



Reappraisal of Austrian Business Confidence Survey 2015 for Mainland China

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Abstract: A statistical reappraisal of the Austrian Business Confidence Survey 2015 regarding the legal entity has been done. Various methods like inferencestatistics or factor analysis have been applied. Joint Ventures face challenges within the company. They face to some extent cultural differences between management and workforce. These are challenges within the company. WFOEs by contrast face challenges involving relations and situations in a Chinese environment. These are challenges outside the company.

1 Introduction

In the last months of 2015 results of an Austrian survey concerning business with China have been published. This survey contained data which are relevant to the mentioned research question of the thesis. But data have been published only with rather nonsophisticated statistical instruments. As the author assumes that still there are - not sufficient exploited - relations within the original data of the published results he undertook a reappraisal of the basic answers to the original questionnaire.

1.1 Background

The German Chamber of Commerce measures business sentiment of German enterprises doing business in China. This is done by online-inquiry on a yearly base since 2007. [1] Since 2012 the Austrian Chamber of Commerce measures business sentiment and confidence of Austrian enterprises doing business in China also. The results are being published by a brochure as univariate or bivariate statistics [2].

1.2 Used Methods

Methods being applied for this reappraisal are dependent of the results of reliability and validity analysis as preconditions. Used methods also are dependent of the level

of data-measurement. They include inference statistics (chi-square-test, man-whitney-U-test) and multivariate statistics like cluster analysis and factor analysis.

2 Requirements for Reappraisal

Two prerequisites of any reappraisal are the examination reliability and – at least internal – validity of the data.

2.1 Reliability of Data

One first step is to compare the two sets of data (especially the corresponding sociodemographic variables) as they had been generated by the same design of research.

The set of the Austrian data consists of 58 total responses, thereof legal entities: 21% Joint Venture, 10% Representative Office, 64% WFOE¹ and 5% not answered. These values are similar to the German Business Confidence Survey 2015, for instance WFOE: 70%. [3]. The Austrian sample subdivided in main business activity shows production 52%, sales 19%, project / consulting / others 26% and 3% not answered. Again these values are similar to the German Business Confidence Survey 2015, companies with production as main business: 49% [4]. If the Austrian sample is subdivided in number of workforce one obtains a split of 36% for 1 to 50 persons and 60% for 50 and more persons. 60% and 3% missing. And again these values are similar to the German Business Confidence Survey 2015, where companies with number of workforce greater than 50 persons were 63% [3].

Compared with the sociodemographic split of the Austrian results to the German Business Confidence Survey 2015 (based on a sample total of 439), one can say that the Austrian sample is similar structured. Or in other words: The Austrian data show quite some ‘external’ reliability² in respect to the sociodemographic variables.

2.2 Internal Validity of Data

Question one in the Business Confidence Survey 2015 inquired the importance of various strategic reasons for Austrian companies to be present in China. Substantial later in the questionnaire – as question 14 - it had been asked for the kind of legal entity in China.

1 Wholly Owned-Foreign Company.

2 Reliability as a measure for the tendency obtaining similar results under consistent conditions.

Therefore it can be tested if there are any differences in the answers of companies to important reasons associated with different legal entities. Six proposed strategic reasons for a company to be present in China have been tested for significant differences concerning the selected legal entity. As the level of the Qu.1-data is ordinal, one can apply the Man-Whitney-U-test. H_0 for each pair of tests states that there is just one significant difference – the difference between Joint Ventures and WFOEs when aiming a Chinese company as a strategic partner.

The difference between Joint Ventures and WFOEs is with a p value of .003 asymptotic significant. An other additional step in this case is to revise the used askew verbal scale of ‘very important, important, not important’. A revised and then formally even verbal scale is important (as the sum of very important and important) and not important. The p value of a now applied chi-square-test (likelihood) is .038. A summarized statistic still shows a significant difference.

Based on the current discussion concerning relevance and meaning of the p value [5] it is advisable to add information. For instance to calculate the possible size of the effect, i.e. the strength the phenomenon under observation. The effect size of a rank biserial correlation according to Wendt is a relatively high $r = .61$. Or to be expressed in practical word: The strength of the correlation between Joint Venture as a legal entity and having a strategic partner as reason to be in China is around two thirds of the maximum possible strength.

3 Legal Entities and Corresponding Challenges for Business Activity

To remember the underlying question of research: “What was (or still is) the influence of the chosen or adapted entry mode for the business development in China?” An important area of research is to investigate possible connections between legal entities and facing specific challenges. The Austrian Business Confidence Survey 2015 predefined eleven challenges for contemporary business in mainland China. Hence one can ask which of the challenges correspond with each kind of legal entity. Two methods have been applied to receive an answer: Bivariate interference statistics and Multivariate statistics in form of a factor analysis.

3.1 Bivariate Interference Statistics

As again the level of the Qu.3-data is ordinal, one could apply the Man-Whitney-U-test. The threefold hypothesis H_0 for each pair of tests states that there just one significant difference concerning current challenges – again a difference between Joint Ventures and WFOEs in respect to cultural differences / workforce. The following figure shows the count of the responses.

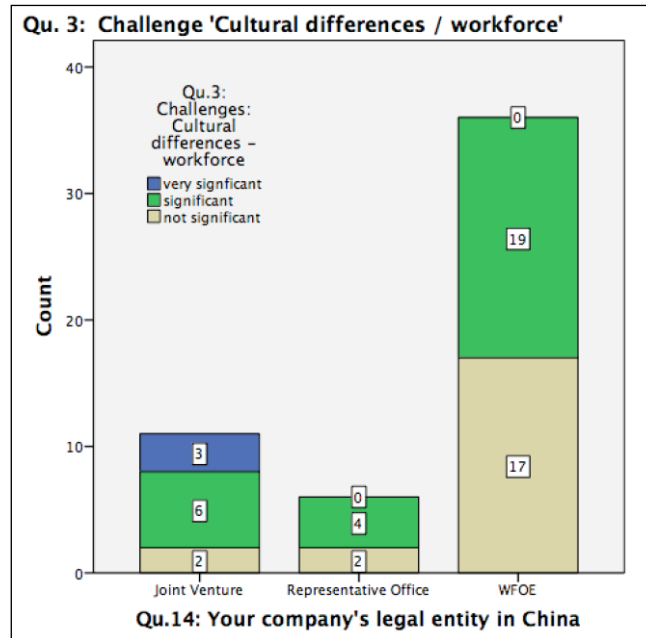


Figure 1

Responses to Question 3 / Challenge 'cultural differences / workforce' and legal entity in China; n=53

As one can see on the first glance, the left column Joint Venture is the only one who shows the category 'very significant'. The man-whitney-U-test yields an asymptotic significant difference with a p value of .015.

A simple method to change this to an even scale is to combine the first two items and call the new combined item now *significant*. This leads to a relationship of 9 *significant* versus 2 *not significant* for Joint Ventures and respectively 19 versus 17 in case of WFOE. Again it is advisable to enrich the results [5]: (a) The effect size of a rank biserial correlation with the original data according to Wendt is $r = .53$. (b) The p value of a now applicable chi-square-test to the summarized scale is .074 (Likelihood).

Interim conclusions A: Current challenges for Joint Ventures are cultural differences with the workforce. This means there are difficulties within the company. WFOEs are not confronted with this problem.

3.2 Multivariate Statistics to Reduce Dimensions

The number of eleven predefined single challenges is quite high for such a short questionnaire. Hence the question arises, are these challenges reducible to less but comprehensive challenges? And if so, is there any nexus traceable to the items of

legal entities? To answer this question an exploratory factor analysis of the eleven items has been applied.

The analysis – done by principal component analysis - proposes that four new components can explain 64,5% of the total variance in the basic data set. The following table presents estimated correlations.

Rotated Component Matrix^a

	Component			
	1	2	3	4
Qu.3: Challenges: Cultural differences - marketing & sales		,779		
Qu.3: Challenges: Cultural differences - workforce	,338	,523		
Qu.3: Challenges: Market access barriers		,721		
Qu.3: Challenges: Quality management			,488	,541
Qu.3: Challenges: Rising costs of raw material			,728	
Qu.3: Challenges: Rising labor costs	,707	-,418		
Qu.3: Challenges: Transport & infrastructure			,759	
Qu.3: Challenges: Attracting & retaining staff	,793			
Qu.3: Challenges: Rule of law (transparency, enforcement of rules and regulations)	,697	,394		
Qu.3: Challenges: Competition				,906

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 6 iterations.

Table 1

Exploratory factor analysis: Loadings of rotated component matrix

An interpretation of these results runs as follows:

- The first component is characterized by workforce: how to attract and retain them and their rising costs. A short label for this component: *Total Chinese Working Specificities*.
- The second component is characterized by the structure of the market: access barriers, problems with marketing and cultural differences with workforce. A label for this component can be named: *Different apprehension of market*.
- The third component is characterized by rising cost of raw material, the (accompanying) problems with transport and infrastructure and the handling of these troubling issues by management. The label for this component: *Material Workflow*.
- The fourth component is characterized by competition and adequate handling by management: *Management in Face of Intense Competition*.

Further correlations between these new components reveal that component one and component three are narrowly associated with each other. The new influence-model of current challenges consists of these factors: (a) Total Chinese working specificities together with a problematic handling of material workflow, (b) A different

apprehension how to approach the market, (c) Managing of management in face of intense competition. A theoretical statistical test (mann-whitney-U) yield a p value of .015. WFOEs are especially confronted with challenges concerning component one (*Total Chinese working specificities*). Joint Ventures however don't face this problem. Seen these results together - what does this practically mean? Practical significance [8] of these results can be stated as such:

Interim conclusion B: WFOEs (Wholly Foreign-Owned Enterprises) are confronted with challenges on a nationwide scale, i.e. challenges involving relations and situations outside the company, challenges related to total Chinese working specificities.

Conclusions

Based on a reappraisal of the Austrian Business Confidence Survey 2015 one can draw the following conclusions regarding the legal entity: Austrian companies aiming at building strategic cooperations with Chinese companies prefer naturally to establish Joint Ventures. However within this mutual supportive form of doing business cultural differences between management and workforce emerge. WFOEs on the other hand are confronted with challenges on a nationwide scale, i.e. challenges involving relations and situations outside the company. Those challenges are typically related to the environment the company is in. In this paper this environment is called Total Chinese Working Specificities.

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