšenej nezamestnanosti, atď. je celkom logicky manévrovací priestor Národného úradu práce značne sťažený a obmedzený. Pri zachovaní doterajšieho systému poistenia v nezamestnanosti bude tento systém narážať na problémy absorpcie extrémnych cyklických výkyvov v nezamestnanosti. Z makroekonomického hľadiska tu existuje vzťah komplementarity, pretože rozsah výberu príspevkov na poistenie v nezamestnanosti závisí od rozsahu a objemu súčasnej zamestnanosti. Štrukturálne zmeny v národnom hospodárstve zatiaľ nepôsobia v prospech tvorby efektívnych pracovných miest, ale skôr naopak dochádza k úbytku pracovných príležitostí a zníženej dynamike tvorby nových pracovných miest. Zvýšená ponuka najmä nekvalifikovanej pracovnej sily napomáha k vytláčaniu časti pracovnej sily do oblasti čiernej práce a tieňovej ekonomiky.

Doterajší priebeh ekonomickej transformácie mal rozdielne regionálne dopady. Pokračovanie tohto vývoja vytváralo akútne nebezpečie spoločensky neakceptovateľnej diferenciácie, a tým i nerovnaké šance pre obyvateľstvo i pre podnikateľskú činnosť v týchto postihnutých regiónoch.

Na druhej strane si musíme uvedomiť existujúce riziká vyplývajúce z geografickej koncentrácie priemyselného kapitálu a potenciálnych užívateľov vysoko kvalifikovanej pracovnej sily. Existuje tu reálne nebezpečie, že prežijú len tie podniky, ktoré sú spojené so zahraničným kapitálom vrátane s nimi kooperujúcich podnikov alebo podniky s jednoduchou výrobou, obsahujúce nízku pridanú hodnotu. Riešenie vidíme v stimulácii príchodu zahraničných investorov, podpore exportných aktivít firiem a na mikroekonomickej úrovni v štrukturálnom posune k rozvoju výrob s vyššou pridanou hodnotou.

ZÁVER

Perspektívne podnikateľské subjekty v SR sa nemôžu dlhodobo orientovať na využívanie nízkych miezd ako na hlavnú komparatívnu výhodu. Dlhodobo udržateľnou stratégiou pre SR je nahradenie komparatívnej výhody nízkej ceny pracovnej sily dokonalejším využívaním kvalifikovaných pracovných síl a zvýšením necenovej konkurenčnej schopnosti. Udržateľný a dynamický hospodársky rast však nie je jediným a dostatočným predpokladom na zastavenie zvyšovania nezamestnanosti. Tento rast musí sprevádzať oživenie aktívnej politiky trhu práce, integrovaná regionálna politika a podpora malých a stredných podnikov, ktoré sú hlavnými tvorcami nových pracovných miest.

I keď vláda rozpracovala určité opatrenia na riešenie nezamestnanosti (Národný plán zamestnanosti, masívne uplatňovanie verejnoprospešných prác, podpora zahraničných investícií, pripravované legislatívne stimulovanie priemyslových parkov, atď.), neukončená reštrukturalizácia spojená s procedurálnymi zmenami konkurzného konania v doteraz nezreštrukturalizovanej časti podnikového sektora môže tieto pozitíva významne oslabiť. V poľnohospodárstve, lesníctve, stavebníctve a v službách spojených s turistickým ruchom resp. službami ovplyvnené výkyvmi v priebehu ročného obdobia sa zvýši sezónnosť zamestnávania pracovníkov a tak sa i zakonzervuje fragmentarizácia zamestnaneckého statusu a cykličnosť trhu práce. Okrem toho sezónnu cykličnosť trhu práce budú ďalej zvýrazňovať nezamestnaní absolventi škôl, ktorí nenašli uplatnenie na trhu práce. Určitú časť ponuky pracovných síl zo strany absolventov bude absorbovaná ich vývozom do zahraničia vo forme au-paire, krátkodobými zamestnaniami, atď.

Trh práce bude i v roku 2001 naďalej kopírovať regionálne výkyvy v ponuke a dopytu práce, vzhľadom k zníženej územnej mobilite pracovných síl a rigidite trhu práce. Na druhej strane, sa nepredpokladá ďalšie zásadnejšie prehlbovanie regionálnych disparít na trhu práce, najmä v ekonomicky slabých a štrukturálne postihnutých regiónoch. Mierny rast nezamestnanosti sa skôr predpokladá v regiónoch s nižšou a strednou mierou nezamestnanosti a v regiónoch s rozhodujúcim a strategickým zamestnávateľským subjektom, ktorý sa dostane do ekonomických problémov. To však nepovedie k výraznému znižovaniu regionálnej polarizácie v nezamestnanosti, ale skôr k stagnácii, resp. miernemu znižovaniu regionálnych rozdielov. Citlivosť trhu práce na konjunkturálne vplyvy a výkyvy sa v tomto období výrazne nezníži.

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INFORMATION

The comparative advantage of Taiwan's major cut flowers

Komparativní výhody hlavních produktů řezaných květin na Tchaj-wanu

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Abstract: For the past decade, Taiwanese floral industry has been growing rapidly in terms of both utilised land and production. The dramatic growth of the floral industry results from a greater domestic floriculture consumption and the increases in cut flower exports. Furthermore, increased floral trade activity can be expected once Taiwan is the signatory of the World Trade Organisation (WTO). The expansion of the floral export market provides potential opportunities for government to switch other agricultural sector resources to the floral industry. The comparative advantage of Taiwan's floral industry is crucial for domestic floriculture supply and floral exports. This research investigates the comparative advantage of Taiwan's exporting of major cut flowers through a comparison of the Taiwanese and Japanese floral industries in terms of net social profitability (NSP) and domestic resource cost coefficient (DRC). The results show that all of the three major cut flowers, chrysanthemums, gladioli, and roses, have comparative advantage.

Key words: competitiveness, comparative advantage, NSP, DRC, floral industry, Taiwan

Abstrakt: Tchajwanské odvětví produkce květin se v posledním desetiletí výrazně zvětšilo jak pokud jde o výměru zemědělské půdy, tak vzhledem k objemu produkce. Tento dramatický růst odvětví je jednak výsledkem zvýšené domácí spotřeby řezaných květin, jednak růstu objemu jejich exportu. Navíc může být očekáván další nárůst tržních aktivit v tomto odvětví, jakmile Tchaj-wan podepíše dohody Světové obchodní organizace (WTO). Expanze exportního trhu květin poskytuje vládě potenciální možnost přesunout zdroje z jiných odvětví zemědělské výroby do odvětví produkce květin. Práce se zabývá hodnocením komparativních výhod tchajwanského exportu hlavních produktů řezaných květin ve srovnání s japonským odvětvím produkce květin prostřednictvím ukazatelů čistého společenského výnosu (NSP) a nákladů domácích zdrojů (DRC). Výsledky ukazují, že komparativní výhody se projevují u všech tří hlavních druhů řezaných květin, chryzantém, mečíků a růží.

Klíčová slova: konkurenceschopnost, komparativní výhoda, NSP, DRC, odvětví produkce květin, Tchaj-wan

INTRODUCTION

For the past decade, Taiwan's floral industry has been growing rapidly in terms of utilised land and production. The total planted space has increased from 5,134 hectares in 1988 to 10,427 hectares in 1997. That is to say, the total planted space has doubled within these ten years (Table 1). The product quality has improved due to the introduction of new varieties from abroad, the choice of commercial products from indigenous plants, and the utilisation of greenhouse facilities in production. The dramatic growth of the floral industry results from a greater demand in domestic floral consumption and the increase in cut flower exports. Taiwan exports a lot of traditional cut flowers, such as chrysanthemums, roses, and gladioli to Japan. Floral production both in Taiwan and in Japan is mainly catering to the domestic market despite the growth in world floral trade.

Sooner or later, Taiwan will become signatory of the World Trade Organisation (WTO). Once Taiwan is a member of WTO increased floral trade activity can be expected. The major competitors include the Netherlands, mainland China, and those South-East countries. The Netherlands is famous by the high quality flowers produced by high-tech greenhouse facilities. On the contrast, mainland China and other South-East countries take advantages of their low labour costs and land costs. The purpose of this paper is to investigate the expected impact of floral trade on the Taiwanese floral industry. In addition, expansive floral exports provide potential opportunities for the government to switch other agricultural sector resources to the floral industry. The competitiveness of Taiwan's floral industry is crucial for floral exports.

The structure of the article is organised as follows. The development of Taiwan's floral industry in terms of floral

Table 1. Floral planted area in Taiwan (ha)

	Cut flowers	Bulbs	Seeds	Nurseries	Potted flowers	Total
1988	3,011	9	46	1,896	172	5,134
1989	2,785	1	2	2,350	235	5,373
1990	3,218	11	17	2,700	260	6,206
1991	3,410	20	21	2,965	254	6,670
1992	3,871	32	27	3,326	324	7,580
1993	4,729	45	25	3,931	359	9,089
1994	4,919	32	31	4,036	383	9,401
1995	4,789	37	47	4,379	409	9,661
1996	4,777	29	28	4,673	461	9,968
1997	4,761	24	19	5,022	601	10,427
1998	4,561	14	16	4,889	692	10,172

Source: Taiwan Agricultural Yearbook, Department of Agriculture and Forestry, Taiwan Provincial Government, 1999

production, consumption, and trade is discussed in section II. Then, in section III, the theoretical consideration of the competitiveness of Taiwan's exporting of cut flowers is discussed and investigated through comparisons between the Taiwanese and Japanese floral industries in terms of comparative advantage Two measures of the competitiveness of Taiwanese floral industry, net social profitability (NSP) and domestic resource cost coefficient (DRC), are specifically calculated and compared. In section IV, the author investigates the challenges and opportunities of Taiwan's floral industry during its integration into the world trade system. The suggestions and implications are provided in section V.

THE TAIWAN'S FLORAL PRODUCTION AND CONSUMPTION

While the space used for floral production increased substantially during the past decade, the industry product structure has also changed. Although the space utilised for cut flower production has been decreasing since 1994, the space for nurseries and potted flowers has been increasing. The industry product structure has been adjusted in favour of nurseries and potted flowers rather than cut flowers. The space for bulbs and herbaceous flowers and seeds are less than one percent of the total utilised floral space. The utilised floral space increases because farmers of other crops are seeking alternatives to their current crops in order to avoid the trade impacts after Taiwan joins WTO. However, specific operational knowledge for floral production and marketing channels are necessary to enter this industry. Floral production requires higher operational knowledge along with capital intensive greenhouse facilities. The establishment of agricultural marketing teams is important for operational technique training and meetings for the exchange of experience between producers. The newly developing regions for production will be located near the traditional regions for floral production because of the well-established infrastructure.

The floral consumption has been increased in accordance with the booming growth economy. According to Maslow's motive hierarchy theory, consumers will pursue their satisfaction on cultural and physiological desires after their basic needs are fulfilled when their incomes increase (Maslow, 1973). The floral consumption is considered as a cultural and physiological activity which expand in accordance with income increase. The floral expenditure and national income can be expressed in equation (1).

$$q_f = F(y, p, t) \tag{1}$$

Where q_f is per capita floral expenditure, y is real national income, p is real floral price, and t expresses the time trend from other factors. The empirical result of Taiwanese cut flower is estimated through linear form, semi-log, and double-log forms by modifying the autocorrelation problem (Table 2). The estimation statistics of R^2 are so high (greater than 0.92) and t-ratios indicate many of the estimated coefficients are significant from zero at the 5% significance level. The estimated floral expenditure elasticities are 1.990, 1.692, and 1.780, respectively. The result implies that cut flowers are luxury goods or fashion goods in Taiwan.

Table 2. The income elasticities estimation of cut flowers in Taiwan

Functional forms	Constant	Income	Price	R^2	$\hat{\rho}$	Elasticity
Linear	1.020	0.155×10^{-2}	−2.090	0.955	0.552	1.990
	(1.396)	(1.396)*	(−4.861)*		(2.809)*	
Double-log	−12.949*	1.692	−0.769	0.966	0.528	1.692
	(−10.26)*	(10.63)*	(−3.358)*		(2.641)*	
Semi-log	−42.784	5.786	−4.217	0.924	0.821	1.780
	(−4.712)	(5.302)*	(−3.963)*		(6.109)*	

Note: * indicate that the estimated coefficient is significantly different from zero at the 5% level
1.The yearly data period is from 1978 to 1995
2.All functional forms are modified to avoid the autocorrelation problems.

Table 3. Production area of cut flowers by major floral consuming countries (ha)

	1970	1980	1985	1990	1991	1992	1993	1994
Japan	8,515	11,317	13,087	16,609	17,426	17,999	18,406	18,700
Germany	4,229	3,091	2,991	3,003	–	3,003	–	–
Belgium	246	262	220	219	215	218	228	–
Greece	570	864	551	402	–	416	–	–
France	–	–	–	1,889	–			
Italy	7,246	7,661	7,827	8,061	7,647	–	7,898	7,654
Netherlands	2,331	4,099	4,778	5,559	5,697	5,899	5,960	6,121
Australia	362	519	–	–	–	–	–	–
Denmark	–	339	251	–	–	–	–	–
Spain	–	2,837	2,573	4,107	–	–	–	–
United Kingdom	–	4,243	4,640	4,387	–	4,307	4,491	–
U.S.	–	–	–	6,925	–	6,180	5,962	5,825
Switzerland	382	310	311	336	–	–	–	–
Israel	–	–	–	1,520	–	1,908	1,800	1,840

Source: Flower Data Statistics, Japanese Floral Promotion Center, 1996.

The increased floral consumption contributes not only to domestic floriculture but also to foreign floral products. High quality flower imports, especially from the Netherlands, increase due to the increased demand for differentiated floral products. Major floral consumption countries such as the United States, Japan, and Germany have prosperous domestic floral industries. The space used for cut flowers in Japan in 1994 was 18,700 hectares. In 1994, the cut flower planted area in Italy, Netherlands, and the United States was 7,654 hectares, 6,121 hectares, and 5,825 hectares, respectively. In 1992, the cut areas planted for flower in Germany and the United Kingdom were 3,003 acres and 4,307 hectares (Table 3). Therefore, Japan used more land for flowers than any other major floral producing country. The floral production of some European countries has not been enough to satisfy the domestic demand for floral products. Therefore, they need to import from other floral producing countries via the Netherlands. Currently, Taiwan exports some native flowers and *bonsai* to Europe through the Netherlands.

Table 4. Taiwanese Floral Trade Statistics (ton, US$1,000)

	Import		Export	
	quantity	value	quantity	value
1990	5,480	8,555	8,124	17,427
1991	5,467	9,224	11,355	23,026
1992	5,574	12,120	9,392	20,166
1993	7,066	14,474	8,069	22,614
1994	7,188	13,397	10,584	27,208
1995	8,684	17,545	13,107	35,959
1996	9,283	18,403	17,645	42,384

Source: Agricultural Trade Statistics, Council of Agriculture, Executive Yuan, 1997

The quantity of floral imports has increased from 5,480 tons in 1990 to 9,283 tons in 1996. The value of floral imports increased from US 8,555,000 dollars in 1990 to US18,403,000 dollars in 1996. The quantity of floral imports increased 69.40 percent while the value of floral imports increased 115.11 percent. The quantity of floral exports was unstable during the period of 1990 to 1996. However, the value of floral exports exceeded that of floral imports (Table 4). The general volume of trade for the floral industry increased.

THE CHALLENGES AND OPPORTUNITIES FOR THE TAIWANESE FLORAL INDUSTRY

Due to the change in its world trade situation, Taiwan has to adjust the use of domestic resources and to improve its floral marketing channels in order to enhance its competitiveness. The main problems of agricultural sectors are the generally small size of farms and high labour costs. The average farm size is only one hectare per family which is too small to reach an economy of scale. Farmers need to find off-farm income to meet their living expenses. On the other hand, the prices of farmlands are extremely high which accounts for a large portion of farm production costs. It is difficult to reach economic efficiency by relying primarily on manual labour rather than on machinery. Consequently, high land prices and labour costs cause high production costs.

The quality of floral products depends on the handling processes of product grading and packaging. The average transportation costs are difficult to reduce because of the small amount produced on each farm. Some production co-operatives and co-operative marketing teams are organised to help collect products in order to reach a reasonable volume of transportation. The auction system has been adopted by floral wholesale companies especially for cut flowers since 1988. There are four floral wholesale companies in Taiwan employing the auction system. The market information is provided on computer networks and a fax-on-demand system for people to request information at any time. The marketing channel for cut flowers is better than that for potted plants. Most potted plants are sold through bargaining rather than auctioning. Generally speaking, the Taiwanese floral industry stands in the turning point facing both the opportunities of development and the challenges of foreign floral products.

THE COMPARATIVE ADVANTAGE OF TAIWAN'S MAJOR CUT FLOWERS

After Adam Smith's absolute advantage analysis of trade, David Ricardo presented the comparative advantage basis for trade. Furthermore, Heckscher and Ohlin analysed the factor endowments and suggested that a country would export which employed abundant factor rather than scarce factor. That is to say, a country has a comparative advantage in exporting a commodity if the opportunity cost is less than other competitive countries. Factors affecting competitiveness are both price-related (such as foreign exchange rates, income, and price indexes) and non-price-related (such as quality, culture, and R&D). The competitiveness can be evaluated in terms of the comparative advantages of this industry such as net social profitability (NSP), domestic resource cost coefficient (DRC), and effective rate of protection (ERP) (Pearson 1973)

Assuming the opportunity costs of inputs and outputs are estimated by social values, the NSP measure can be expressed by equation (2).

$$NSPj = \sum_{i=1}^{n} aijpi - \sum_{s=1}^{m} fsjvs + Ej \qquad (2)$$

where a_{ij} indicates the i-th output of j-th production activity, p_i represents the shadow price of i-th output, f_{sj} indicates the s-th input used in j-th production activity, v_s represents the shadow price of s-th input, and E_j represents the external effect.

Assume that all products are tradable and the costs of inputs can be divided into two categories, the costs of domestic inputs and foreign inputs, equation (2) can be rewritten as equation (3).

$$NSPj = (uj - mj - rj)\,v - \sum_{s=2}^{m} fsjvs + Ej \qquad (3)$$

where u_j indicates the values (calculated according to international prices) of all outputs of j-th production activity, m_j represents the value (calculated according to CIF prices) of all intermediate inputs of j-th production activity, r_j indicates the values of inputs held by foreigners of j-th production activity, and v represents the shadow price of foreign exchange.

The alternative measure, *DRCj*, calculates the values of domestic resources to earn or to save of j-th production activity and is expressed by equation (4).

Table 5. The comparative advantage of chrysanthemum in Taiwan (NT dollars/dozen)

		1993	1995	1996
(A)	product market price	50.52	44.52	56.04
(B)	tradeable input costs (domestic market values)	1.262	1.157	1.145
(C)	added values (domestic market values) [A–B]	49.258	43.363	54.895
(D)	domestic resource costs except capital costs (domestic market values)	25.223	22.405	22.067
(E)	private revenues [C–D]	24.035	20.957	32.828
(F)	product world price[a]	74.435	77.445	86.44
(G)	tradeable input costs	1.681	1.254	1.335
(H)	added values (world market values) [F–G]	73.267	76.191	85.105
(I)	domestic resource costs except capital costs (world market values)	27.965	25.454	24.466
(J)	social revenues [H–I]	45.302	50.737	60.639
(K)	domestic resource costs (opportunity costs)	10.728	8.305	8.18
(L)	net social profitability, NSP [J–K]	34.574	42.432	52.459
(M)	comparative advantage[b]	advantage	advantage	advantage
(N)	DRC [(I+K)/H]	0.528	0.443	0.384
(O)	comparative advantage[c]	advantage	advantage	advantage

Note:
a. The Japanese market price is selected because Japan is the main importer of Taiwanese chrysanthemum
b. The comparative advantage is decided according to the calculated NSP
c. The comparative advantage is decided according to the calculated DRC

$$DRC_j = \frac{\sum_{s=2}^{m} f_{sj} v_s - E_j}{(u_j - m_j - r_j)\, v} \quad (4)$$

Assume the net foreign exchange earned or saved is positive, i.e. $u_j - m_j - r_j > 0$, the *NSP* measure and the *DRC* coefficient can be compared. When $DRC_j < 1$, or $NSP_j > 0$, *j*-th production activity has comparative advantages; when $DRC_j = 1$, or $NSP_j = 0$, *j*-th production activity is break-even; and when $DRC_j > 1$, or $NSP_j < 0$, *j*-th production activity has comparative disadvantages.

The comparative advantage of three major cut flowers in Taiwan, chrysanthemum, gladiolus, and rose are measured by *NSP* and *DRC* coefficient. These three major cut flowers are traditional items exported to Japan. Therefore, the Japanese market price is selected because Japan is the main importer of Taiwanese chrysanthemum. The

Table 6. The comparative advantage of gladiolus in Taiwan (NT dollars/dozen)

		1995	1996
(A)	product market price	51.24	48
(B)	tradeable input costs (domestic market values)	15.919	20.304
(C)	added values (domestic market values) [A–B]	35.331	27.696
(D)	domestic resource costs except capital costs (domestic market values)	13.539	15.452
(E)	private revenues [C–D]	21.792	12.244
(F)	product world price[a]	60.158	62.573
(G)	tradeable input costs	16.475	21.124
(H)	added values (world market values) [F–G]	43.683	41.449
(I)	domestic resource costs except capital costs (world market values)	15.909	15.452
(J)	social revenues [H–I]	27.774	25.997
(K)	domestic resource costs (opportunity costs)	17.57	22.238
(L)	net social profitability, NSP [J–K]	10.204	3.759
(M)	comparative advantage[b]	advantage	advantage
(N)	DRC [(I+K)/H]	0.766	0.909
(O)	comparative advantage[c]	advantage	advantage

Note:
a. The Japanese market price is selected because Japan is the main importer of Taiwanese gladiolus
b. The comparative advantage is decided according to the calculated NSP
c. The comparative advantage is decided according to the calculated DRC

Table 7. The comparative advantage of rose in Taiwan (NT dollars/dozen)

		1994	1995	1996
(A)	product market price	46.8	46.92	58.8
(B)	tradeable input costs (domestic market values)	2.108	2.401	2.442
(C)	added values (domestic market values) [A–B]	44.692	44.519	56.358
(D)	domestic resource costs except capital costs (domestic market values)	18.798	25.483	26.037
(E)	private revenues [C–D]	25.894	19.036	30.321
(F)	product world price[a]	44.878	23.67	59.218
(G)	tradeable input costs	1.65	1.368	1.521
(H)	added values (world market values) [F–G]	43.228	22.302	57.697
(I)	domestic resource costs except capital costs (world market values)	20.842	28.253	28.869
(J)	social revenues [H–I]	22.386	– 5.951	28.828
(K)	domestic resource costs (opportunity costs)	9.6	10.452	10.664
(L)	net social profitability, NSP [J–k]	12.786	–16.403	18.164
(M)	comparative advantage[b]	advantage	disadvantage	advantage
(N)	DRC [(I+K)/H]	0.704	1.735	0.814
(O)	comparative advantage[c]	advantage	disadvantage	advantage

Note:
a. The Japanese market price is selected because Japan is the main importer of Taiwanese rose
b. The comparative advantage is decided according to the calculated NSP
c. The comparative advantage is decided according to the calculated DRC

NSP measures of chrysanthemum are positive in 1993, 1995, and 1996. That is to say, chrysanthemum has the comparative advantage. The *DRC* coefficient of chrysanthemum is all less than one which reinforce the above result (Table 5). Though the chrysanthemum exports to Japan have comparative advantages, the export quantity decreased during these years. A possible reason is the Japanese development policy of growing chrysanthemum in Okinawa island. Government trade intervention should not be neglected while considering floral trade.

Both of the *NSP* measures of gladiolus in 1995 and 1996 are positive. Both of the *DRC* coefficients of gladiolus are less than one which reinforce the above result (Table 6). The result shows that Taiwan gladiolus possesses comparative advantages for exporting to Japan. However, the comparative advantage reduced in 1996 due to the increase of production costs.

The figures for the rose changed during the period from 1994 to 1996. The figures for *NSP* and *DRC* coefficient in 1994 and 1996 show that rose possesses comparative advantage; however, the measures of *NSP* and *DRC* in 1995 shows it also has some disadvantages (Table 7). This is due to the relative changes in domestic and foreign prices. The domestic rose price is higher than the export CIF price resulting in a lower quantity of rose exports. Generally speaking, the high domestic price is the main reason for insubstantial Taiwanese floral exports.

IMPLICATIONS AND SUGGESTIONS

Taiwan's floral production and consumption are similar to most developed countries, the floral consumption increases along with the national income. The main challenges and opportunities for the Taiwan floral industry derive from the new floral trade situations, arising from Taiwan's membership in of WTO. Floral products will begin to be imported from mainland China and some South-East Asian countries. On the other hand, Taiwan will need to promote its floral products in Japan and other potential markets. Therefore, Taiwan's floral trade will increase in terms of quantity and value in the future.

The domestic floral production has to be adjusted in product structure in favour of high quality products. More new varieties of cut flowers will be produced to replace the traditional low value-added cut flowers. In addition, potted plant production must be increased to satisfy the increased consumers' needs. Although domestic floral producers do not compete vigorously in export activities due to the high profits earned domestically, they will need to pay more attention to the overseas market in the future.

Most of the flower imports from North America and Europe are of temperate flowers. On the other hand, more than one third of Japanese floral imports are tropical flowers including orchids (Laws and Galinsky 1995) . Tropical flowers are less popular in major flower countries such as the United States, Canada, Germany, France, the Netherlands, and United Kingdom. Therefore, Taiwan may choose to produce tropical and subtropical flowers as a product differentiation policy.

The international vertical co-operation among Taiwan, mainland China, and Japan can be divided into three stages, R&D and nursery production, greenhouse production, and marketing. Taiwan should emphasise the R&D and commercial nursery production. mainland China will need to improve its production facilities to produce flowers. Japanese companies may sell the imported intermediate products from mainland China and Taiwan. Once the vertical integration is well established, Taiwan can develop its floral industry by the segmentation strategy under the challenge of the high quality imports from the Netherlands as well as the cheap floral imports from mainland China and other South-East Asian countries.

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The effect of migrants – various consumers on wine consumption in Australia[1]

Vplyv emigrantov na spotrebu vína v Austrálii

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Abstract: An attempt was made to make marginal improvements to the theory, data and empirics of demand for wine in Australia. The initial step was to define the problem to be investigated using traditional theory and some insights from household production theory. The conflicting results of the previous studies may be explained by the argument that wine and beer may be culinary complements, but economic substitutes. Two differently specified forms of Duloy's disaggregated demand functions were applied to test the hypothesis that European Migrants, demand for wine does not differ from that of local population or other groups of migrants. The first specification, Model I, allows the marginal and average propensities of consumption to change with different compositions of the community. Price and income elasticity of demand for European Migrants is lower than for locals. However, the cross price elasticity of demand for wine with respect to beer price is completely different for European Migrants – positive, indicating substitutability between beer and wine. The second approach using Duloy's disagregated function, Model II, allows us to test if European Migrants, demand differs from demand of the local population or the other groups of migrants in the long term. A modified Koyck distributed lag model was estimated. Following the results of these models it seems that "migrants" defined as 'European Migrants' is not a statistically significant regressor of wine consumption in the long term (see Table 4 and 5). However, it appears that migrants specified as those from Continental Europe have a positive effect on consumption of wine in Australia. On the other hand, British migrants modify Australian wine consumption negatively.

Key words: demand, consumption, Duloy's model, regression, household production theory, migrants, local population

Abstrakt: V štúdii išlo o marginálne zlepšenie v teórii, dátach a skutočného odhadu dopytu po víne v Austrálii. Prvým krokom bolo definovať problém z hľadiska tradičnej neoklasickej teórie, ako aj z niektorých dôležitých aspektov teórie produkcie v domácnosti. Rozdielne výsledky predchádzajúcich štúdií o komplementarite alebo substitabilite vína a piva môžu byť vysvetlené tým, že víno a pivo sú pravdepodobne kulinárne komplementy, ale ekonomicky substituenty. Dve rozdielne špecifikované formy Duloyových disagregovaných dopytových funkcií boli aplikované na testovanie hypotézy, že dopyt Európskych emigrantov po víne nie je rozdielny oproti dopytu starousadlíkov, alebo emigrantov z iných krajín v Austrálii. Model I je špecifikovaný tak, že dovoľuje otestovať zmenu spotreby jak marginálnu, tak priemernú podľa kompozície populácie. Z výsledkov vyplýva, že cenová a príjmová elasticita u Európskych emigrantov je nižšia než u starousadlíkov. Avšak krížová elasticita dopytu (cena piva) po víne je úplne rozdielna, pre Európskych emigrantov – pozitívna, indikujúc substitúciu medzi pivom a vínom. V druhom modeli (Model II) aplikujúc Duloyovú dizagregovanú funkciu je prakticky dovolené otestovať či dopyt po víne Európskych emigrantov je rozdielny od starousadlíkov, alebo emigrantov z iných krajín v dlhom období. Modifikovaný Koyckov „distributed lag" model bol testovaný. Z výsledkov vyplýva, že Európski emigranti nie sú štatistický významnou premennou pre dopyt po víne z hľadiska dlhodobého (Tab.4 a 5). Avšak emigranti špecifikovaní ako emigranti z kontinentálnej Európy majú pozitívny vplyv na konzumáciu vína v Austrálii. Na druhej strane, emigranti z Britských ostrovov majú negatívny vplyv.

Kľúčové slova: dopyt, spotreba, regresia, emigranti, starousadlíci, Duloyov model, teória domácej produkcie

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INTRODUCTION

The research begins by addressing some basic issues of how the information affects consumer's behaviour. It is supposed that consumers of various groups – migrants with different information about product, experience and environment – may have different consumption pattern. The purpose of the study was to test whether migrants from different countries have the same pattern of wine consumption in Australia. The focus of the analysis was to test the hypothesis of the long term effect of different migrants wine consumption. Since the proportion of European migrants – who were supposed to be wine drinkers – decreased in 1980-ties, the estimation was done using the data from the years 1956 to 1986. The conclusion of this study – an effect of cultural differences in consumption – is supported by the results of studies from the year 1999 and 2000.

The Australian Wine Industry was characterised by a rapid growth in the market for grapes and wines from 1955/1956 to 1985/86. The market share of table wines in the alcoholic beverages market was growing rapidly (from 17% in 1955 to 78% in 1986) and the market shares of red and white table wines changed - in the sixties in favour of red (45-50% of table wines) and in the seventies of white (60–76%) table wines (Havrila. 1989).

A number of socio-economic factors have been responsible for shifting demand for Australian wine such as increasing incomes, changes in relative prices, apparently successful promotion and popularisation of cheap cask wines. However, changes in the proportions of different ethnic groups (particularly migrants of the European origin), increasing rates of inflation and other effects changed the demand for wine as well.

The favoured method of expanding the domestic market has been through promotion by sellers, both brand-specific and, in general, by increasing consumer information about wines. But the information should be there in the community. It was there since the proportion of migrants (15% in 1955) – mostly European – was high, increased to 21% in 1986 (Table 1).

OBJECTIVES OF THE STUDY

The purpose of the study is to derive estimates of the parameters of economic relationships, in addition to the product and consumer characteristics, which influence the demand for wine. The net effect of changes in demand is not immediately apparent, and some may have offsetting influences on the aggregate consumption. The major objectives of this study can be expressed as estimation of critical parameters of demand for wine conventionally explained but allowing for the subtle forms which prices and income may take because of the influence of socio-cultural effects (migrants) and market information (promotion).

These objectives can be expressed in terms of null hypotheses as follows:

Table 1. Proportion of migrants in Australia 1955/56 to 1985/86

Year	Total population[1]	Proportion of migrants			
		total	European	CEM[2]	British
1955/56	9.4276	15.34	13.83	6.58	7.25
1956/57	9.6431	15.69	14.17	6.94	7.22
1957/58	9.8461	15.91	14.37	7.14	7.23
1958/59	10.0612	16.29	14.67	7.44	7.23
1959/60	10.2807	16.74	15.03	7.83	7.20
1960/61	10.5082	16.93	15.19	8.00	7.19
1961/62	10.7051	17.03	15.27	8.16	7.11
1962/63	10.9162	17.22	15.39	8.22	7.17
1963/64	11.1355	17.64	15.71	8.35	7.36
1964/65	11.3595	18.09	16.09	8.46	7.63
1965/66	11.5505	18.45	16.39	8.53	7.87
1966/67	11.8102	18.61	16.52	8.55	7.97
1967/68	12.0308	19.04	16.74	8.59	8.15
1968/69	12.2963	19.52	16.99	8.64	8.34
1969/70	12.5517	19.97	17.19	8.69	8.50
1970/71	13.0673	19.74	16.81	8.48	8.32
1971/72	13.3037	19.62	16.55	8.28	8.27
1972/73	13.5045	19.64	16.36	8.13	8.23
1973/74	13.7226	19.77	16.34	8.06	8.28
1974/75	13.8930	19.52	16.03	7.92	8.11
1975/76	14.0331	19.37	15.75	7.79	7.96
1976/77	14.1922	19.39	15.52	7.66	7.86
1977/78	14.3592	19.37	15.27	7.55	7.72
1978/79	14.5157	19.48	15.04	7.45	7.59
1979/80	14.6954	19.73	14.95	7.40	7.55
1980/81	14.9233	20.13	14.96	7.37	7.59
1981/82	15.1784	20.32	14.90	7.33	7.57
1982/83	15.3786	20.25	14.71	7.28	7.43
1983/84	15.5559	20.25	14.46	7.18	7.28
1984/85	15.7515	20.36	14.24	7.09	7.15
1985/86	15.9739	20.58	14.09	7.01	7.08

[1]in millions
[2]Continental European Migrants

Source: ABS, Cat. No. 3404.0, 4.23, Demorg. Bulletin No. 72–87

(1) The incomes of consumers, and prices of wine and beer are not significant determinants of the demand for wine in Australia;
(2) Current consumption is not related to the previous consumption;
(3) European migrants' demand for wine does not differ from that of the local population.

SOME ASPECTS OF THE TRADITIONAL DEMAND THEORY

The traditional theory of consumer behaviour rests on the view that consumers seek to maximise utility U, directly from the services of goods X_i purchased in the market place

$$U = u(X_1, X_2, ..., X_n) \quad (1)$$

subject to the constraints of prices P_i and income Y_i:

$$Y \equiv \sum_{i \equiv 1}^{n} (X_i P_i) \quad (2)$$

where $i = 1...n$ goods.

The effect of changes in the real income and relative prices on the demand for X_i are summarised by the demand function

$$X_i \equiv d_i\left(\frac{Y}{P}, \frac{P_i}{P}, \frac{P_j}{P}, T\right) \quad (3)$$

where P is a price index and T are tastes.

The nature of consumer behaviour is said to depend upon the general properties of the consumer's utility function. It is assumed that this function is continuous, at least twice differentiable and strictly concave and monotonically increasing. The consumer with a given income Y is supposed to make a choice of quantities of goods $X_1, X_2, ..., X_n$ from the commodity space with n elements to maximise utility (U):

$$Max\, U(X_1, X_2, ..., X_n) + \lambda(Y - (X_1P_1, X_2P_2, ..., X_nP_n)) \quad (4)$$

However, the necessary condition for the *free extremum* or utility is to find the derivative of the Langrangian function with respect to $X_1, X_2, ..., X_n$.

HOUSEHOLD PRODUCTION THEORY

In traditional theory, the demand function is summarised as a function of relative prices, consumer income and tastes. But, tastes are hardly quantifiable. It may be said that traditional theory neglects pertinent information, the properties of goods and the characteristics of consumers.

The *characteristic theory* summarises the demand function as a function of market goods, their prices, full income, and the consumers own time and environment. The environment is viewed as the level of technology in the household production process, which differs in education, race, household composition, experience and information: defined as human capital. Since groups of migrants differ in the level of education, experience and information about characteristics of goods, they may have different patterns of consumption. Even Steenkamp et.al. (1999) argue that consumer innovative ability is affected negatively by the importance of consumer's attachment to the value domain of conservation compared to the openness to change.

In a similar way, information may increase or change the level of human capital and change the consumption pattern of local population as the opposite to migrants. We consider some applications of household production theory to the demand for wine and it is largely derived from the works by Becker (1965), Lancaster (1966a, 1966b), and Stigler and Becker (1977). They argue that consumer's demand for market goods is a derived demand for *commodities* produced by the consumer from market goods and services. The similarity between derived demand by a firm for factor of production and the consumer demand for market goods as a derived demand is apparent.

However, if an individual consumer chooses to buy particular goods, does his decision depend on market prices and his income only, or on his preferences, which are derived from the previous information (different ethnic groups), as well? The individual does not make decisions without any information or previous experience. As Stigler (1961) argues, the expected savings from an additional unit of search (information) is approximately the quantity (q) a consumer wishes to purchase times the expected reduction in price ($\delta P/\delta W$) as a result of search, or:

$$q\left|\frac{\delta P \min}{\delta W}\right| = MC_w \quad (5)$$

where MC_w is the marginal cost of search.

Therefore, the implication that utility is derived directly from goods and services in the market place is restricted. Similarly Burguet and Vives (2000) argue, that costly information acquisition can present full revelation and depends on the behaviour of marginal costs at zero.

Consumers can produce different products from market goods and services with different information, experience and environment. Utility in this case does not depend on market prices and incomes only, but also on the abilities of individuals. Utility directly obtained from the productive activities of combining purchased market goods and services with the consumer's time and abilities. This approach is the primary focus of household production theory, which states that utility (U) is directly obtained from entities, called commodities (Z_i), produced by consumers from market goods and services.

$$U = u(Z_1, Z_2, ..., Z_n) \quad (6)$$

Where the Z_i stand for services from and quantities of the commodity. The commodity is produced by the household using market goods X_i, quantities of his own time t_i, and the environment E, which reflects the state of the arts of production (the level of technology in the household production process differs with ethnicity).

$$Z_i = z_i(X_i, t_i; E) \quad (7)$$

By the environment we mean either different levels of information or different household composition and physical conditions. Then it may be argued that different information because of different background (education, race, physical, conditions), or new information accepted from advertising or promotion has an effect on the production process of the commodity (See eq. 7), and on the utility function. Then it can be argued that the consumer's demand for market goods is a derived demand analogous to derived demand by a firm for any factor of production. Thus consumer's utility is maximised subject to the production (7) and the constraints of the household's available time and income. Cooper (2000) names similar changes in production process as *gamma changes*. It is a variation that can be measured only by adding a new perceived dimension to product positioning. Becker (1965) observed that the time and money income constraints can be resolved into a single resource constraint, the households full income. Thus in analogous fashion to the utility maximisation depicted in the traditional theory expressed by equation $MaxU(X_1, X_2, ..., X_n) + \lambda(Y - (X_1P_1, X_2P_2, ..., X_nP_n))$, utility, under the dispensation of the extended theory, is maximised subject to the constraints of the household production and full income. Then the consumer with a given full income S is making the choice of quantities of commodities Z_1 to Z_n to maximise utility U expressed similarly as in equation of traditional theory as

$$MaxU(Z_1, Z_2, ..., Z_n) + \lambda(S - \sum(wt_i + P_iX_i)) \qquad (8)$$

where

S – is household full income defined as $S = wT + V$,

ω – is the wage, assumed to be constant,

V – is the household non-wage income,

P_i – is the price of the market good,

X_i – is the quantity of the market good,

t_i – is the household time in producing Z_i.

The first order conditions for maximisation with respect to the commodities implies:

$$\frac{MUi}{MUj} = \frac{\delta U / \delta Zi}{\delta U / \delta Zj} = \frac{\Pi i}{\Pi j} \qquad (9)$$

where the ratio of marginal utilities is cast in terms of commodities and their prices, instead of market goods and their prices as in the traditional theory. For utility to be at a maximum, the ratio of the marginal utilities of two commodities Z_i and Z_j must equal the ratio of their marginal costs Π_i/Π_j. The derivatives in (9) are marginal input-output coefficients. The marginal costs are the shadow prices of the Z_i that are determined in turn by the prices of market goods, and time, and by the productivity of each in producing the Z_i.

The factor prices (or input coefficients) are affected by changes in the environment E (equation 7), which reflect the level of technology of the production process or community information. And thereby the environment alters a commodity's relative price Π_i/Π_j. If Π is an index of all commodity prices, these changes may also affect the price level Π by raising or lowering the average Π_i as a whole. And, as Becker (1965) argues, a change in the household's costs of living is equivalent to a change in the average price of all commodities.

If Z_i is either knowledge or information and both are beneficial goods, and if training increases the appreciation of it, which augments the value of human capital and time, then human capital and time build the stock of knowledge or information. And vice versa, the stock of knowledge or information increases the productivity of time and human capital.

However, it is very difficult to estimate the effect of information empirically. So far we have argued that the environment may be viewed as the level of technology in the household but differs by experience and information, level of education or race. Migrants arriving in Australia live in a new environment. They (migrants) differ in relation to local population (or between different groups of migrants), in education, experience and information about the characteristics of goods (e.g. local wine).

Assuming this, the different information and knowledge results in a different pattern (habit) of consumption for different groups of migrants in relation to locals. Thus, the effect of knowledge, which will differ between groups of migrants and between migrants and locals, may be estimated empirically as an effect of migrants. The theoretical background to empirical estimation of migrants' effect on consumption was formulated by Duloy (1967).

In this study, the effects of knowledge and information are taken into account as the effect of migrants or the effect of different information (knowledge) on the consumption of wine. However, if it is assumed that there is an effect of information on the consumption pattern – effects of migrants, one ought to consider the existence of habit in wine consumption. Similar results were found in Simester et.al. (2000). They confirm the basic premise that by quality improvements it is possible to yield enduring and measurable improvements in consumer's perception of satisfaction.

THE MODEL, DATA AND VARIABLES SPECIFICATION

One of the determinants of wine consumption, identified in the statement of objectives of the demand for wine in Australia study, was that changes in the composition of the population are expected to change the aggregate consumption pattern of alcoholic beverages. Since it is necessary to ensure that models operate in a manner consistent with economic theory and with physical/biological constraints, the actual or perceived characteristics of the market determine the structural behavioural relationships in the model. To a certain extent, the model is dependent upon the researcher's beliefs about the operation of the market.

In the previous studies of consumption patterns in Australia, different approaches were applied to estimate the impact of immigration on the general demand function. George (1974) and Owen (1979) used an unsatisfactory approach because they incorporated no theory as to how migration affects the economy or consumption of wine, and secondly they assumed only differences in the average propensity to consume, the ,*impact effect*' of migrants.

The dependent variable

Per capita figures of the retail sales of wine were used to account for the shift in demand which could be attributed to population changes. This assumption means that the estimated model refers to a hypothetical average consumer.

The prices and income variables

In the study the prices of wine, beer and income are deflated by consumer price index (CPI) with the 1980 base. The ABS (Australian Bureau of Statistics) series of publication *Consumer Price Index-Quarterly* contain the index of wine and spirits together (in one observation). The data for wine prices – subgroup index – were obtained from the ABS in February 1987, for the period of December 1973 to December 1986. The wine price index constructed by George (1974) was used for the previous years.

The migration variable

Duloy (1967) expressed his approach to the consumption function as an aggregation problem of migrants and local population. The relationship forms the aggregate consumption function:

$$C_t/N_t = \alpha_a + (\alpha_m - \alpha_a)\,\Pi_t + \beta Y_t/N_t \qquad 10)$$

Where Π is a proportion of migrants M_t to the total population N_t at time t.

C and Y – refer to consumption and income,

a and m – refer to local and migrants population,

L and M – is local and migrants population,

t – is the year of consumption.

It is assumed that the intercept parameter in (10) for *migrants who have just arrived in Australia* is higher than that for locals. Consequently, after time spent in Australia α_m approaches α_a at an increasing rate until T years $\alpha_m(T) = \alpha_n$. It is assumed that in the period $\alpha_m(0)$ to $\alpha_m(T)$ the consumption of migrants will differ from that of locals.

Duloy,s assumption of differences in consumption and savings behaviour of migrants and the local population is applied in Model I, which is specified in a similar way as in (10):

$$Q = \alpha_l + (\alpha_m - \alpha_l)\,M_t + \beta_{1l}Y_t + \beta_{2l}WP_t + \beta_{3l}BP_t + (b_{1m} - \beta_{1l})\,M_tY_t + (\beta_{2m} - \beta_{2l})\,M_tWP_t + (\beta_{3m} - \beta_{3l})\,M_tBP_t + \varepsilon_t \qquad (11)$$

where

M – the proportion of the stock of migrants (total, European, CEM or British) to the total population times 100[3],

m and l – subscripts refering to migrants and local population,

Q – yearly domestic sales of wine in Australia (litre/capita),

Y – yearly average household disposable income in real 1980 dollars (dollars/head),

WP – yearly wine price index deflated by consumer price index (CPI) – weighted average of eight capital cities for all commodity groups. Index 1980 = 100,

BP – beer price – yearly index deflated by CPI as for WP,

ε – error term about which the usual requirements with respect to ordinary least squares (OLSQ) are assumed to hold,

t – year subscript = 1 in 1955/56,..., to 31 in 1985/86,

α, β – regression coefficients.

Here we assume that migrants have no impact effect on consumption, but because their habit in consumption is different to locals, we expect that the effect of the change in prices and income will have different marginal responses from migrants and locals. Migrants are specified here as a stock of people born outside Australia enumerated at every census (See Table 1). Where British migrants (BT) are defined as migrants form British Islands, CEM are migrants from Europe except British migrants, European migrants are defined as CEM plus British migrants, Total migrant population is defined as total immigration to Australia.

In principle the parameters of (11) can be estimated, and thus the hypothesis of different behaviour of the two groups, locals and migrants, can be tested. In each case, if the coefficients $(\alpha_m - \alpha_l)$ and $(\beta_m - \beta_l)$ are not significantly different from zero, this implies that the average and marginal demand responses for migrants are not significantly different from locals. The results of regressions are presented in Table 2 and 3. It may be noted that the models detected an effect of migration in all equations except that with the variable of "Total Migrants" (first column of Table 2). In that model, the coefficients of the

[3] The variable of the proportion of migrants times 100 is the percentage of migrants in the whole population. This variable is applied in the regression instead of the real proportion of migrants, since the coefficient of the variable is more understandable, but the result of the regression does not change.

Table 2. The estimates of Model I (OLSQ)

Variable	Immigration total	European	CEM + British	CEM	British
	Q_t	Q_t	Q_t	Q_t	Q_t
C	76.160	435.090	335.920	317.050	433.850
	(0.52)	(7.62)	(3.59)	(6.80)	(5.83)
M_t	−4.05[t]	−28.03[e]	−15.36[c]	−40.69[c]	−55.99[b]
	(−0.54)[t]	(−7.77)[e]	(−1.02)[c]	(−6.94)[c]	(−5.96)[b]
B_t			−27.59[b]		
			(−1.75)[b]		
Y_t	0.442E−02	0.0207	0.0267	0.0231	0.0191
	(0.48)	(8.15)	(4.70)	(8.23)	(6.04)
$M_t Y_t$	−0.756E−04[t]	−0.106E−02[e]	−0.28E−02[c]	−0.250E−0.2[c]	−0.190E−02[b]
	(−0.16)[t]	(−6.42)[e]	(−2.66)[c]	(−6.65)[c]	(−4.66)[b]
$B_t Y_t$			−0.182E−0.3[b]		
			(−0.15)[b]		
WP_t	−0.640	−1.010	−0.877	−0.818	−1.066
	(−1.08)	(−5.98)	(−3.59)	(−5.71)	(−4.47)
$M_t WP_t$	0.0258[t]	0.0567[e]	0.0574[c]	0.0937[c]	0.116[b]
	(0.88)[t]	(5.30)[e]	(0.79)[c]	(5.11)[c]	(3.86)[b]
$B_t WP_t$			0.041[b]		
			(0.47)[b]		
BP_t	−0.452	−4.190	−3.638	−3.251	−4.167
	(−0.34)	(−7.36)	(−4.19)	(−6.54)	(−5.96)
$M_t BP_t$	0.031[t]	0.270[e]	0.204[c]	0.419[c]	0.546[b]
	(0.46)[t]	(7.46)[e]	(1.46)[c]	(6.56)[b]	(6.02)[b]
$B_t BP_t$			0.268[b]		
			(1.81)[b]		
R^2	0.98	0.99	0.99	0.99	0.99
$\bar{R}^2$	0.98	0.99	0.99	0.99	0.99
DW	0.70	2.23	2.19	2.24	1.78
SSR	13.449	4.288	3.534	4.327	6.405
F	199.78	633.25	400.40	627.63	422.92

Q_t – is the annual consumption of wine per capita
SSR – is sum of squared residuals
The figures in parentheses are *t*-statistics
CEM and [c] – Continental European Migrants
B and [b] – British Migrants
EM and [e] – European Migrants
TM and [t] – Total Migrant Population

variables are not significantly different from zero, thus it is concluded that the effect of the whole migrant population is not different from locals in consumption of wine in Australia.

Since the Durbin-Watson *d*-statistic signifies the presence of serial correlation in the model, so it may be argued that model is miss-specified, or a relevant variable is omitted. The results of the regression indicate that the variable of total migrants, as defined by George (1974) and Owen (1979) for the estimation of wine consumption, is not adequately specified.

Generally, the model with European, CEM and British migrants possesses satisfactory statistical characteristics. The value of $\bar{R}^2$ and *F*-statistics indicate a high level of explanation of wine consumption, the Durbin-Watson *d*-statistics suggest the absence of auto-correlation, and the signs of the estimated elasticities confirm prior expectation.

The estimate of the elasticities imply that demand for wine in Australia is income elastic, however the income elasticity of demand is higher for the local community than for the migrant population, (see Table 3). The impact of migrants in Duloys model is measured by the change of the elasticities. Accepting the result of the regression, European Migrants have a large decreasing effect on income elasticity of demand for wine (–0,50). In contrast, the effect of the total migrant population in Australia is unimportant.

Table 3: The estimates of demand elasticities in Model I

Demand elasticity	Immigration total	European	CEM + British	CEM	British
			Total		
E_{ii}	−1.60	−1.31	−1.12	−0.84	−1.80
E_{ij}	1.15	0.25	0.10	0.35	0.22
E_{iy}	1.45	0.02	1.52	1.66	2.14
			Locals		
E_{ii}	−1.33	−1.88	−2.12	−1.79	−2.98
E_{ij}	0.87	−2.28	−4.28	−3.54	−4.86
E_{iy}	1.48	2.52	2.94	2.85	3.04
			Migrants		
E_{ii}	0.27	0.58	0.53[c] 0.42[b]	0.95	1.17
E_{ij}	0.29	2.53	1.90[c] 2.48[b]	3.90	5.08
E_{iy}	−0.03	−0.50	−1.34[c] −0.08[b]	−1.19	−0.90

E_{ii} – the own price elasticity of demand
E_{ij} – the cross price elasticity of demand
E_{iy} – the income elasticity of demand
The elasticities are calculated at mean values
CEM and [c] – Continental European Migrants
B and [b] – British Migrants
Total– Elasticity of Total Population
Locals – Elasticity of local Population in Australia
Migrants – The Change of the Elasticity by Migrants

If European Migrants are dis-aggregated into Continental European Migrants (CEM) and British Migrants, it appears that CEM have a large negative effect (–1,34) on income elasticity. The effect of British Migrants is very small if it is estimated in the same model as CEM. It may be concluded that British Migrants as well as the total population of migrants in Australia have, in aggregate, a similar pattern of wine consumption to the locals. This makes some sense with British Migrants, since the Australian population has been basically British. The absence of an effect from the total population of migrants may by explained by the different consumption habits of different groups of migrants offsetting one another.

The demand for wine is price elastic for the local population in Australia, and migrants have a dampening effect on the price elasticity of demand for Australia as a whole. Therefore, it is concluded that the decline in consumption of wine is much smaller for European Migrants than for the locals, if the price of wine increases.

The cross price elasticity of demand for wine with respect to beer price is positive but small (0,10 to 0,35) for total population in Australia. However, this elasticity is negative for the local population indicating that a one per cent increase in the beer price decreases wine consumption of the local population by 2–5 per cent. This may indicate that wine and beer are complements for that part of the population. But, as Meagher et al. (1983) argues, the substitution effect of beer for wine is not sufficiently strong. If the beer consumption habit for the local population is very strong, then given the budget for alcoholic beverages and total budget of the total population, consumption shifts away from wine whereas the level of beer consumption remains at the level prior to the price changes. It is then likely that the consequence of the decrease in the price of beer, emanating from the budget of 1988/89 year, will be increased consumption of booth beer and wine by the local population. That will occur not because of complementarity between beer and wine in the local population, but because there is a strong habit reinforces the"income effect".

Wine is a substitute for beer for the migrant population in Australia. The change of the positive cross elasticity of demand with respect to beer price is very high (between 2,53 and 5,08) for migrants. Then the elasticity indicates that the positive effect of the change of beer price on consumption of wine by the migrant population is higher than its negative effect for the local population. However, the effect of migrants in this model is measured by the change of elasticities. Then the result of the change is a positive (substitution) effect for the total population – so, beer and wine are estimated as substitutes for the total population in Australia.

To conclude, it is accepted that European Migrants, but primarily Continental European Migrants (CEM), have a different pattern of consumption of wine comparing to the locals, and as a result their (migrants) demand elasticity with respect to income, price of wine and price of beer differ from those of the local population.

THE EFFECT OF MIGRANTS IN THE LONG-TERM

The purpose of the study in Model II is to test the hypothesis that migrants have a long-term effect on the consumption of wine. In the analysis for Model I it was concluded, that the differences in consumption pattern of migrants and locals exist because of their different habits. In Model II, we are to test the null hypothesis that in the long-term habit in the consumption of wine are the same for migrants and locals. A model of the form similar to Duloy,s was exploited to estimate the effect of migrants in the long-term. A modified Koyck (1954) distributed lag model was estimated.

$$Q_t = \alpha_1 + (\alpha_m - \alpha_1) M_t + \beta_1 Q_{t-1} + \beta_2 Y_t + \beta_3 WP_t + \beta_4 BP_t + (\varepsilon_t - \lambda\varepsilon_{t-1}) \quad (12)$$

where:

M – is the proportion of stock of migrants to the total population times 100,

$(\alpha_m - \alpha_1)$ – is the change in the average level of consumption in the whole community due to the migrant population.

The maximum likelihood method (MLM) is preferred to that of OLSQ since serial correlation of residuals exists in the model examining the proportion of European migrants. In the model estimated by OLSQ procedure, the null hypothesis *Ho*: $q = 0$. That the error terms are serially

Table 4. The estimates of Model II (OLSQ)

	Immigration			
Variable	total	European	CEM	CEM + British
	Q_t	Q_t	Q_t	Q_t
C	−34.954	−45.631	−38.828	−38.051
	(−2.35)	(−2.68)	(−23.78)	(−2.73)
M_t	9.941	7.779	7.905	7.953^{CEM}
	(3.63)	(2.26)	(4.23)	(4.27)
				-2.438^{B}
				(−1.06)
Q_{t-1}	7.966	8.811	9.371	9.377
	(10.64)	(10.03)	(12.78)	(12.53)
Y_t	2.217	3.535	3.009	3.004
	(1.50)	(2.24)	(2.27)	(2.30)
WP_t	−9.337	−10.094	−9.841	−8.888
	(−9.68)	(−6.65)	(−10.33)	(−6.81)
BP_t	5.176	7.138	7.205	7.063
	(2.28)	(2.81)	(3.41)	(3.34)
R^2	0.997	0.996	0.997	0.997
$\overline{R}^2$	0.995	0.995	0.997	0.997
DW	1.86	1.52	2.20	2.24
h	0.43	1.53	0.61	0.73
SSR	2.637	3.369	2.339	2.229
F	1575.52	1232.23	1777.01	1489.26
E_{ii}	−0.88	−0.95	−0.93	−0.84
E_{ij}	0.49	0.67	0.68	0.67
E_{iy}	0.21	0.33	0.28	0.29
E^l_{ii}	−3.82	−5.59	−7.75	−7.00
E^l_{ij}	2.13	3.94	5.66	5.58
E^l_{iy}	0.91	1.94	2.33	2.41

Q_t – is the annual wine consumption per capita
E_{ii} – the own price elasticity of demand
E_{ij} – the cross price elasticity of demand
E_{iy} – the income elasticity of demand
E^l – the long-term elasticity of demand
The elasticities are calculated at mean values
CEM – Continental European Migrants
B – British Migrants

Table 5. The estimates of Model II (MLM)

	Immigration			
Variable	total	European	CEM	CEM + British
	Q_t	Q_t	Q_t	Q_t
Rho	0.014	0.281	−0.160	−0.204
C	−35.379	−50.907	−35.804	−34.973
	(−2.37)	(−2.79)	(−2.75)	(−2.76)
M_t	9.894	6.066	8.216	8.327^{CEM}
	(3.578)	(1.475)	(5.01)	(5.27)
				-2.414^{B}
				(−1.22)
Q_{t-1}	7.950	8.341	9.574	9.616
	(10.54)	(8.62)	(13.97)	(14.48)
Y_t	2.254	4.293	2.696	2.667
	(1.52)	(2.41)	(2.25)	(2.30)
WP_t	−9.332	−9.534	−9.862	−8.906
	(−9.58)	(−5.34)	(−11.781)	(−7.925)
BP_t	5.235	7.558	6.910	6.811
	(2.29)	(2.85)	(3.48)	(3.52)
R^2	0.997	0.993	0.998	0.998
$\overline{R}^2$	0.996	0.991	0.998	0.998
DW	1.87	1.88	2.06	2.07
h	0.40	0.41	0.18	0.21
SSR	2.630	3.184	2.285	2.147
F	1278.08	570.87	2038.24	1750.60
E_{ii}	−0.88	−0.90	−0.93	−0.84
E_{ij}	0.49	0.71	0.65	0.64
E_{iy}	0.21	0.40	0.25	0.25
E^l_{ii}	−3.52	−4.28	−9.30	−8.40
E^l_{ij}	1.94	3.38	6.50	6.40
E^l_{iy}	0.84	1.90	2.50	2.50

Q_t – is the annual wine consumption per capita
E_{ii} – the own price elasticity of demand
E_{ij} – the cross price elasticity of demand
E_{iy} – the income elasticity of demand
E^l – the long-term elasticity of demand
The elasticities are calculated at mean values
CEM – Continental European Migrants
B – British Migrants

independent, is accepted for the model with total migrants and continental migrants, if the *d*-test is applied[4]. The *d*-test is inconclusive in the model with European Migrants. If the *h*-test is applied to test the null hypothesis of serial correlation in residuals, the null hypothesis is accepted for each model. However, the highest value of the *h*-test is found in the model with European Migrants. Once again, it may be said that the *d*-test and the *h*-test perform similarly, but the *d*-test is more precise. The null hypothesis *Ho*: $q = 0$ is accepted in each model estimated by the MLM, if either the d- test or *h*-test[5] is applied.

The estimated of the effects of migrants are similar to those of Owen (1979) – the migrants effect on consump-

[4] Inder (1986) proposed that the DW *d*-test is generally more powerful and performs more consistently than do the large-sample asymptotic critical values of Durbin's *h*-test and *t*-test.

[5] Havrila (2000) found out that the estimate of Durbin's *h*-statistics in the linear-log functions was not defined. The problem arises because of a theoretical definition of the standard error and the estimates of variables. The *h*-statistics is defined if the standard error is transform by geometric mean, similarly to the Box and Cox (1964).

tion of wine is large. The estimates are significant at the 5 per cent level, except that for British Migrants. The effect of migrants (measured by the parameter ($\alpha_m - \alpha_l$)) is positive, except for British Migrants. As excepted, an increase of the proportion of British Migrants has a dampening effect on consumption of wine, since it was argued that British are predominantly beer drinkers, especially for the migrating blue-collar class.

The estimates of short-run elasticity of demand with respect to income are of the same order as those in Tsolakis et al. (1983a), but lower than estimates in other studies. The price elasticity of demand for wine is similar to that estimated by Taplin and Ryan (1969). The elasticity of demand with respect to beer price (cross) indicates that the substitution effect is greater than estimated in other studies except, Murphy (1981). But George (1974) and Meagher et al.(1983) estimated a negative effect on the consumption of wine from increases in the price of beer – wine and beer are complements.

CONCLUSION

The estimated cross price elasticity in Model I (Table 2 and 3) is small but positive, the elasticity is negative for the local population, but positive for the migrants population. Such contrary effects of beer price for different parts of the population may explain the contradictory results in the previous studies. The estimates of migrants variable defined as 'European Migrants' in the Model II (Table 4 and 5) is not a statistically significant regressor of wine consumption in the long term. It appears that the migrants from Continental Europe have a positive affect on the consumption of wine in Australia, but the British migrants negative. Thus, such a result provides an information that the aggregate variable of 'European Migrants' poses two contrary forces of its two components.

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