134. Jahrgang (2017), Sonderheft 1a, S. 131 – 148

Austrian Journal of Forest Science
Centralblatt für das gesamte Forstwesen

Application of the Local Multipliers Calculation at the Example of a Forest Enterprise

Anwendung lokaler Multiplikatoren am Beispiel eines Forstbetriebes

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Keywords: Economics, Forestry, Benefits, Local expenditures, Economic activities, Regions

Schlüsselbegriffe: Ökonomie, Forstwirtschaft, Nutzen, lokale Ausgaben, ökonomische Aktivitäten, Regionen

Summary

Forestry and related industries represent important components of local, regional and national economies. This contribution presents the information obtained from the evaluation of the importance of a forestry enterprise to the local economy. The evaluation was carried out on the Training Forest Enterprise Masaryk Forest Křtiny (TFE MF Křtiny) located close to Brno – to the north of Brno in the Southern Moravia Region in the Czech Republic. The evaluation of the economic benefits may provide valuable information not only for enterprises but also for politics and stakeholders.

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The aim of the article is to describe the benefits of the selected forestry enterprise to the local economy, with a special focus on the local expenditures of local suppliers and on the local expenditures of employees who are residents of the region.

The local multiplier scores of 2 and 3 were obtained using the methodology of the local multiplier according to Sacks (2000), the accounting information and the results of the local employees and the suppliers are done by questionnaire surveys. The surveys are done according to the methodology of Sacks (2002) and Johanisová (2007). The calculation of the local multipliers is done in two or three rounds. In the first round, the total revenue of the TFE MF Křtiny was determined. In the second round, the local expenditures of TFE MF Křtiny on employees and suppliers, divided into local and non-local expenditures, were determined. The third round focused on the way in which the local employees and suppliers redistribute their payments. Thus, it determined the local expenses of the beneficiaries of the round 2 (recipients of the TFE Křtiny funds – the local suppliers and employees).

The methodology is divided into several steps. In the first step, local multiplier 2 (LM2) focuses on the first two rounds of the circulation of the funds, i.e. on the total revenue of the examined entity and on its local expenditures. LM3 contains the first two rounds of the same pattern as LM2, but adds also the round in which it quantifies the local spending of all who received the funds of the examined body in round 2 (i.e. who were beneficiaries of the local expenditures). For organizations, these are mainly suppliers and employees.

The value of the local multiplier for TFE Křtiny, which was determined using the above-mentioned methodology, was 1.52. The comparison with table values and the values of other organizations indicates, that the score is average or even below average. This number means that TFE Křtiny creates an extra income of 52 pennies for the local economy of each crown of their expenditures. Based on this value, it is possible to deduce conclusions for the enterprise management and other decision-making processes in the area such as tenders etc. It shows clearly how the company contributes to the local economy and it can help the company in negotiating subsidies at both the national and international level.

Zusammenfassung

Das Forstwesen und die daran anschließende Industrie sind wichtige Bestandteile der lokalen, regionalen und nationalen Wirtschaft. Dieser Beitrag präsentiert die Ergebnisse einer Bewertung der Bedeutung eines Forstbetriebes für die lokale Wirtschaft. Die beispielhafte Untersuchung wurde im Lehrforstbetrieb (LFB) Masaryk Forest Křtiny durchgeführt. Die Bewertung des wirtschaftlichen Beitrages kann eine wertvolle Information für die betreffenden Betriebe selbst aber auch die Politik und andere Interessensgruppen bieten.

Ziel des Artikels ist es, die Leistungen des ausgewählten Forstbetriebes für die lokale Wirtschaft, mit einem Fokus auf die lokalen Ausgaben der Lieferanten und Angestellten, zu beschreiben.

Mit Hilfe der Methodik lokaler Multiplikatoren nach Sacks (2000) wurden auf der Grundlage von Buchführungsdaten und den Ergebnissen von Fragebogen-Erhebungen bei lokal ansässigen Angestellten und Lieferanten Ergebniswerte von 2 bzw. 3 erzielt. Die Berechnung der lokalen Multiplikatoren verläuft in zwei oder drei Schritten. Im ersten Durchgang wird das Gesamteinkommen in LFB Křtiny ermittelt. Im zweiten Durchgang werden die Ausgaben pro Angestelltem und Lieferanten errechnet. Dabei werden die Ausgaben nach lokalen und nicht lokalen Empfängern differenziert. Im dritten Durchgang wird analysiert, wie lokale Angestellte und Lieferanten die von ihnen erhaltenen Mittel weiter verwenden.

Mit dieser Methodik wurde ein lokaler Multiplikator des LFB Křtiny in Höhe von 1,52 ermittelt. Im Vergleich mit Tabellenwerten und anderen Betrieben stellt dieses Ergebnis einen niedrigen bis durchschnittlichen Wert dar. Diese Zahl bedeutet, dass der LFB Křtiny von jeder Krone seiner Ausgaben 52 Heller Einkommen für die lokale Wirtschaft stiftet. Ausgehend von diesem Wert können wir Schlussfolgerungen für das Betriebsmanagement und weitere Entscheidungen z.B. im Bereich der Ausschreibung von Bieterverfahren ableiten. Der Wert zeigt deutlich, dass sich der Betrieb an der lokalen Wirtschaft beteiligt und kann ihm bei den Verhandlungen zum Einwerben von Zuschüssen auf nationaler und internationaler Ebene helfen.

1. Introduction

Forest enterprises are a specific component of the state economy as their economic activity is bound to rural regions. The economic activities of the regions and their differences are described by the regional economy (for definitions of regional economies see Armstrong and Taylor, 2000; Čadil, 2010; Hájek et al., 2012). In this article, we refer to the regional economy as to the economy of micro-regions, namely of the municipal territories. The research was conducted in the area of the TFE Křtiny Masaryk Forest, i.e. in a micro-community (with the radius of about 30 km). The results can be related to a larger area. For example, it can be compared with the value of the investment multiplier of the Czech economy which is around 5. Regional localization of the business brings advantages, especially for a local economy (Shuman, 2000; Douthwait, 1996; Kutáček, 2007). It can lead to an increase in regional employment, promotion of local households, businesses and to raising of the overall local economy in the region. It reduces dependence on imports from outside. Forest enterprises provide a combination of social and economic benefits to the local economy. Their socio-economic benefits include, above all, cash flows to local entrepreneurs, the supply of products and services to the enterprise, as well as to employee salaries. However, the benefits which

stem from the recreational function of forest ecosystems, as well as the tourism revenues which flow into the region, are also included. These benefits represent additional business and employment opportunities. (Hlaváčková, Březina, 2015). Recreational functions also provide many important benefits and contributions to the physical and psychological well-being (Chan et al., 2012).

A local multiplier is a suitable tool for determining the economic benefit of a forest enterprise, at least that of direct market activity. It allows for tracking the movement of financial resources in a local economy, and can assist enterprises in determining the contribution of their economic activity to the local economy according to Sacks (2002). Furthermore, the management can change its decision-making processes based on such analyses and focus more on the sustainable development of forestry. Both foreign and domestic authors deal with the topic of local multipliers (Sacks, 2002; Cimadono and Bénassy-Quére, 2012; Gnos and Rochon, 2000; Došek, 2006; Rejmanová, 2014; Březina, Hlaváčková, Šafařík, 2015). Research on multipliers in tourism and recreation was carried out e.g. by Archer and Owen, 1971; Dwyer and Forsyth, 2005; Crompton, Jeong, and Dudensing, 2015.

The objectives of the article are to present the results of the research which was focused on determining the benefits of a forest enterprise to a local economy and to interpret these results in relation to their use and to the management decision-making of the enterprise. Mainly, the spending of the local suppliers and employees will be examined because it plays an important role in determining the benefits of forest companies to the local economy. The value of the total annual income of the employees ranging from 3,703 € to 16,666 € was divided into 7 categories of 1,851 € each. The largest response rate was in the category ranging from 3,703 € to 5,556 €. The annual expenditures of the suppliers ranging from 0 € to 1,481,481 € were divided into 10 categories with regard to the legal form of business (persons: over 7,407 €, legal entities: over 185,185 €). The largest response rate was in the category from 14,814 € to 22,222 €.

2. Material and Method

In order to determine the values of the local multiplier, a case study was conducted for the Training Forest Enterprise Masaryk Forest Křtiny (hereinafter referred to as the "TFE Křtiny"), Czech Republic.

TFE Křtiny encompasses 10,495 ha, 98% of which is forested. The enterprise is divided into three forest districts – Vranov (3,345 ha of forest land), Habrůvka (7,006 ha of forest land) and Bílovice nad Svitavou (2,920 ha of 3,640 ha forested). (TFE, 2016).

Data from the information system of the TFE Křtiny were used to calculate the local

multiplier, specifically the accounting data of incomes and expenditures of the individual forest regions. These data were necessary for calculating the so-called local multiplier LM2; for calculating the local multiplier LM3, it was necessary to survey the local employees and suppliers. We included only local expenditures.

LM2 is to focus on the first two rounds of the circulation of funds - it is the total revenue of the examined entity and local expenditures of the examined subject. The LM3 contains the first two rounds of the same pattern as the LM2 but it also quantifies local spending of all those who were examined and received funding in the round 2 (i.e. who were beneficiaries of the local expenditures). The organization typically provide income to suppliers and employees.

A questionnaire survey was conducted in 2015 asking local employees and contractors to provide information for the year 2014.

The questionnaires for employees and suppliers consisted of an introduction in which the objective of the investigation and the assurance of anonymity were stated, as well as the way the provided data would be treated, and the organizers of the research were introduced. The value of total annual income of the employees were divided into 7 categories from 3703 € to 16 666 €, every 1851 €. The largest response rate was in the category from 3703 € to 5556 €. Annual expenditure suppliers were divided into 10 categories ranging from 0 € to 1,481,481 € (persons: over 7407 €, legal entities: over 185 185 €), i.e. depending on the legal form of business. The largest response rate was in the category from 14 814 € to 22 222 €. The first part was followed by questions. Two pieces of information were surveyed in the employee's section: the amount of income from their employer in 2014 and the percentages of local and non-local spending of the 11 items – food, beverages, and tobacco; clothing and footwear; housing; water and energy; transportation and fuels; postal services and telecommunications; real estate tax; other taxes; repayments (credits, loans, insurance, saving); recreation, sport, and culture; other goods and services. The determination of these items was based on the composition of the consumer basket used by the Czech Statistical Office (CSO). The second questionnaire was addressed to the local suppliers. These suppliers were investigated in regard to their total expenditures in 2014 which were distributed into 11 categories (expenditures on staff; expenditures on suppliers; property tax; other taxes; water; energy; rent and operation of buildings; fuels; postal services and telecommunication; promotion and advertising; other goods and services). In this case, too, a distinction was made between local and non-local spending. For both questionnaires, instructions were created to help the respondents.

It was also necessary to establish a representative sample of employees and suppliers. A representative sample can be determined using a mathematical method for calculating the minimum statistical sample from the population that is representative, which means that the results can be generalized to the entire population.

Table 1 states the minimum required number of questionnaires received from the suppliers at the significance level α = 0.05, i.e. the reliability of the test of 95%, and the varying confidence interval of the achieved responses.

Table 1: Calculation of the minimum statistical sample from the population of suppliers

Tabelle 1: Berechnung des minimal erforderlichen Stichprobenumfangs der Lieferanten

Variants of solutions	A	B	C
Confidence level (%)	95	95	95
Confidence interval (%)	5	7.5	10
Population	30	30	30
Sample size	28	26	23

Source: Sample Size Calculator, 2016

For the employees, the calculation of the minimum statistical sample from a population at a significance level α = 0.05 and for different confidence intervals is shown in Table 2.

Table 2: Calculation of the minimum statistical sample from the population of employees

Tabelle 2: Berechnung des minimal erforderlichen Stichprobenumfangs der Angestellten

Variants of solutions	A	B	C
Confidence level (%)	95	95	95
Confidence interval (%)	5	7.5	10
Population	82	82	82
Sample size	68	56	44

Source: Sample Size Calculator, 2016

The sample size equals the number of respondents.

It was necessary to convert Czech crowns to Euros which was accomplished by employing the average daily nominal exchange rate of the Czech crown against the Euro for 2014 (27.533 CZK/EUR) (CSO, 2016).

The data obtained from the survey were processed using basic statistical methods. The interval estimate of quality (p) was established to enhance the presentation of the

results obtained from the questionnaire survey by using the correction coefficient (k) for random error relative frequencies (Øp) (Swoboda, 1977).

An exploratory analysis of the data from the employees' questionnaires was carried out using the STATISTICA programme. The graphs of Figures 4 and 5 show that the distribution of data in the file approaches the Gaussian distribution.

3. Results

There were 54 suppliers of TFE Křtiny in 2014. Of the suppliers, 29 were legal entities and 25 individuals. The total expenditures on these suppliers accounted for 39% in legal persons and 61% in individuals.

The case study revealed that 30 of the 54 suppliers were local to TFE Křtiny. TFE Křtiny paid 484,185 € to these suppliers which stand for 43.3% of the total expenditures of TFE Křtiny. It is approximately 57% of the total expenditures on suppliers.

In the case of the local suppliers, 23 questionnaires were filled in out of the total of 30 questionnaires. This number has met the requirements of the minimum statistical sample from a population at a significance level of alpha equalling 0.05, i.e. the reliability of the tests is 95% and the confidence interval is 10% (so-called solution variant C). The minimum required number of questionnaires for this variant is just 23. Thus, this sample is considered to be representative. The number of questionnaires constitutes for 76.7% of the population.

The group of 23 local suppliers comprises 7 legal entities and 16 natural persons. Corporate expenses represent 94.5% of the total expenditures of local suppliers. Therefore, 5.5% of local spending is of natural persons. A natural person is operating as an individual (individual people) pursuant to the Act No. 455/1991 Coll. on Trades and may not be entered in the Commercial Register.

Table 3 shows the difference between these two legal forms in individual items. There are also percentages of local and non-local spending of total expenditures of legal entities and individuals.

Table 3: Percentages of local and non-local costs of natural and legal persons

Tabelle 3: Prozentuale Anteile lokaler und nicht lokaler Ausgaben von natürlichen und juristischen Personen

Items	Legal entities		Individuals	
	Local	Non-local	Local	Non-local
Expenditures on staff	3.42	8.60	20.39	0.00
Expenditures on suppliers	8.73	59.47	25.75	1.28
Repayments	0.00	5.43	0.00	2.88
Property tax	0.11	0.00	2.26	0.00
Other taxes	0.00	8.43	0.00	4.00
Water, energy	0.00	0.62	0.14	2.73
Rent, operation of buildings	0.14	0.00	2.84	0.08
Fuels	0.93	2.37	16.81	5.95
Postal services, telecommunication	0.00	0.46	0.00	2.88
Promotion, advertising	0.24	0.01	0.00	0.00
Other goods, services	0.41	0.64	8.80	3.22
Total expenditures	13.97	86.03	76.99	23.01

From Table 3 it is clear that small businesses spend most of their expenses locally, contrary to legal entities which spend about 86% non-locally. In real figures, however, the natural persons spend locally only a third of the total local spending of the legal entities. Legal persons are defined pursuant to the provisions of Act No. 89/2012 Coll. the Civil Code and the types of legal persons pursuant to Act No. 90/2012 Coll. on Commercial Companies and Cooperatives; they are entered in the Commercial Register. From the practical perspective, it is clear that it is necessary to support small businesses (self-employed persons) who spend the majority of their funds locally and thus support the local economy. Large companies employ local staff, yet the expenditures of their employees go in chain stores and thus their funds are not spent locally.

Legal persons are major firms whose turnovers are in most cases higher than those of individuals. In both, however, the biggest part of expenditures was on suppliers and staff costs. Figure 1 shows the percentage of those expenses divided into the 4 largest items within local and non-local spending.

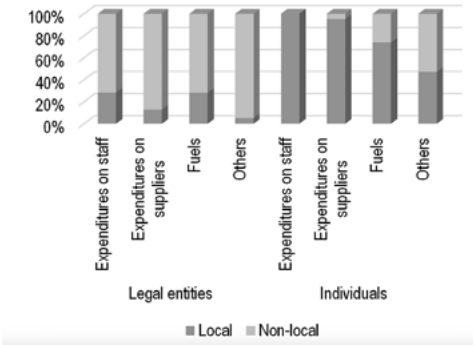

Figure 1: Percentages of the four major items of expenditure

Abbildung 1: Prozentuale Anteile der vier bedeutendsten Ausgabenpositionen

Figure 1 shows a clear distinction between legal and natural persons. The expenditures are local for the majority of the natural persons, e.g. in the case of staff expenditures it is 100%. Corporate spending is mostly non-local; in the case of staff expenditure, it is about 13%.

Focusing on the local expenditures and their volume, the total local expenditures of individuals represent approximately one third of all corporate spending. This and more can be seen from Figure 2.

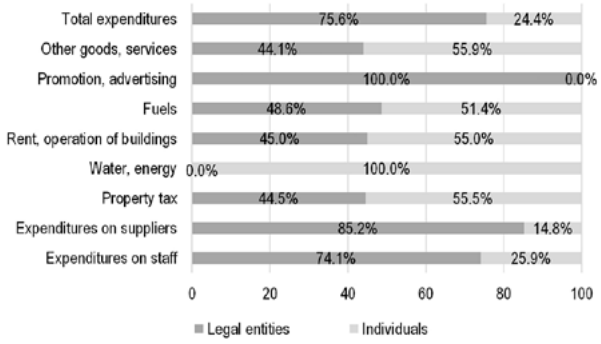

Figure 2: Percentages of expenditures of natural and legal persons

Abbildung 2: Prozentualer Ausgabenanteil natürlicher und juristischer Personen

Concerning the expenditures on staff, the share of natural persons to legal persons is 26% to 74%. The legal entities occupy more than 85% of the expenditures on local suppliers. However, this figure represents only 13% of the corporate expenditures on all suppliers.

Table 4 provides an interval estimate of local expenditures vendors using variables p = 17.47% with a range of sample N = 30; n = 23; p = 0.175.

Table 4: Interval estimation of local expenditure suppliers

Tabelle 4: Intervallschätzung der lokalen Ausgaben von Lieferanten

Items	Coefficient	%
Standard deviation	0,380	
Random error relative frequencies	0,069	± 6,9
Correction factor	0,491	
Random error relative frequencies using weighting	0,034	± 3.4

With 95% of confidence, the amount of local expenditure of local suppliers ranged between 14.07% and 20.87%.

Furthermore, 57 of the 82 local employees (69.8%) of the TFE Křtiny completed the questionnaires. Thus, a statistically significant quantity of employees was approached (the variant of solution B with the confidence interval of 7.5%). These employees spent more than 155,000 € locally, which makes up to 40% of their expenditures.

Firstly, an analysis of missing data in the questionnaires from employees was performed based on the analysis of frequency. It was discovered that only the question in the category "age" was not answered by 6 respondents. All the other details were filled in by the employees.

There were 33 men (relative frequency of 57.9%) and 24 women (relative frequency of 42.1%) of the 57 employees who completed the questionnaire. 22 employees occupied technical – economical or managerial positions (relative frequency of 39.6%), and 35 employees occupied worker positions (frequency of 61.4%). Most workers fall into the lowest wage category (40.4%) with their net income for 2014 ranging from 3,645 € to 5,468 €. The frequency of the individual categories is shown in Figure 3.

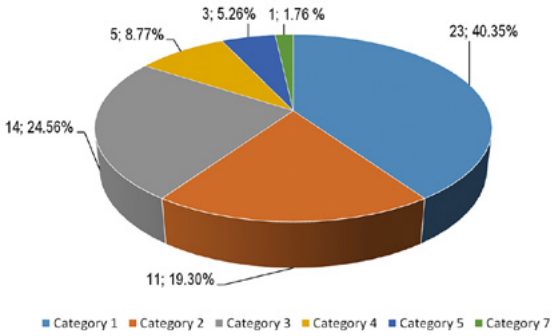

Figure 3: Frequency of wage categories of employees

Abbildung 3: Häufigkeit von Lohngruppen der Beschäftigten

The employees were divided into 7 categories in terms of age as shown in Table 5 with the largest group of employees being between 30 and 50 years. These 7 categories were divided according to the average monthly wage in the forest management by individual employees' jobs.

Table 5: Age categories of employees

Tabelle 5: Altersgruppen der Beschäftigten

Category	Age	Absolute frequency	Relative frequency
Category 1	up to 20	1	1.75
Category 2	from 20 to 30	8	14.04
Category 3	from 30 to 40	15	26.32
Category 4	from 40 to 50	16	28.07
Category 5	from 50 to 60	6	10.53
Category 6	over 60	5	8.77
Category 7	unknown	6	10.52

Table 6: Expenditure categories of employees

Tabelle 6: Ausgaben der Beschäftigten in Gruppen

Category	Local expenditure	Absolute frequency	Relative frequency
Category 1	0	3	5.26
Category 2	from € 0 to € 1000	9	15.79
Category 3	from € 1000 to € 2000	4	7.02
Category 4	from € 2000 to € 3000	19	33.33
Category 5	from € 3000 to € 4000	11	19.30
Category 6	from € 4000 to € 5000	6	10.53
Category 7	from € 5000 to € 6000	4	7.02
Category 8	from € 6000 to € 7000	0	0.00
Category 9	from € 7000 to € 8000	1	1.75

With regard to local expenditures, category 4 is the largest which means that one third (33.33%) of the employees spends locally between € 2,000 and € 3,000.

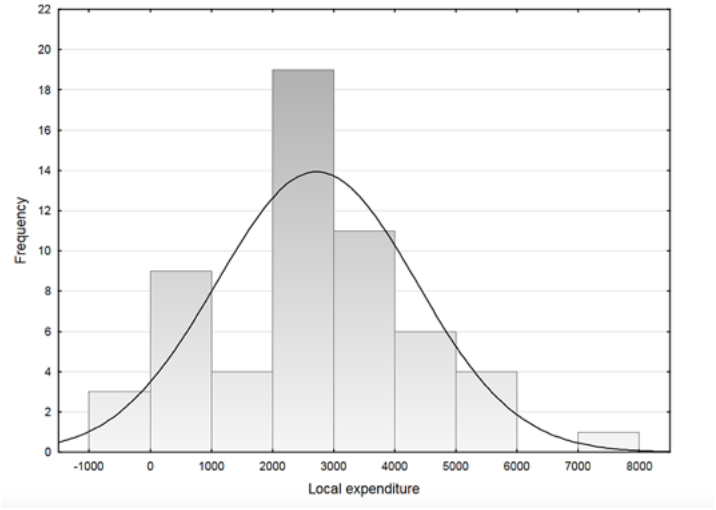

Figure 4: Histogram of expenditures of employees

Abbildung 4: Histogramm der Ausgaben von Beschäftigten

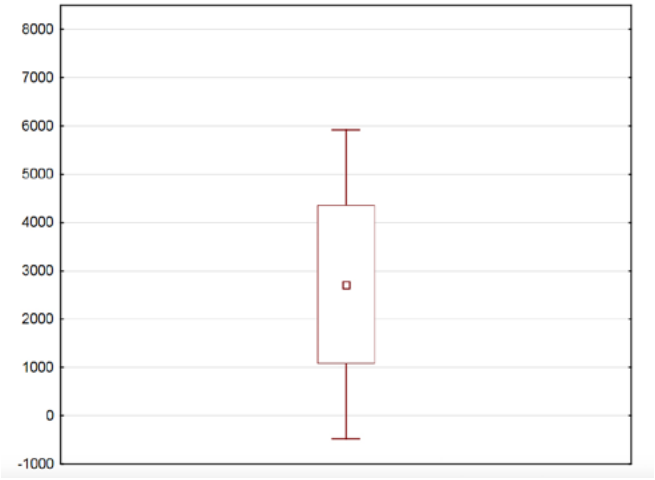

Figure 5: Boxplot of expenditures of employees

Abbildung 5: Boxplot der Ausgaben von Beschäftigten

The box graph of Figure 5 shows that the data include a remote point. After a more detailed investigation it was discovered that these data cannot be excluded from the analysis since this employee actually spends most of his salary locally on housing. Outlying data are also evident from Figures 6 and 7, especially from the quantile-quantile graph (see Figure 6).

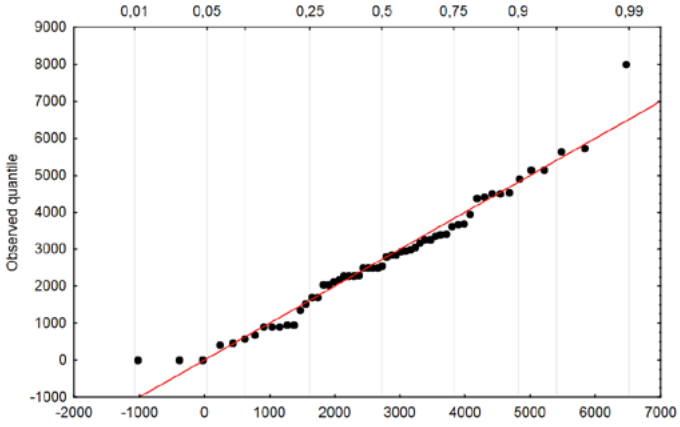

Figure 6: Quantile-quantile graph of expenditures of employees

Abbildung 6: Quantile-Quantile Plot der Ausgaben von Beschäftigten

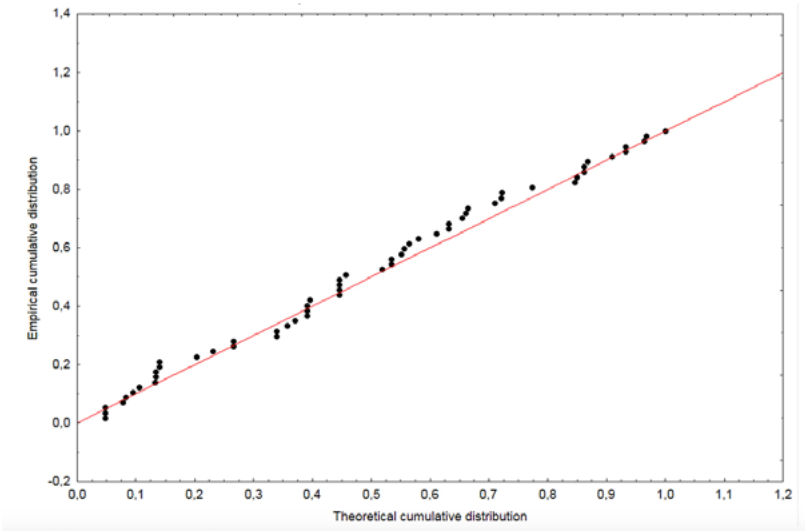

Figure 7: Graph of variance of expenditures of employees

Abbildung 7: Varianzgrafik der Ausgaben von Beschäftigten

The graph of variance (see Figure 7) indicates a slight asymmetry. Most of the diagnostic graphs show a normal distribution, although some data show deviations from this division and cannot be excluded from the analysis.

Table 7: Classical parameter estimation

Tabelle 7: Klassische Schätzungen der Parameter

parameter distribution	Value
n	57
Shapiro-Wilk test of normality p	0.148
Average	2,723
Standard deviation	1,632
The lower quartile	1,698
The upper quartile	3,623
Median	2,542
Dispersion	2,664,766
skewness	0.550

The difference between the average and the median is not so significant; with regard to the value of its skewness, a normal distribution can be assumed. The Shapiro-Wilk test of normality found that normality is not rejected.

In addition, correlations between categories of total net income, age, and local spending were examined. A correlation was discovered between net income and local expenditure.

Table 8 provides an interval estimate of local expenditures of employees using variables

p = 39.56% with sample sizes N = 82; n = 57;

p = 0.396.

Table 8: Interval estimation of local expenditures of employees

Tabelle 8: Intervallschätzung der lokalen Ausgaben von Beschäftigten

Items	Coefficient	%
Standard deviation	0,489	
Random error relative frequencies	0,054	± 5,4
Correction factor	0,556	
Random error relative frequencies using weighting	0,030	± 3.0

With 95% of confidence, the amount of local expenditure of local suppliers ranged between 36.56% and 42.56%.

The values of the local multipliers LM2 and LM3 were calculated from accounting data of the TFE Křtiny and from the surveys of employees and suppliers. LM2 was calculated as 1.23; LM3 was 1.52. This value means that CZK 1 of expenditures of TFE Křtiny generates CZK 1.52 (0.06 €) for the local economy. These values themselves are not meaningful. It is necessary to compare them with the recommended values and those of similar enterprises.

Based on the comparisons with enterprises in the industry and the region, the enterprise can deduce conclusions for improving their decision-making and management at the local level and strengthen all three pillars of sustainable regional development.

The score of local multipliers can be affected by decisions in regard to the cost structure. Cash flow monitoring will enable the organization to determine its impact on the local economy and to understand the local community. The obtained information may be used in setting of marketing objectives and strategies of the enterprise as well as in improving communication with customers, which in turn will increase the competitiveness of the enterprise. It is also possible to use the obtained information to build a corporate culture and to improve the relation with employees.

4. Discussion

The research focuses on the analysis of cash flows of the forest enterprise to determine how much of the spent money will remain in the area and to map the circulation of money spent in the area before it leaves. The results show that about 57% of the total expenditures on suppliers of the TFE Křtiny were spent on local suppliers. Although more of the suppliers are legal entities, the enterprise spends 61% of its expenditures on small suppliers (individuals). From the local suppliers' perspective, the proportion is 91 to 9 in favour of the local suppliers in terms of volume of funds.

The stated results lead to reflection on the economy of the monitored organization as well as on the potential of the given region. The enterprise may assess the actual use of its internal resources and, in the case of monitoring, the trend of the LM3 values over time to obtain valuable information about changes in the flow of monetary resources, which is also confirmed by Silovská (2015).

Generally, it is possible to notice the economic benefit of calculating the local multiplier to assess increases in regional employment, support of local households and business entities, and increases in the overall local economy of a region. According to Shuman (2000), it would consequently lead to a return of the decision-making processes back to the region, and to a decrease in its dependency on external input. Regional politics then play an important role here (Armstrong and Taylor, 2000).

According to Sacks (2002), if LM2 is from 1 to 2, then the LM3 reaches the values between 1 and 3. However, Kutáček (2007) states that the realistic value of LM3 is up to 2.20. The values of both the local multipliers 2 and 3 (1.23, resp. 1.52) appear to be very low in comparison with the recommended values, as well with those determined by Březina, Hlaváčková, Šafařík (2015) who applied the method to the National Park of Podyjí. It implies that the management of TFE Křtiny should focus on increasing the share of local suppliers or on the education of its employees.

Another goal is to reduce the difference in social groups and gender, to improve respect for human rights and to increase fairness and control in decision-making processes (Hines, 2000).

Effective deciding on the way in which the spending is being carried out can bring profits to local residents, improve the competitiveness of the investigated company and meet the objectives of development policies. If the local economy improves, the government will be able to expend fewer resources, e.g. in the form of social benefits. This would allow channelling funds of the development policies to other areas in the region.

However, both recommendations seem to be problematic. In the case of suppliers, the enterprise must observe the law concerning public procurement which forbids considering a supplier's location. Influencing consumer behaviour of employees also seems to be problematic since an enterprise is not able to order its employees to support the local shops. The only possible solution seems to be a change of regional or national policy and the introduction of tools supporting the local economy.

Since the Training Forest Enterprise Masaryk Forest Křtiny is located near the second largest city of the Czech Republic - Brno, the forests provide socio-economic benefits, especially in terms of their recreational function which is related to the aesthetic function. By providing forest ecosystem services in terms of recreational and aesthetic functions, forests additionally benefit the economy in terms of employment and business opportunities.

Acknowledgement

This paper was prepared with the support of the Internal Grant Agency projects of the Faculty of Forestry and Wood Technology, Mendel University in Brno No. LDF_VT_2015010 and 2016007.

References

Archer, B. H., Owen, C. B., 1971. Towards a Tourist Regional Multiplier. Regional Studies, 5 (4): 289-294.

Armstrong, H., Taylor, J., 2000. Regional economics and policy. 3rd ed. Oxford, England, Blackwell, 437.

Březina, D., Hlaváčková, P., Šafařík P. 2015. Vliv Správy národního parku Podyjí na lokální ekonomiku v okrese Znojmo. Zprávy lesnického výzkumu, 60(2): 130-137.

Čadil, J., 2010. Regionální ekonomie: teorie a aplikace. 1. ed. Prague: C.H. Beck, 152.

Chan, K.M.A., Satterfield, T., Goldstein, J., 2012. Rethinking ecosystem services to better address and navigate cultural values. Ecological Economics, 74, 8-18.

Cimadomo, J., Bénassy-quéré, A., 2012. Changing patterns of fiscal policy multipliers in Germany, the UK, and the US. Journal of Macroeconomics, 34 (2): 845-873.

Crompton, J. L., Jeong, J. Y, Dunensing, R. M. 2015. Journal of Travel Research: 1-14.

CSO, 2016. Key macroeconomic indicators. CSO – Czech statistical office. [WWW Document]. URL http://www.czso.cz/ (accessed 02.10.16).

Došek, M., 2006. Lokální multiplikátor jako indikátor lokalizace: případová studie subjektů ve vymezené oblasti Litoměřicka. Diploma Thesis. Brno, Masaryk University, 81.

Douthwaite, R., 1996. Short Circuit: strengthening local economies for security in an unstable world. Dublin, Lilliput Press, in association with The Lilliput Press, xiv. 386.

Dwyer, L., Forsyth, P., 2005. Extimating the Impacts of Special Events on the Economy. Journal of Travel Research, 43 (4): 351-359.

Gnos, C., Rochon L.-P., 2000. The Keynesial Multiplier. Routledge Frontiers of Political Economy, 224.

Hájek, O., Novosák, J., Zahradník, P., Bednář, P., 2012. Regionální disparity a financování regionální politiky. Politická ekonomie, 60 (3): 330-348.

Hines, C., 2000. Localization: a global manifesto.Earthscan ., London and Sterling VA, Publications Ltd, 290.

Hlaváčková, P., Březina, D., 2015. Benefits of the forest enterprise for the regional economy. Proceedings from X. International Conference on Applied Business Research ICABR 2015, 312-321.

Johanisová, N., 2007. A comparison of Rural Social Enterprises in Britain and the Czech Republic. Dissertation Thesis. Brno, Masaryk University, 275.

Kutáček, S., 2007, Penězům na stopě: měření vašeho dopadu na místní ekonomiku pomocí LM3. [Money on the Trail: Measuring Your Impact on the Local Economy Using LM3]. 1. vyd. Brno, Trast pro ekonomiku a společnost, 93.

Sacks, J., 2002. The money trail: measuring your impact on the local economy using LM3. London, New Economics Foundation, 118.

Sample Size Caltulator. 2016. Creative Research System. [WWW Document]. URL http://www.surveysystem.com/sscalc.htm#one (accessed 05.05.16).

Shuman, M., 2000. Going local: creating self-reliant communities in a global age. New York, Routledge, xiv, 318.

Silovská, H., 2015. Sledování a hodnocení místního ekonomického rozvoje se zřetelem na využití lokálního multiplikátoru. Dissertation Thesis. Prague, University of Economics, 147.

Swoboda, H., 1977. Moderní statistika. Prague: Nakladatelství Svoboda, 351.

TFE, 2016. Training Forest Enterprise Masaryk Forest Křtiny. [WWW Document]. URL http://www.slpkrtiny.cz/ (accessed 02.19.16).