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Is there any future for cash crops in developing countries? The case of vanilla.

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Abstract

A generally used term for easy marketable commodities usually with high prices is cash crops As a result of it these commodities are produced by many developing and especially least developed countries (LDC). These crops have witnessed fluctuation in prices during the last decade. We can suppose that these products would be the domain of developing countries nevertheless the opposite is true.

Vanilla is a very good example of those products especially because just very few producers exist. We can suppose that vanilla trade would be the sphere of very few producers and beside that the agents would deal mostly with the demand site on the international market. However, the international vanilla market shows slight differences. Nevertheless, it can be grown just in very few areas. Madagascar belongs between the most well known producers.

The aim of this paper is to analyse the international vanilla trade with regards to the production and consumption side and specifics of cash crops in general. International vanilla trade is even higher than the production itself. These results indicate that vanilla is being re-exported and the trade is not just a normal commodity trade but being use as a investment instrument as well.

Key words

Cash crops, vanilla, international trade, RCA.

Anotace

Termín cash crops se používá v případě zemědělských komodit, které jsou lehce zpeněžitelné na mezinárodním trhu obvykle za vysoké ceny. Tyto komodity jsou obvykle pěstovány v rozvojových a hlavně nejméně rozvinutých zemích (LCD). V průběhu minulého desetiletí došlo k výraznému kolísání jejich cen na mezinárodních trzích. Bylo by možné očekávat, že tyto plodiny jsou doménou nejméně rozvinutých zemí. Opak je však pravdou.

Vzhledem k omezenému množství producentů patří vanilka mezi dobré příklady těchto komodit. Mohli bychom očekávat, že obchod s vanilkou budou doménou pouze několika málo producentů a na mezinárodním trhu bude dominovat strana poptávky. Trh s vanilkou však vykazuje výrazné rozdíly. I přes tuto důležitost může být vanilka pěstována pouze v několika oblastech světa (např. Madagaskar).

Cílem tohoto článku je analyzovat produkční a spotřební stranu obchodu s vanilkou se zaměřením na specifika obchodu s lehce zpeněžitelnými produkty. Výsledky ukazují, že obchod s vanilkou je podstatně vyšší než produkce a existuje zde tedy velké množství re-exportů.

Klíčová slova

Lehce zpeněžitelné produkty, vanilka, mezinárodní obchod, RCA

Introduction

The term cash crops are being very often interchanged with the term export crops. Cash crops represent food and non-food commodity either sold domestically or exported abroad with comparison to the export crops which are just being sold abroad (Barbier, 1989). In this paper we shall use the common sense definition of crops being sold for cash. The group of non-food cash crops consist, for example, of tea, coffee, sugar, tobacco and spices. The shift between food crops and cash crops is known as commercialization. Effect of this shift has been described by many studies (see Maxwell and Fernando, 1989). Some of them document the possible positive effects and alternatively many of them highlight the disastrous consequence of such a shift.

Many developing countries try to assign priorities whether to specialize in cash crops or focus more on substance production of food crops. This debate is very often based on competitive advantage and terms of trade. Many economics stress the fact that specialization in cash crops can be helpful for farmers who can sell their cash crop production and buy food crops (Timmer, 1997; Govereh and Jayne, 2003; Goetz, 1992; Balat et al. 2009; Jeníček, 2008; Kennedy et al, 1992; Ali and Farooq, 2003); however, the premise can be valid just in a case that the vulnerability of cash crops do not exist. The stability of the prices has also been stressed by Mintem et al. (2009), Svatoš, (2008), Čechura (2009) and Schweitzer (2009). Contrarily, Dorosh and Haggblade (1993) found out that investment in food crops (rice) generate higher GDP and employment. On the other hand Easterly and Levine (2003) point out that cash crop can be a burden for economic development. Cash crop production can also negatively influence the biodiversity (Mertz et al, 2005) which can have negative impact on economic growth. On the other hand, vanilla very often intercropped areca – palm. Planting both together make the plantation structurally complex. For example, vanilla is often planted together with some other cash crops – such as bananas and coffee in Uganda.

This paper focuses on vanilla that is an aromatic spices originated in Mexico. About 110 species of Vanilla belong to the orchid family (Orchidaceae). Commercial vanilla flavour is being derived from Vanilla planifolia (Verma et al, 2008). Vanilla spices are being connected mostly with culinary delights, however, is has its history as a medical plant too. The production of Vanilla beans demands special climatic and soil conditions and it is also labour intensive (Blarel and Dolinsky, 1995). The previous statements confirm that the vanilla is one of the most expensive spices. Some authors even mention that it is the second most expensive one after saffron.

Data and Methodology

The aim of this paper is to analyse the structure of foreign trade with vanilla. As a vanilla belong to the group of cash crops and there is a tendency of agriculture commodities price decline (Rakotorisoa and Shapouri, 2001) we aim to examine the trends in vanilla foreign trade. The commodity selection was done on the base of primary producer structure. We assume that as vanilla is being produce just in very few developing countries it can significantly contribute to the economic growth of those countries.

Firstly, we begin to investigate the structure of producers. The descriptive analysis is employed and data come from FAOSTAT. Based on the first stage we continue to analyse the export and import site of the vanilla trade. Partially, we also touch the question of prices as the prices play a key role in the foreign trade. We also use the revealed comparative advantage indices for our analyses. The original RCA index, formulated by Balassa (1965) can be written as:

$$B = (xij / xit) / (xnj / xnt) \quad (1)$$

where x represents exports, i is a country, j is a commodity, t is a set of commodities and n is a set of countries. RCA I measures a country's exports of a commodity (or industry) relative to its total exports, and to the corresponding exports of a set of countries, e.g. the world.

A comparative advantage is "revealed", if RCA I > 1. If RCA is less than unity, the country is said to have a comparative disadvantage in the commodity/industry. It is argued that the RCA I index is based due to the omission of imports especially when country-size is significant. We accept the fact that the RCA indices are not predicative enough about the real structure of trade. For trade analysis we use data from COMTRADE

but there exists one problem. COMTRADE trade matrices include both types of vanilla – one use for culinary purposes and the second one used for perfumes.

Results and discussion

Vanilla production

Many developing countries try to assign priorities whether to specialize in cash or food crops. This question is crucial especially for net food importing countries (such as Madagascar, Kenya and Malawi) specializing in cash crop production. According to FAOSTAT vanilla is being produces in 13 countries on 82 098 hectares of land (2008). The four main producers according to harvested area are Madagascar (69 th. ha), Indonesia (9 th. ha), China (1.5 th. ha) and Mexico (1.1 th. ha). The harvested area of other producers is under 1 000 ha. The value of mean is rather high – 6 315, 23 ha compare to the value of median (250 ha) and mode (40 ha). Madagascar represents 84.5% of the whole harvested area and Indonesia, China and Mexico all together account approximately for 15%. The previously mentioned data show that the distribution is far above the ground. 97 % of the harvested area is located in low income or food deficit countries.

Similar situation can be seen when we describe the production in tones. The overall production was 9 080 tons in 2008. Indonesia is the biggest producer of 3 700 tons accounting for 40.75%, follow by Madagascar (3 700 tons and 30.84%), China (1 400 tons and 15.42%) and Mexico (637 tons and 7.02%). All together these countries account for 94% of the total production. The production of vanilla is very unstable because vanilla tends to have problems with fungus and diseases and this very often causes the full removal of the plant. However, the production of vanilla tended to growths by 5 % per year. The standard deviation of production oscillates around 1 837 tons between the years1985–2008.

Based on previous data we can say that the inequality of vanilla hectare yields must exist. As Madagascar has the highest harvested area, however, it is just the second highest producer regarding tons. As is evident from the chart 1 enormous discrepancies exist between yields in producing countries. The trend of median does not show any distinct differences even though the difference between maximum and minimum value is increasing. China has been witnessing the highest increase in hectare yields compare to Madagascar that use an extensive production with decreasing hectare yields.

Due to the previous facts we cannot explain the increase in production either by increasing harvested area or increasing hectare yields. The producers' prices are rather stable except for Madagascar. Even through the decline in yields the producer prices in Madagascar were more then three times higher than is the value of median in 2003. The rapid increase in prices was given by the problems of Madagascar vanilla industry caused by three seasons of crop failures. The Madagascar's producer's price was growing by 1.25 % between the years 1991 and 2007. Mexico, Portugal, Indonesia and Zimbabwe witness decline in production prices in the monitored years.

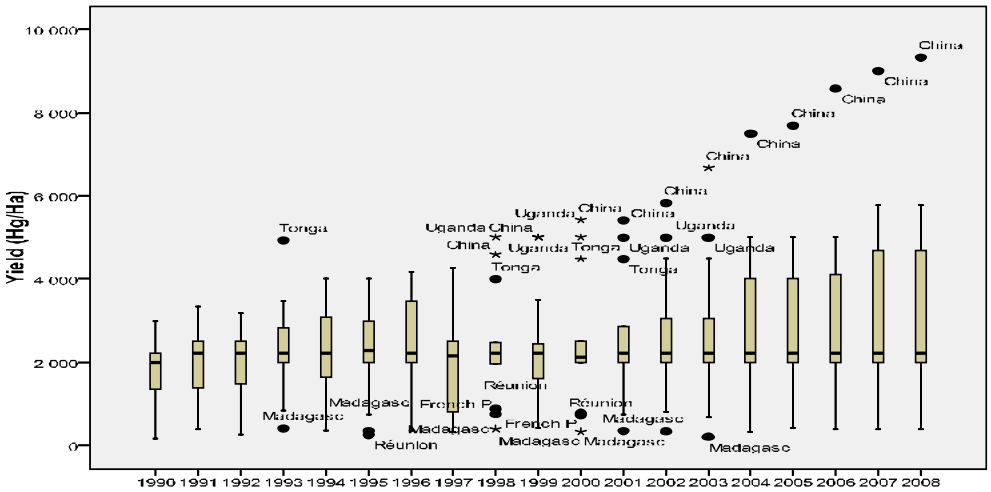
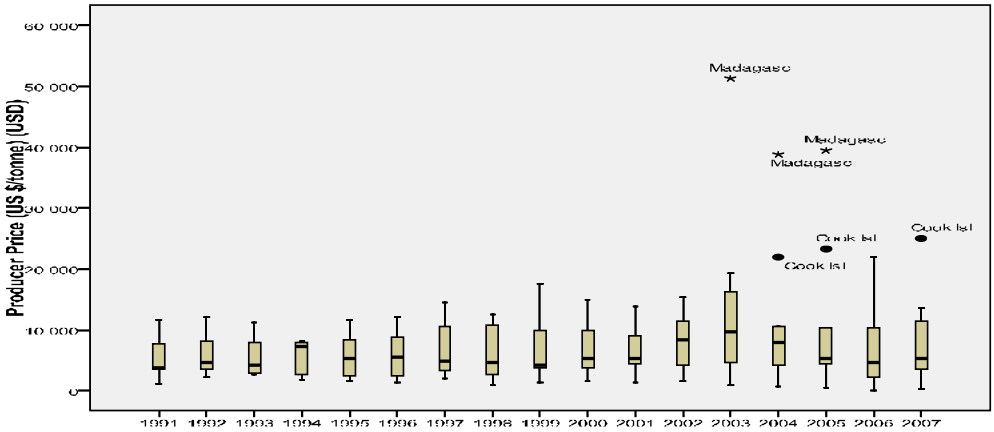


Chart 1: The variation of vanilla yields between years 1990 – 2008.



Source: own calculation based on FAO data

Chart 2: The variation of producer price between years 1991 – 2007.

Vanilla trade

Vanilla is traded all around the globe. In the last century the trade was controlled by Madagascar. During the previous years the situation has changed. However, there are differences in the export and import site. As is evident from the previous fact vanilla trade have to copy the pattern of the production. As mentioned above the production is approximately 9 000 tons. The traded quantity is around 7 000 tons. Chart 3 displays the vanilla production and trade development. The difference between production and export quantity is influenced by two main factors. First of them is intermediate consumption, second factor is the quantity of stock. The latter one plays a key role in the trade. For example in 1985 Madagascar had the stock of 1 500 tons and the expected production was nearly the same. This caused a drop in prices. The price of vanilla is very vulnerable at the international market and many producer wait for better conditions. The trend of export and import showed the same pattern till 1995. Since 1996 the structure changed. The difference between export and import is given by re-exports which are not included in the calculation. High re-export is one of the main characteristics of the cash crops. France, USA and Germany belong between the biggest re-exporters. They focus on both – processed vanilla and fresh one as well. The prices of re-export fluctuate significantly between years and countries.

The difference between productions, export quantity and export value is displayed in table 1. Export analysis can be divided into two parts – export quantity and export value. Both are dominated by Madagascar followed by India. Compare to the production, where Indonesia is on the first position, this time export quantity and export value are dominated by Madagascar and India. However, Indonesian's export price per unit is higher than Indian's. If we compare the export price we realize that the best trader is French Polynesia followed by Comoros and Madagascar. Prices of French Polynesia are really high although this is given by the special type of vanilla (vanilla tahitensis) which is only being produced there. This type of vanilla is not used for culinary purposes but for perfumes and is known for very high prices and diminishing production.

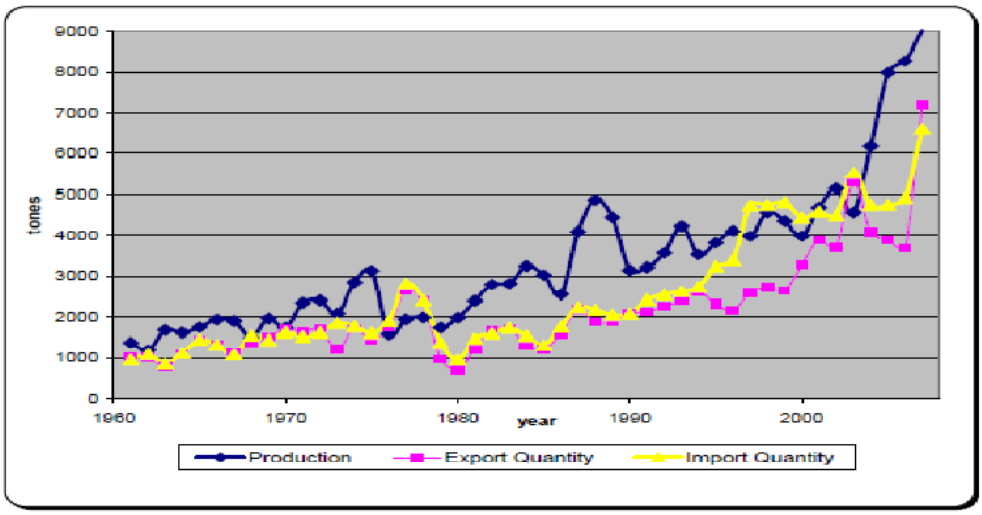
Very low price for the traded amount receive Kenya, Turkey and India. This analysis is just based on the production quantity. During the last century the export prices were really high. This was caused by Madagascar which was able to control most of the international market by its own trading companies. Few years ago the situation just as other countries (Indonesia, Uganda and China) started to produces vanilla. We have also witnessed the increased export from these countries. Another reason for breaking the cartel of Madagascar vanilla trader was the increasing position of smuggling gangs that smuggle vanilla from Madagascar.

Comparing the list of the biggest producers (table 1) and exporters (table 2) we found out some differences. Surprisingly, China's export of vanilla is not very significant at the international level. Some other states (such as Mexico, Portugal, Tonga or Turkey) are also absent from the previous list of producers. We have here, in contrast, some other states (such as Germany, Belgium, Luxemburg or France) that do not produce vanilla beans. If we put

side by side the ten biggest importers the average price for country fluctuates between 18 USD/kg (Italy) and 82 USD/kg (Switzerland) in 2007. This fluctuation is also significant for each country. Italy import vanilla from Austria for 280 USD/kg and for 5 USD/kg from Uganda. In total Europe imports 49.5 % of the import value which account for 41 % of import quantity. Europe is followed by Northern America (41.7 % of the import value and 41.6 % of import quantity). As is evident the average price for Northern America is lower than for Europe. USA and Europe are also the biggest consumers of vanilla.

For example, in 2007 Germany imported vanilla from 12 states (Indonesia, India, Madagascar or Turkey) in the trade value over 10 mil USD and net weight over 548 th. kg and in the same year re-exported vanilla into 38 states. The trade value for was nearly the same 10,47 mil USD but the net weight was halved to 268 th. kg. There also exists difference between the realised prices. The average import price is 42 USD/kg and export price 54 USD/kg. Comparing the import prices there also exist huge disproportions. Similar situation happens in the case of Belgium's import and export. Import is realised just from 4 countries for average price 36,2 USD/kg and export for average price of 100 USD/kg. There is also difference in realised export prices. As is evident from these numbers the export prices differ from developed and developing countries. The only exception for developing countries is French Polynesia which has one of the highest realised average export prices (the reasons were explained above).

In general, export value is important for most of the countries. The share of low income and food deficit countries on the export value is just 62 % which is equal to 76 % of the export quantity. Europe is on the other side. The export value is 24.8 % and the share in export quantity is 12.3 %.



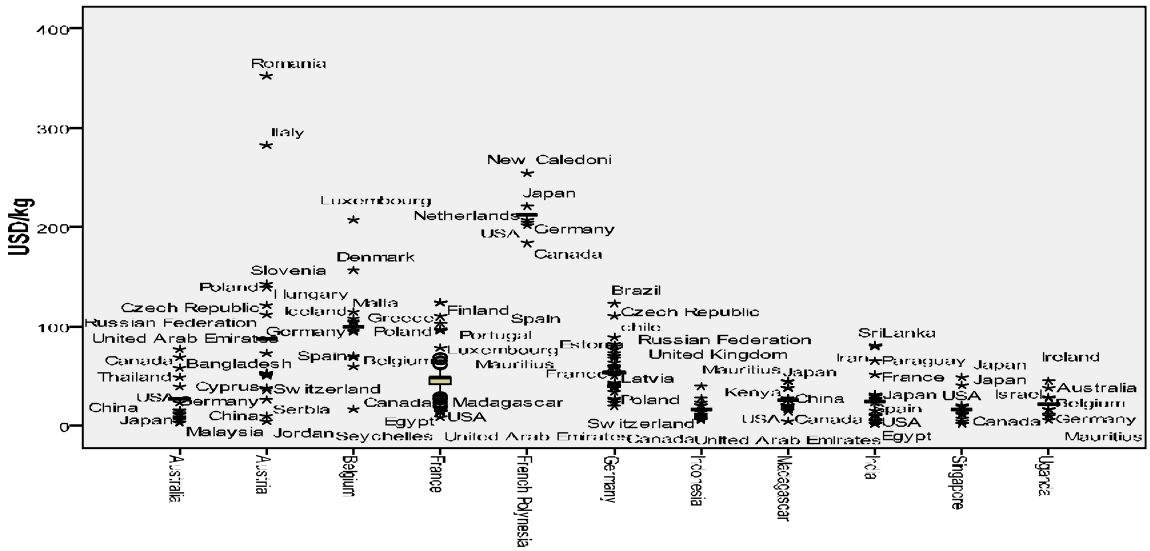
Source: FAO data

Chart 3 Production, export and import quantity of vanilla.

Production	tones		Export Quantity	tones		Export Value	thousands $
Comoros	50		Comoros	60		Comoros	1 871
French Polynesia	30		French Polynesia	11		French Polynesia	2 686
China	1 350		China	8		China	78
India	233		India	1 074		India	6 411
Indonesia	3 700		Indonesia	540		Indonesia	6 066
Kenya	8		Kenya	2		Kenya	1
Madagascar	2 800		Madagascar	3 085		Madagascar	48 962
Malawi	20		Malawi	0		Malawi	0
Mexico	637		Mexico	41		Mexico	429
Portugal	15		Portugal	0,2		Portugal	2
Tonga	150		Tonga	10		Tonga	133
Turkey	170		Turkey	139		Turkey	393
Uganda	70		Uganda	422		Uganda	6 262
Zimbabwe	10		Zimbabwe	0		Zimbabwe	0
Total	9 243		Total	5 392		Total	73 294
World	**9 255**		**World**	**7 210**		**World**	**116 298**

Source: own calculation based on COMTRADE data

Table 1 Structure of vanilla production and trade (in 2007).



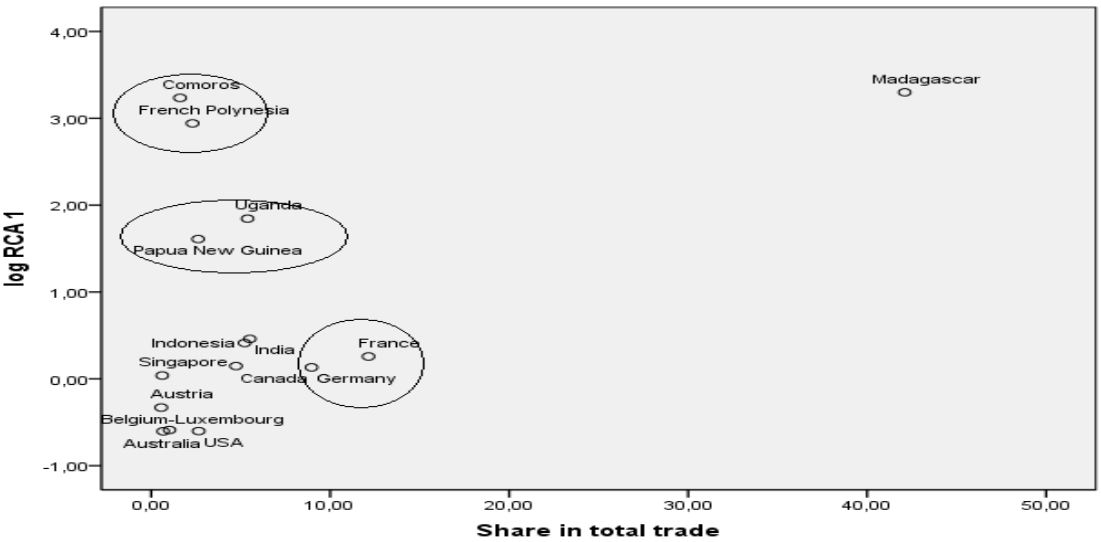
Source: own calculation based on COMTRADE data

Chart 4: Variance in export prices for selected exporters in 2007.

RCA1	1961	1971	1981	1985	1991	2001	2007
Australia	0	0	0	0	0.033	0.013	0.249
Austria	0	0	0	0.017	0.025	0.154	0.467
Belgium-Luxembourg	0	0	0	0	0	0.042	0.258
Canada	0	0	0	0	0.508	0.149	1.405
Comoros	1571.769	1758.145	2457.091	2071.111	2390.334	1830.591	1717.168
France	0.214	0.120	0.727948	0.653283	0.381153	1.037832	1.809652
French Polynesia	927.988	453.798	41.75969	109.4176	385.837	195.6368	875.4563
Germany	0.040	1.680	2.591414	1.904296	1.892804	1.36996	1.365478
India	0	0	0	0.00242	0	0.535632	2.884697
Indonesia	0.620	1.983	5.028213	9.376117	20.56248	10.41504	2.585743
Madagascar	293.742	356	489.6072	573.8968	883.6251	940.2852	1990.831
Papua New Guinea	0	0	0	0	0	5.030518	40.66152
Singapore	0	0.011417	11.36267	0.01346	0.003954	1.515997	1.092744
Uganda	0.831	0.473526	0	0	3.144988	37.28654	69.96586
USA	0	0	0	0	0.084114	0.436012	0.250521

Source: own calculation based on COMTRADE data

Table 2: RCA 1 for exporters.



Source: own calculation based on COMTRADE data

Chart 4: Relation between shares in total trade and log RCA 1 (2007).

This has to raise the question if it is still profitable for developing countries to specialize in cash crops. This is closely related to the question of competitiveness of these countries and product on international market.

Very important indicator for measurement of the competitiveness on the international market is RCA 1 index if it is higher than 1 it is a sign of competitiveness on the international market.

The previous table two includes 15 biggest exporters which all together have more than 96 % share on the vanilla market in 2007. Nearly half of these countries belong to the developed nations and do not produce vanilla.

It is evident that the biggest producer Madagascar is competitive during the whole monitored period, though; its level of competiveness is rather fluctuating. This fluctuation is given by the unstable international prices. There were only three countries (Comoros, French Polynesia and Madagascar) exporting vanilla with comparative advantage in 1961. Thirty years later six countries were competitive. In 2007 eleven countries had RCA1 higher than one. The level of RCA is different.

Based on the relationship between share in total world vanilla trade and log RCA 1 we can divide the biggest traders into four main group plus Madagascar. The latter one has its own special group. This is given by a very high share in total trade (42 %) and also extremely high RCA index. Madagascar is keeping this position also due to the highest share on the production. This country is also known for its extensive way of vanilla production.

The second group is represented by Comoros and French Polynesia. These two countries have really high comparative advantage and what is also important they have reached high level of RCA during the whole monitored period. Next group includes Uganda and Papua New Guinea which are relatively new to the vanilla market; however, their level of comparative advantage is increasing.

The four groups contain France and Germany. Both countries are not primary producers. Their share on the market fluctuates around 10 % and they are both competitive. Even if Germany's RCA index has declining trend and France has become competitive just during the last decade. However, this means that even countries which are not primary producers can reach comparative advantage. This also means that developing countries are loosing one of their very important budgetary resources. This also shows that vanilla is a trade article for re-export.

The last group consists of countries with relatively low share on the international market. It includes both developed and developing countries. Maybe it would be better to divide this group into two; one which has RCA higher than one and the second with comparative disadvantage. The latter one includes USA, Austria, Australia and Belgium and Luxembourg.

Conclusions

Vanilla belongs between cash crops which can gain resources for small producers as well as national budget. The production of vanilla is being control by few countries because it required special conditions for production. The biggest producers are Indonesia, Madagascar and China and the production quantity is very unstable. Two types of vanilla is being produced – one for culinary purposes and the second one for perfumes. The latter is much more expensive than the former one. Even "only" culinary vanilla is one of the most expensive spices (after saffron) and it is a ground for speculations. Due to this the price of vanilla is very vulnerable at the international market. This volatility is determined beyond the control of the producing countries which cannot influence it. There exist negative affect on the supply when the farmers cannot rely on the market with planning the crop rotation.

Comparing the production with trade (export and import) we found out that vanilla is quite often re-exported. Re-export does not include just processed vanilla but bean as well. As it was mentioned above vanilla is mostly produced in developing countries, however, the gain of producers and states is not sufficient. The comparison of export quantity and export value showed that the share of developing countries is rather low. The export quantity is not equal to the export value. If we put it in contrast, France, Germany or Belgium have high share in export value even if they do not have any plantation of vanilla. The price of producing countries is low compare to the prices of re-export. This is closely connected with competitiveness. The most competitive ones are developing countries;

however, even countries with obvious comparative disadvantage can re-export vanilla.

All the above mentioned facts raise the question if it is still beneficial and profitable for developing countries to focus on cash crop. They face the problem of low prices, however, the question is if it helps them to add some added value and be able to sell processed products instead of raw material. Would not be better to specialised in the food crop and be able to feet their own people?

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