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Designing a country's small and medium-sized enterprise development index using firm-level data: The case of Thailand

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APPENDIXES

Designing a Country's Small and Medium-Sized Enterprise Development Index Using Firm-Level Data: The Case of Thailand

Shigehiro Shinozaki and Daisuke Miyakawa

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Appendix 1

Probabilistic Principal Component Analysis Concept

This appendix provides a detailed explanation of the probabilistic principal component analysis (P-PCA) model developed for this study, referring to Tipping and Bishop (1999), Bishop (2006), and Hastie et al. (2009). The P-PCA is a variant of a standard PCA that allows for some missing data, assuming that every observed data $x \in \mathbb{R}^d$ correspond to a latent variable $z \in \mathbb{R}^{d'}$ and is generated by the following linear model:

$$x = Wz + \mu + \epsilon, \tag{1}$$

where matrix W$\in \mathbb{R}^{d \times d'}$ relates the latent variable to the observed data, μ ($\in \mathbb{R}^d$) is the mean of this model, and ε is the noise. The distribution of z is the $k-$dimensional standard Gaussian $N(0, I)$, while ϵ comes from the Gaussian $N(0, \sigma^2 I)$. When there is n observed data $\{x_i\}_{i=1}^n$, the latent variable and noise corresponding to x_i are written as z_i and ϵ_i, respectively. For simplicity, $X = (x_1, x_2 \cdots, x_n)^T \in \mathbb{R}^{n \times d}$ and $Z = (z_1, z_2 \cdots, z_n)^T \in \mathbb{R}^{n \times d'}$, and each x_i is regarded as identically and independently sampled from model (1). Thus, model (1) assumes the observed data is realized by the low dimensional ($d' < d$) latent variable. The goal is to find optimal parameters (μ, W, σ^2) to maximize the posterior likelihood. Before applying the analysis, X is regularized into mean 0 and variance 1 for each column.

Under these premises, the observed variable s_i follows its marginal distribution $x_i \sim N(\mu, WW^T, +\sigma^2 I)$ (independent and identically). Thus, the following log likelihood function is generated, where X is regularized as the zero-mean in the following transformation:

$$\begin{aligned}\mathcal{L} &= \sum_{i=1}^{n} -\frac{1}{2}\left[\log\det\left(WW^\top + \sigma^2 I\right) + (x_i - \mu)^\top \left(WW^\top + \sigma^2 I\right)^{-1}(x_i - \mu)\right] \\ &= -\frac{1}{2}\left[n \log\det\left(WW^\top + \sigma^2 I\right) + n\mu^\top \left(WW^\top + \sigma^2 I\right)^{-1}\mu + \sum_{i=1}^{n} x_i^\top \left(WW^\top + \sigma^2 I\right)^{-1} x_i\right],\end{aligned} \tag{2}$$

where the independent terms for the maximum likelihood estimation are omitted.

According to Tipping and Bishop (1999), the optimal parameters that attain the maximal of L can be explicitly written. Here, the eigenvalue decomposition of the covariance matrix of X is used. Let $(v_1, \lambda 1), \cdots, (v_d, \lambda_d)$ be sets of eigenvector and eigenvalue of $X^T X$ sorted in order of increasing eigenvalues. With $U = (v_1, \cdots, v_d)$ and $\Lambda = (\lambda_1, \cdots, \lambda_d)$, these notations bring the following solution for the maximum likelihood estimation:

$$\begin{cases} \mu_* = 0 \\ W_* = U(\Lambda - \sigma^2 I)^{\frac{1}{2}} R \quad \left(R \ (\in \mathbb{R}^{d' \times d'}) \text{ is an arbitrary rotation matrix}\right) \\ \sigma_*^2 = \dfrac{1}{d - d'} \displaystyle\sum_{i=d'+1}^{d} \lambda_i. \end{cases} \tag{3}$$

Using expectation–maximization algorithm

Apart from the explicit solution to equation (3), there are several useful iterative algorithms to solve optimization problems. The gradient descent method is probably the most popular algorithm for optimization. The expectation-maximization (EM) algorithm introduced here assures that L does not decrease at each step.

In the following exposition, we denote a set of parameters (μ, W, σ^2) as θ, and subscript the parameters of the k-th iteration as $\theta_k (k = 1,2,\cdots)$. However, a more generalized setting is considered where the random variables *x* and *z* follow a joint distribution $p(x, z|\Theta)$, but only x can be observed. We draw n data $\{x_i\}_{i=1}^n$ identically and independently from $p(x, z|\theta)$. To apply the maximum likelihood estimation to derive θ_k, the objective function can be written as follows:

$$
\begin{aligned}
\mathcal{L}(\theta) &= \log p(X|\theta) \\
&= \int p(Z|X,\theta_k) \log p(X|\theta)\ \mathrm{d}Z \\
&= \int p(Z|X,\theta_k) \log \frac{p(X,Z|\theta)}{p(Z|X,\theta_k)}\ \mathrm{d}Z + \int \log p(Z|X,\theta_k)\ \log \frac{p(Z|X,\theta_k)}{p(Z|X,\theta)}\ \mathrm{d}Z \\
&= \int p(Z|X,\theta_k) \log \frac{p(X,Z|\theta)}{p(Z|X,\theta_k)}\ \mathrm{d}Z + \mathrm{KL}\left(p(Z|X,\theta_k) \parallel p(Z|X,\theta)\right).
\end{aligned}
$$

The EM algorithm aims to maximize the first term so that the following equation holds:

$$
\theta_{k+1} = \arg\min_{\theta} \int p(Z|X,\theta_k) \log \frac{p(X,Z|\theta)}{p(Z|X,\theta_k)}\ \mathrm{d}Z = \arg\min_{\theta} \int p(Z|X,\theta_k) \log p(X,Z|\theta)\ \mathrm{d}Z
$$

The second term is no less than zero and attains its minimum at $\theta = \theta_k$. Thus, the EM algorithm assures that $L(\theta_{k+1}) \geq L(\theta_k)$ holds for all $k = 1,2,\cdots$ as follows:

$$
Q_k(\theta) = \int p(Z|X,\theta_k) \log p(X,Z|\theta)\ \mathrm{d}Z = \sum_{i=1}^{n} \int p(Z|X,\theta_k) \log p(x_i, z_i|\theta)\ \mathrm{d}Z = \sum_{i=1}^{n} \int p(z|x_i,\theta_k) \log p(x_i, z_i|\theta)\ \mathrm{d}z.
$$

Furthermore, $\int p(Z|X, \theta_k)$ log $p(X, Z|\theta)\mathrm{d}\theta$ can be transformed as follows:

$$
Q_k(\theta) = \int p(Z|X,\theta_k) \log p(X,Z|\theta)\ \mathrm{d}Z = \sum_{i=1}^{n} \int p(Z|X,\theta_k) \log p(x_i, z_i|\theta)\ \mathrm{d}Z = \sum_{i=1}^{n} \int p(z|x_i,\theta_k) \log p(x_i, z_i|\theta)\ \mathrm{d}z.
$$

The second equality holds as (x_i, z_i) $(i = 1, \cdots, n)$ is independent.

In summary, the EM algorithm alternately repeats two steps: an expectation step for log $p(X, Z|\theta)$ with regard to $p(Z|X, \theta_k)$ and to calculate the *k*-th target function $Q_k(\theta)$, and a maximization step to maximize it. Although there is no guarantee of obtaining a global optimal solution, convergence of its likelihood is guaranteed by its derivation. This method is particularly useful for estimating parameters in latent variable models where the optimization of simultaneous distributions is difficult.

Applying the EM algorithm to the probabilistic PCA model, the simultaneous distributions can be written as follows:

$$p(x, z|\mu, W, \sigma^2) = \frac{1}{\sqrt{(2\pi\sigma^2)^d}} \exp\left(-\frac{\|x - Wz - \mu\|_2^2}{2\sigma^2}\right) \cdot \frac{1}{\sqrt{(2\pi)^k}} \exp\left(-\frac{\|z\|_2^2}{2}\right).$$

Then, the conditional distribution $p(z|x_i, \theta_k)$ of z with k−th parameters is given by the following:

$$p(z|x_i, \theta_k) \propto \exp\left(-\frac{1}{2\sigma_k^2}\left(z^\top(W_k^\top W_k + \sigma^2 I)z - 2(x_i - \mu_k)^\top W_k z\right)\right)$$
$$\therefore z|x_i, \theta_k \sim \mathcal{N}\left((W_k^\top W_k + \sigma_k^2 I)^{-1} W_k^\top (x_i - \mu_k), \sigma_k^2 (W_k^\top W_k + \sigma_k^2 I)^{-1}\right)$$

This object means that the mean $< z_i >$ and the covariance $< z_i z_i^T >$ of z under $p(z|x_i, \theta_k)$ can be written respectively as follows, with $\left(W_k^T W_k + \sigma^2 I\right)^{-1}$ denoted as M_k:

$$<z_i> = M_k W_k^\top (x_i - \mu_k), \quad <z_i z_i^\top> = \sigma_k^2 M_k + <z_i><z_i>^\top$$

By extracting terms which relate to θ from Q_k, we get the k−th target function:

$$\sum_{i=1}^{n} \int p(z|x_i, \theta_k) \log p(x_i, z_i|\theta) \, \mathrm{d}z - (\text{irrelevant terms})$$
$$= \frac{1}{2} \sum_{i=1}^{n} \int p(z|x_i, \theta_k) \left[\log \sigma^2 + z^\top z + \frac{1}{\sigma^2}\left\{(x_i - \mu)^\top (x_i - \mu) - 2(x_i - \mu)^\top W z + z_i^\top W^\top W z_i\right\}\right] \, \mathrm{d}z$$
$$= \frac{1}{2}\left[\log \sigma^2 + \mathrm{tr}(<z_i z_i^\top>) + \frac{1}{\sigma^2}\left\{(x_i - \mu)^\top (x_i - \mu) - 2(x_i - \mu)^\top W <z_i> + \mathrm{tr}(W^\top W <z_i z_i^\top>)\right\}\right].$$

Finally, θ_{k+1} is calculated by differentiating the target function by (μ, W, σ^2) and finding a unique stationary point:

$$\begin{cases} \mu_{k+1} = 0 \\ W_{k+1} = \left(\sum_{i=1}^{n} x_i <z_i>^\top\right) \cdot \left(\sum_{i=1}^{n} <z_i z_i^\top>\right)^{-1} \\ \sigma_{k+1}^2 = \frac{1}{n} \sum_{i=1}^{n} \left(\|x_i\|_2^2 - 2x_i^\top W_{k+1} <z_i> + \mathrm{tr}(W_{k+1}^\top W_{k+1} <z_i z_i^\top>)\right) \end{cases},$$

under the condition $\mu_0 = 0$.

When the set of data X is missing some values, each x_i is decomposed into the following two terms for easier explanation:

$$x_i = I_i^s s_i + I_i^t t_i.$$

The two variables s_i and t_i correspond to the observed coordinates and missing coordinates, respectively. When x_i consists of u observed coordinates and v missing coordinates, $(s_i)_j$ is the j−th observed coordinates of x_i, and $(t_i)_j$ is the j−th missing coordinates of x_i. Therefore, s_i and t_i are u-dimensional and v-dimensional, while $I_i^s(\in \mathbb{R}^{d\times u})$ and $I_i^t(\in \mathbb{R}^{d\times v})$ are defined as follows:

$$(I_i^s)_{lj} = \begin{cases} 1 & (\text{if } j\text{−th observed coordinate of } x_i \text{ is } x_l) \\ 0 & (\text{otherwise}), \end{cases}$$
$$(I_i^t)_{lj} = \begin{cases} 1 & (\text{if } j\text{−th missing coordinate of } x_i \text{ is } x_l) \\ 0 & (\text{otherwise}). \end{cases}$$

Then, the simultaneous distribution of s, t, z under fixed I^s and I^t can be written as follows:

$$p(s,t,z|\mu,W,\sigma^2) = \frac{1}{\sqrt{(2\pi\sigma^2)^d}} \exp\left(-\frac{\|I^s s + I^t t - Wz - \mu\|_2^2}{2\sigma^2}\right) \cdot \frac{1}{\sqrt{(2\pi)^k}} \exp\left(-\frac{\|z\|_2^2}{2}\right).$$

Also, there are conditional distributions about z and t under the observed s:

$$p(t,z|s,\mu,W,\sigma^2) \propto \exp\left(-\frac{1}{2\sigma^2}\begin{bmatrix} z^\top t^\top \end{bmatrix} \underbrace{\begin{bmatrix} W^\top W + \sigma^2 I & -W^\top I^t \\ -(I^t)^\top & I \end{bmatrix}}_{=:D} \begin{bmatrix} z \\ t \end{bmatrix} + \frac{1}{\sigma^2} \underbrace{\left(\begin{bmatrix} W^\top \\ -(I^t)^\top \end{bmatrix} (I^s s - \mu)\right)^\top}_{=:m} \begin{bmatrix} z \\ t \end{bmatrix}\right).$$

We define and calculate m and D with the mean and variance of t and z under the fixed s. Using these distribution functions, we can derive the EM algorithm for data with missing values by regarding both t and t as latent variables.

Appendix 2

Factor Loadings based on Probabilistic Principal Component Analysis

A1. Factor Loadings (Manufacturing and Bangkok)

A. Relation Between the First Factor and Variables

	Bank Loan Overdraft	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors	Working Capital Amount
(-1.0, -0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000
(-0.9, -0.8)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0909	0.0000	0.0000	0.0000	0.0000
(-0.8, -0.7)	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.7, -0.6)	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.6, -0.5)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.5, -0.4)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000
(-0.4, -0.3)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.3, -0.2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.2, -0.1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.1, -2.22e-16)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-2.22e-16, 0.1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0909
(0.1, 0.2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.2, 0.3)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.3, 0.4)	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.4, 0.5)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.5, 0.6)	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.6, 0.7)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.7, 0.8)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.8, 0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.9, 1.0)	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
mean	0.986	-0.675	0.589	-0.717	0.362	-0.879	-0.871	-0.981	-0.43	0.018	0.038

B. Relation Between the Second Factor and Variables

	Bank Loan Overdraft	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors	Working Capital Amount
(-1.0, -0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.9, -0.8)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.8, -0.7)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.7, -0.6)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000
(-0.6, -0.5)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909
(-0.5, -0.4)	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.4, -0.3)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.3, -0.2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.2, -0.1)	0.0909	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000
(-0.1, -2.22e-16)	0.0000	0.0909	0.0000	0.0000	0.0000	0.0909	0.0000	0.0909	0.0000	0.0000	0.0000
(-2.22e-16, 0.1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.1, 0.2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.2, 0.3)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.3, 0.4)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000
(0.4, 0.5)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.5, 0.6)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.6, 0.7)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.7, 0.8)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.8, 0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.9, 1.0)	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
mean	-0.132	-0.012	-0.408	-0.198	0.926	-0.01	0.386	-0.093	-0.17	-0.666	-0.547

Continued on the next page

C. Relation Between the Third Factor and Variables

	Bank Loan Overdraft	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors	Working Capital Amount
(-1.0, -0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.9, -0.8)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909
(-0.8, -0.7)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.7, -0.6)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.6, -0.5)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.5, -0.4)	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.4, -0.3)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000
(-0.3, -0.2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.2, -0.1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000
(-0.1, -2.22e-16)	0.0909	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-2.22e-16, 0.1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.1, 0.2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.2, 0.3)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000
(0.3, 0.4)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.4, 0.5)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.5, 0.6)	0.0000	0.0909	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.6, 0.7)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000
(0.7, 0.8)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.8, 0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.9, 1.0)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
mean	-0.002	0.543	0.535	-0.429	-0.092	-0.284	0.234	-0.112	0.697	-0.317	-0.823

Source: Authors' calculations.

A2. Factor Loadings (Manufacturing and Outside Bangkok)

A. Relation Between the First Factor and Variables

	Bank Loan Overdraft	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors	Working Capital Amount
(-1.0, -0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.9, -0.8)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152
(-0.8, -0.7)	0.0000	0.0152	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0152
(-0.7, -0.6)	0.0000	0.0152	0.0152	0.0000	0.0152	0.0000	0.0152	0.0152	0.0152	0.0152	0.0000
(-0.6, -0.5)	0.0152	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0303	0.0000
(-0.5, -0.4)	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.4, -0.3)	0.0000	0.0152	0.0000	0.0000	0.0303	0.0000	0.0000	0.0152	0.0303	0.0000	0.0152
(-0.3, -0.2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0303	0.0000	0.0000	0.0000	0.0000
(-0.2, -0.1)	0.0303	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000
(-0.1, -2.22e-16)	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0152	0.0152	0.0000	0.0152	0.0000
(-2.22e-16, 0.1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0455	0.0000	0.0152	0.0000	0.0000	0.0000
(0.1, 0.2)	0.0000	0.0000	0.0000	0.0152	0.0152	0.0000	0.0152	0.0152	0.0000	0.0000	0.0152
(0.2, 0.3)	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000
(0.3, 0.4)	0.0152	0.0152	0.0000	0.0152	0.0000	0.0000	0.0000	0.0152	0.0303	0.0000	0.0000
(0.4, 0.5)	0.0000	0.0152	0.0000	0.0152	0.0000	0.0000	0.0152	0.0000	0.0152	0.0000	0.0152
(0.5, 0.6)	0.0000	0.0000	0.0303	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000
(0.6, 0.7)	0.0152	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.7, 0.8)	0.0000	0.0000	0.0152	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.8, 0.9)	0.0000	0.0000	0.0152	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.9, 1.0)	0.0000	0.0000	0.0152	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152
mean	-0.035	-0.166	0.509*	0.467*	0.077	-0.105	-0.112	-0.09	-0.057	-0.284	-0.067

Continued on the next page

B. Relation Between the Second Factor and Variables

	Bank Loan Overdraft	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors	Working Capital Amount
(-1.0, -0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.9, -0.8)	0.0000	0.0000	0.0000	0.0000	0.0303	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.8, -0.7)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000
(-0.7, -0.6)	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.6, -0.5)	0.0000	0.0303	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152
(-0.5, -0.4)	0.0152	0.0000	0.0000	0.0000	0.0000	0.0152	0.0152	0.0152	0.0152	0.0000	0.0152
(-0.4, -0.3)	0.0000	0.0000	0.0000	0.0303	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.3, -0.2)	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152
(-0.2, -0.1)	0.0000	0.0152	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.1, -2.22e-16)	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000
(-2.22e-16, 0.1)	0.0000	0.0152	0.0455	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0152
(0.1, 0.2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.2, 0.3)	0.0152	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.3, 0.4)	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.4, 0.5)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0152
(0.5, 0.6)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0152	0.0303	0.0000	0.0000
(0.6, 0.7)	0.0303	0.0152	0.0303	0.0000	0.0303	0.0303	0.0000	0.0152	0.0303	0.0455	0.0000
(0.7, 0.8)	0.0152	0.0152	0.0000	0.0000	0.0000	0.0152	0.0152	0.0000	0.0152	0.0152	0.0000
(0.8, 0.9)	0.0152	0.0000	0.0000	0.0000	0.0000	0.0303	0.0303	0.0152	0.0000	0.0000	0.0152
(0.9, 1.0)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000
mean	0.438*	0.049	0.246	-0.372*	0.025	0.562*	0.419	0.419	0.441*	0.39	-0.001

C. Relation Between the Third Factor and Variables

	Bank Loan Overdraft	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors	Working Capital Amount
(-1.0, -0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.9, -0.8)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.8, -0.7)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.7, -0.6)	0.0152	0.0152	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000
(-0.6, -0.5)	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0152	0.0152	0.0152
(-0.5, -0.4)	0.0152	0.0000	0.0000	0.0152	0.0152	0.0152	0.0000	0.0000	0.0000	0.0152	0.0000
(-0.4, -0.3)	0.0152	0.0152	0.0000	0.0000	0.0000	0.0152	0.0152	0.0000	0.0303	0.0000	0.0152
(-0.3, -0.2)	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000
(-0.2, -0.1)	0.0303	0.0303	0.0303	0.0303	0.0000	0.0303	0.0000	0.0152	0.0000	0.0000	0.0000
(-0.1, -2.22e-16)	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0152
(-2.22e-16, 0.1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0303	0.0303	0.0152	0.0152	0.0303
(0.1, 0.2)	0.0000	0.0000	0.0152	0.0152	0.0152	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000
(0.2, 0.3)	0.0000	0.0000	0.0303	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0152	0.0152
(0.3, 0.4)	0.0152	0.0000	0.0000	0.0000	0.0303	0.0152	0.0000	0.0000	0.0000	0.0303	0.0000
(0.4, 0.5)	0.0000	0.0152	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.5, 0.6)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000
(0.6, 0.7)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.7, 0.8)	0.0000	0.0000	0.0000	0.0303	0.0000	0.0000	0.0152	0.0152	0.0000	0.0000	0.0000
(0.8, 0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.9, 1.0)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
mean	-0.234	-0.231	0.037	0.161	0.104	-0.107	-0.033	-0.028	-0.071	-0.014	-0.106

Source: Authors' calculations.

B1. Factor Loadings (Agriculture and Bangkok)

A. Relation Between the First Factor and Variables

	Bank Loan Overdraft	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors	Working Capital Amount
(-1.0, -0.9)	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.9, -0.8)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0909
(-0.8, -0.7)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.7, -0.6)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.6, -0.5)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000
(-0.5, -0.4)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.4, -0.3)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.3, -0.2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.2, -0.1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000
(-0.1, -2.22e-16)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-2.22e-16, 0.1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.1, 0.2)	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.2, 0.3)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.3, 0.4)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.4, 0.5)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.5, 0.6)	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.6, 0.7)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000
(0.7, 0.8)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.8, 0.9)	0.0000	0.0000	0.0909	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000
(0.9, 1.0)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
mean	0.16	0.579	0.851	-0.904	0.861	-0.841	-0.145	-0.531	0.682	0.85	-0.861

B. Relation Between the Second Factor and Variables

	Bank Loan Overdraft	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors	Working Capital Amount
(-1.0, -0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.9, -0.8)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.8, -0.7)	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.7, -0.6)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.6, -0.5)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.5, -0.4)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909
(-0.4, -0.3)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.3, -0.2)	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.2, -0.1)	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.1, -2.22e-16)	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-2.22e-16, 0.1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.1, 0.2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.2, 0.3)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000
(0.3, 0.4)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000
(0.4, 0.5)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000
(0.5, 0.6)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.6, 0.7)	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.7, 0.8)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0909	0.0000	0.0000	0.0000
(0.8, 0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.9, 1.0)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
mean	0.683	-0.795	-0.13	-0.001	-0.217	0.436	0.712	0.799	0.364	0.242	-0.494

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C. Relation Between the Third Factor and Variables

	Bank Loan Overdraft	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors	Working Capital Amount
(-1.0, -0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.9, -0.8)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.8, -0.7)	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.7, -0.6)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.6, -0.5)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.5, -0.4)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.4, -0.3)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.3, -0.2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.2, -0.1)	0.0000	0.0909	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.1, -2.22e-16)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0909
(-2.22e-16, 0.1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.1, 0.2)	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.2, 0.3)	0.0000	0.0000	0.0909	0.0000	0.0909	0.0000	0.0000	0.0909	0.0909	0.0000	0.0000
(0.3, 0.4)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.4, 0.5)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000
(0.5, 0.6)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.6, 0.7)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.7, 0.8)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.8, 0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.9, 1.0)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
mean	-0.703	-0.15	0.236	0.181	0.294	-0.193	0.426	0.219	0.268	-0.046	-0.016

Source: Authors' calculations.

B2. Factor Loadings (Agriculture and Outside Bangkok)

A. Relation Between the First Factor and Variables

	Bank Loan Overdraft	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors	Working Capital Amount
(-1.0, -0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0152	0.0000	0.0152	0.0152
(-0.9, -0.8)	0.0000	0.0000	0.0000	0.0000	0.0152	0.0152	0.0000	0.0000	0.0152	0.0000	0.0000
(-0.8, -0.7)	0.0000	0.0152	0.0000	0.0303	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000
(-0.7, -0.6)	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0303
(-0.6, -0.5)	0.0000	0.0000	0.0000	0.0152	0.0152	0.0000	0.0152	0.0000	0.0152	0.0000	0.0152
(-0.5, -0.4)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.4, -0.3)	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0152	0.0000	0.0303	0.0000
(-0.3, -0.2)	0.0000	0.0000	0.0152	0.0000	0.0152	0.0303	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.2, -0.1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000	0.0152
(-0.1, -2.22e-16)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-2.22e-16, 0.1)	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000
(0.1, 0.2)	0.0000	0.0152	0.0000	0.0000	0.0000	0.0303	0.0000	0.0152	0.0000	0.0152	0.0000
(0.2, 0.3)	0.0152	0.0000	0.0000	0.0152	0.0000	0.0000	0.0152	0.0152	0.0152	0.0000	0.0000
(0.3, 0.4)	0.0000	0.0303	0.0152	0.0000	0.0152	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000
(0.4, 0.5)	0.0000	0.0152	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0152
(0.5, 0.6)	0.0152	0.0152	0.0455	0.0000	0.0152	0.0000	0.0000	0.0152	0.0000	0.0152	0.0000
(0.6, 0.7)	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0152	0.0000	0.0152	0.0000
(0.7, 0.8)	0.0152	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.8, 0.9)	0.0303	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000
(0.9, 1.0)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
mean	0.476*	0.189	0.405*	-0.292	-0.105	-0.101	-0.064	0.058	-0.344	-0.051	-0.425*

Continued on the next page

B. Relation Between the Second Factor and Variables

	Bank Loan Overdraft	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors	Working Capital Amount
(-1.0, -0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152
(-0.9, -0.8)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.8, -0.7)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152
(-0.7, -0.6)	0.0000	0.0000	0.0000	0.0303	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152
(-0.6, -0.5)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0152
(-0.5, -0.4)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000
(-0.4, -0.3)	0.0152	0.0152	0.0000	0.0000	0.0303	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000
(-0.3, -0.2)	0.0000	0.0000	0.0000	0.0152	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.2, -0.1)	0.0000	0.0303	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.1, -2.22e-16)	0.0000	0.0152	0.0152	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-2.22e-16, 0.1)	0.0303	0.0152	0.0303	0.0000	0.0000	0.0000	0.0152	0.0152	0.0000	0.0000	0.0152
(0.1, 0.2)	0.0000	0.0000	0.0152	0.0152	0.0000	0.0000	0.0000	0.0152	0.0000	0.0303	0.0000
(0.2, 0.3)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0303	0.0000	0.0303	0.0000	0.0152
(0.3, 0.4)	0.0152	0.0000	0.0000	0.0152	0.0152	0.0000	0.0000	0.0303	0.0000	0.0000	0.0000
(0.4, 0.5)	0.0000	0.0152	0.0152	0.0000	0.0000	0.0152	0.0000	0.0000	0.0152	0.0152	0.0000
(0.5, 0.6)	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0152	0.0152	0.0000
(0.6, 0.7)	0.0152	0.0000	0.0000	0.0000	0.0000	0.0152	0.0152	0.0000	0.0152	0.0000	0.0000
(0.7, 0.8)	0.0000	0.0000	0.0152	0.0000	0.0000	0.0152	0.0303	0.0152	0.0000	0.0000	0.0000
(0.8, 0.9)	0.0152	0.0000	0.0000	0.0000	0.0152	0.0152	0.0000	0.0152	0.0000	0.0000	0.0000
(0.9, 1.0)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
mean	0.259	-0.04	0.224	-0.196	0.122	0.474*	0.445*	0.407*	0.292	0.044	-0.445*

C. Relation Between the Third Factor and Variables

	Bank Loan Overdraft	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors	Working Capital Amount
(-1.0, -0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.9, -0.8)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.8, -0.7)	0.0000	0.0303	0.0000	0.0000	0.0000	0.0000	0.0152	0.0152	0.0000	0.0000	0.0000
(-0.7, -0.6)	0.0000	0.0000	0.0000	0.0000	0.0152	0.0152	0.0000	0.0152	0.0000	0.0000	0.0152
(-0.6, -0.5)	0.0303	0.0152	0.0000	0.0152	0.0152	0.0000	0.0000	0.0000	0.0000	0.0303	0.0152
(-0.5, -0.4)	0.0000	0.0152	0.0152	0.0000	0.0152	0.0152	0.0152	0.0000	0.0152	0.0152	0.0000
(-0.4, -0.3)	0.0152	0.0152	0.0000	0.0000	0.0000	0.0303	0.0000	0.0000	0.0303	0.0000	0.0000
(-0.3, -0.2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000
(-0.2, -0.1)	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0152	0.0000	0.0000
(-0.1, -2.22e-16)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0152
(-2.22e-16, 0.1)	0.0000	0.0000	0.0152	0.0152	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0152
(0.1, 0.2)	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000
(0.2, 0.3)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0152	0.0000	0.0152	0.0303
(0.3, 0.4)	0.0000	0.0000	0.0303	0.0303	0.0152	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000
(0.4, 0.5)	0.0000	0.0000	0.0000	0.0303	0.0303	0.0000	0.0000	0.0000	0.0303	0.0000	0.0000
(0.5, 0.6)	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000
(0.6, 0.7)	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0152	0.0000
(0.7, 0.8)	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.8, 0.9)	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(0.9, 1.0)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
mean	-0.122	-0.344	0.26	0.179	-0.05	-0.382*	-0.029	-0.129	-0.078	-0.165	-0.117

Source: Authors' calculations.

C1. Factor Loadings (Real Variables)

A. Relation Between the First Factor and Variables

	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Working Capital Amount
(-1.0, -0.9)	0.0026	0.0000	0.0026	0.0000	0.0000	0.0000
(-0.9, -0.8)	0.0106	0.0132	0.0159	0.0026	0.0026	0.0000
(-0.8, -0.7)	0.0026	0.0106	0.0079	0.0079	0.0026	0.0079
(-0.7, -0.6)	0.0026	0.0159	0.0185	0.0079	0.0000	0.0000
(-0.6, -0.5)	0.0079	0.0212	0.0106	0.0026	0.0026	0.0106
(-0.5, -0.4)	0.0079	0.0265	0.0053	0.0159	0.0053	0.0026
(-0.4, -0.3)	0.0053	0.0079	0.0132	0.0450	0.0026	0.0000
(-0.3, -0.2)	0.0026	0.0132	0.0106	0.0106	0.0053	0.0079
(-0.2, -0.1)	0.0000	0.0185	0.0053	0.0132	0.0053	0.0053
(-0.1, -2.22e-16)	0.0053	0.0053	0.0106	0.0185	0.0053	0.0000
(-2.22e-16, 0.1)	0.0079	0.0026	0.0026	0.0026	0.0053	0.0026
(0.1, 0.2)	0.0079	0.0026	0.0053	0.0026	0.0053	0.0053
(0.2, 0.3)	0.0026	0.0106	0.0079	0.0000	0.0053	0.0053
(0.3, 0.4)	0.0079	0.0026	0.0053	0.0053	0.0079	0.0132
(0.4, 0.5)	0.0026	0.0079	0.0132	0.0053	0.0185	0.0212
(0.5, 0.6)	0.0053	0.0026	0.0079	0.0053	0.0079	0.0212
(0.6, 0.7)	0.0132	0.0000	0.0106	0.0079	0.0238	0.0053
(0.7, 0.8)	0.0317	0.0026	0.0079	0.0053	0.0265	0.0132
(0.8, 0.9)	0.0265	0.0026	0.0026	0.0053	0.0291	0.0238
(0.9, 1.0)	0.0132	0.0000	0.0026	0.0026	0.0053	0.0212
mean	0.306*	-0.293*	-0.102	-0.12*	0.431*	0.395*

B. Relation Between the Second Factor and Variables

	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Working Capital Amount
(-1.0, -0.9)	0.0000	0.0053	0.0000	0.0026	0.0053	0.0000
(-0.9, -0.8)	0.0000	0.0212	0.0026	0.0212	0.0053	0.0000
(-0.8, -0.7)	0.0026	0.0397	0.0106	0.0026	0.0106	0.0079
(-0.7, -0.6)	0.0026	0.0132	0.0079	0.0132	0.0291	0.0106
(-0.6, -0.5)	0.0079	0.0132	0.0212	0.0185	0.0265	0.0079
(-0.5, -0.4)	0.0132	0.0212	0.0079	0.0026	0.0212	0.0185
(-0.4, -0.3)	0.0106	0.0185	0.0132	0.0026	0.0159	0.0185
(-0.3, -0.2)	0.0185	0.0079	0.0106	0.0026	0.0079	0.0000
(-0.2, -0.1)	0.0079	0.0026	0.0159	0.0053	0.0106	0.0026
(-0.1, -2.22e-16)	0.0238	0.0000	0.0106	0.0106	0.0053	0.0106
(-2.22e-16, 0.1)	0.0079	0.0053	0.0159	0.0079	0.0106	0.0106
(0.1, 0.2)	0.0132	0.0026	0.0159	0.0132	0.0079	0.0079
(0.2, 0.3)	0.0132	0.0026	0.0026	0.0053	0.0000	0.0132
(0.3, 0.4)	0.0159	0.0053	0.0000	0.0000	0.0000	0.0079
(0.4, 0.5)	0.0079	0.0026	0.0079	0.0053	0.0026	0.0238
(0.5, 0.6)	0.0053	0.0026	0.0106	0.0000	0.0000	0.0106
(0.6, 0.7)	0.0026	0.0000	0.0026	0.0026	0.0000	0.0079
(0.7, 0.8)	0.0079	0.0026	0.0026	0.0026	0.0000	0.0000
(0.8, 0.9)	0.0053	0.0000	0.0079	0.0476	0.0079	0.0053
(0.9, 1.0)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0026
mean	0.034	-0.472*	-0.105*	0.024	-0.358*	0.018

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C. Relation Between the Third Factor and Variables

	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Working Capital Amount
(-1.0, -0.9)	0.0000	0.0000	0.0026	0.0000	0.0000	0.0000
(-0.9, -0.8)	0.0000	0.0026	0.0026	0.0053	0.0026	0.0026
(-0.8, -0.7)	0.0026	0.0053	0.0000	0.0000	0.0026	0.0079
(-0.7, -0.6)	0.0053	0.0079	0.0053	0.0079	0.0079	0.0132
(-0.6, -0.5)	0.0079	0.0079	0.0079	0.0159	0.0185	0.0185
(-0.5, -0.4)	0.0185	0.0079	0.0132	0.0026	0.0317	0.0185
(-0.4, -0.3)	0.0106	0.0185	0.0212	0.0132	0.0265	0.0053
(-0.3, -0.2)	0.0132	0.0212	0.0079	0.0132	0.0132	0.0185
(-0.2, -0.1)	0.0159	0.0079	0.0106	0.0053	0.0185	0.0159
(-0.1, -2.22e-16)	0.0106	0.0159	0.0132	0.0053	0.0106	0.0106
(-2.22e-16, 0.1)	0.0159	0.0159	0.0079	0.0000	0.0132	0.0159
(0.1, 0.2)	0.0079	0.0106	0.0132	0.0185	0.0053	0.0079
(0.2, 0.3)	0.0079	0.0132	0.0079	0.0026	0.0026	0.0159
(0.3, 0.4)	0.0159	0.0132	0.0212	0.0106	0.0053	0.0079
(0.4, 0.5)	0.0159	0.0079	0.0079	0.0556	0.0079	0.0026
(0.5, 0.6)	0.0079	0.0053	0.0106	0.0026	0.0000	0.0053
(0.6, 0.7)	0.0053	0.0026	0.0053	0.0079	0.0000	0.0000
(0.7, 0.8)	0.0026	0.0026	0.0053	0.0000	0.0000	0.0000
(0.8, 0.9)	0.0026	0.0000	0.0026	0.0000	0.0000	0.0000
(0.9, 1.0)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
mean	0.004	-0.077	0.006	0.051	-0.256*	-0.19*

Source: Authors' calculations.

C2. Factor Loadings (Financial Variables)

A. Relation Between the First Factor and Variables

	Bank Loan Overdraft	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors
(-1.0, -0.9)	0.0032	0.0095	0.0127	0.0190	0.0095
(-0.9, -0.8)	0.0127	0.0095	0.0063	0.0095	0.0063
(-0.8, -0.7)	0.0032	0.0159	0.0159	0.0222	0.0063
(-0.7, -0.6)	0.0063	0.0063	0.0063	0.0127	0.0095
(-0.6, -0.5)	0.0095	0.0095	0.0095	0.0063	0.0032
(-0.5, -0.4)	0.0032	0.0000	0.0063	0.0032	0.0095
(-0.4, -0.3)	0.0095	0.0095	0.0127	0.0000	0.0063
(-0.3, -0.2)	0.0127	0.0127	0.0127	0.0032	0.0063
(-0.2, -0.1)	0.0095	0.0095	0.0159	0.0000	0.0063
(-0.1, -2.22e-16)	0.0032	0.0127	0.0063	0.0127	0.0063
(-2.22e-16, 0.1)	0.0159	0.0159	0.0095	0.0095	0.0063
(0.1, 0.2)	0.0095	0.0095	0.0063	0.0127	0.0159
(0.2, 0.3)	0.0127	0.0095	0.0127	0.0159	0.0063
(0.3, 0.4)	0.0159	0.0063	0.0127	0.0032	0.0159
(0.4, 0.5)	0.0063	0.0127	0.0032	0.0000	0.0095
(0.5, 0.6)	0.0095	0.0190	0.0095	0.0222	0.0127
(0.6, 0.7)	0.0190	0.0032	0.0190	0.0190	0.0222
(0.7, 0.8)	0.0063	0.0063	0.0032	0.0127	0.0063
(0.8, 0.9)	0.0159	0.0159	0.0095	0.0095	0.0159
(0.9, 1.0)	0.0159	0.0063	0.0095	0.0063	0.0190
mean	0.148*	0.012	-0.014	-0.002	0.177*

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B. Relation Between the Second Factor and Variables

	Bank Loan Overdraft	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors
(-1.0, -0.9)	0.0063	0.0063	0.0063	0.0000	0.0032
(-0.9, -0.8)	0.0063	0.0127	0.0095	0.0032	0.0063
(-0.8, -0.7)	0.0190	0.0286	0.0190	0.0063	0.0222
(-0.7, -0.6)	0.0190	0.0095	0.0222	0.0159	0.0000
(-0.6, -0.5)	0.0254	0.0032	0.0127	0.0095	0.0095
(-0.5, -0.4)	0.0159	0.0222	0.0222	0.0222	0.0190
(-0.4, -0.3)	0.0063	0.0190	0.0063	0.0095	0.0159
(-0.3, -0.2)	0.0127	0.0095	0.0254	0.0222	0.0159
(-0.2, -0.1)	0.0222	0.0095	0.0095	0.0063	0.0127
(-0.1, -2.22e-16)	0.0063	0.0095	0.0032	0.0222	0.0095
(-2.22e-16, 0.1)	0.0159	0.0000	0.0159	0.0095	0.0095
(0.1, 0.2)	0.0095	0.0190	0.0095	0.0127	0.0159
(0.2, 0.3)	0.0000	0.0095	0.0095	0.0063	0.0127
(0.3, 0.4)	0.0063	0.0190	0.0063	0.0095	0.0190
(0.4, 0.5)	0.0032	0.0000	0.0095	0.0159	0.0095
(0.5, 0.6)	0.0063	0.0032	0.0000	0.0032	0.0063
(0.6, 0.7)	0.0127	0.0127	0.0095	0.0190	0.0000
(0.7, 0.8)	0.0032	0.0063	0.0032	0.0063	0.0095
(0.8, 0.9)	0.0032	0.0000	0.0000	0.0000	0.0032
(0.9, 1.0)	0.0000	0.0000	0.0000	0.0000	0.0000
mean	-0.226*	-0.2*	-0.245*	-0.051	-0.099*

C. Relation Between the Third Factor and Variables

	Bank Loan Overdraft	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors
(-1.0, -0.9)	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.9, -0.8)	0.0000	0.0063	0.0032	0.0000	0.0032
(-0.8, -0.7)	0.0000	0.0063	0.0190	0.0063	0.0063
(-0.7, -0.6)	0.0032	0.0063	0.0063	0.0032	0.0063
(-0.6, -0.5)	0.0032	0.0222	0.0254	0.0095	0.0159
(-0.5, -0.4)	0.0127	0.0095	0.0127	0.0127	0.0063
(-0.4, -0.3)	0.0190	0.0286	0.0317	0.0286	0.0190
(-0.3, -0.2)	0.0127	0.0127	0.0190	0.0159	0.0190
(-0.2, -0.1)	0.0190	0.0222	0.0127	0.0317	0.0159
(-0.1, -2.22e-16)	0.0190	0.0190	0.0159	0.0222	0.0254
(-2.22e-16, 0.1)	0.0159	0.0095	0.0032	0.0222	0.0222
(0.1, 0.2)	0.0254	0.0032	0.0190	0.0127	0.0286
(0.2, 0.3)	0.0349	0.0254	0.0095	0.0000	0.0127
(0.3, 0.4)	0.0222	0.0159	0.0095	0.0222	0.0032
(0.4, 0.5)	0.0032	0.0000	0.0032	0.0032	0.0032
(0.5, 0.6)	0.0063	0.0095	0.0032	0.0063	0.0095
(0.6, 0.7)	0.0032	0.0000	0.0032	0.0032	0.0032
(0.7, 0.8)	0.0000	0.0032	0.0032	0.0000	0.0000
(0.8, 0.9)	0.0000	0.0000	0.0000	0.0000	0.0000
(0.9, 1.0)	0.0000	0.0000	0.0000	0.0000	0.0000
mean	0.023	-0.143*	-0.213*	-0.097*	-0.093*

Source: Authors' calculations.

D1. Factor Loadings (Small Sample Exercise – 50% Sample)

A. Relation Between the First Factor and Variables

	Bank Loan Overdraft	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors	Working Capital Amount
(-1.0, -0.9)	0.0000	0.0000	0.0000	0.0014	0.0014	0.0014	0.0000	0.0014	0.0014	0.0014	0.0000
(-0.9, -0.8)	0.0014	0.0000	0.0029	0.0014	0.0000	0.0014	0.0029	0.0014	0.0014	0.0014	0.0014
(-0.8, -0.7)	0.0000	0.0043	0.0014	0.0029	0.0029	0.0000	0.0000	0.0000	0.0014	0.0000	0.0000
(-0.7, -0.6)	0.0014	0.0043	0.0029	0.0029	0.0202	0.0029	0.0043	0.0029	0.0029	0.0014	0.0043
(-0.6, -0.5)	0.0029	0.0101	0.0029	0.0058	0.0058	0.0000	0.0043	0.0029	0.0014	0.0029	0.0014
(-0.5, -0.4)	0.0014	0.0072	0.0058	0.0072	0.0058	0.0000	0.0014	0.0029	0.0014	0.0000	0.0029
(-0.4, -0.3)	0.0058	0.0058	0.0043	0.0058	0.0000	0.0014	0.0043	0.0000	0.0043	0.0058	0.0014
(-0.3, -0.2)	0.0014	0.0144	0.0058	0.0043	0.0043	0.0058	0.0029	0.0087	0.0029	0.0043	0.0043
(-0.2, -0.1)	0.0029	0.0029	0.0029	0.0087	0.0043	0.0014	0.0072	0.0029	0.0072	0.0014	0.0043
(-0.1, -2.22e-16)	0.0058	0.0130	0.0101	0.0058	0.0058	0.0029	0.0058	0.0087	0.0130	0.0072	0.0058
(-2.22e-16, 0.1)	0.0072	0.0014	0.0072	0.0101	0.0058	0.0014	0.0072	0.0058	0.0101	0.0029	0.0101
(0.1, 0.2)	0.0101	0.0058	0.0130	0.0159	0.0115	0.0144	0.0072	0.0043	0.0029	0.0101	0.0058
(0.2, 0.3)	0.0144	0.0014	0.0101	0.0072	0.0043	0.0087	0.0072	0.0159	0.0101	0.0072	0.0043
(0.3, 0.4)	0.0130	0.0058	0.0072	0.0058	0.0115	0.0072	0.0115	0.0058	0.0058	0.0043	0.0130
(0.4, 0.5)	0.0130	0.0058	0.0072	0.0029	0.0029	0.0144	0.0058	0.0072	0.0115	0.0101	0.0101
(0.5, 0.6)	0.0014	0.0043	0.0029	0.0014	0.0029	0.0087	0.0043	0.0072	0.0043	0.0144	0.0087
(0.6, 0.7)	0.0058	0.0043	0.0043	0.0014	0.0014	0.0058	0.0072	0.0029	0.0029	0.0043	0.0014
(0.7, 0.8)	0.0014	0.0000	0.0000	0.0000	0.0000	0.0087	0.0029	0.0058	0.0043	0.0072	0.0087
(0.8, 0.9)	0.0014	0.0000	0.0000	0.0000	0.0000	0.0029	0.0043	0.0043	0.0014	0.0043	0.0029
(0.9, 1.0)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0014	0.0000	0.0000	0.0000	0.0000	0.0000
mean	0.172*	-0.11*	0.018	-0.092*	-0.149*	0.283*	0.118*	0.157*	0.095*	0.228*	0.198*

B. Relation Between the Second Factor and Variables

	Bank Loan Overdraft	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors	Working Capital Amount
(-1.0, -0.9)	0.0000	0.0000	0.0014	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.9, -0.8)	0.0000	0.0000	0.0072	0.0029	0.0029	0.0014	0.0000	0.0014	0.0043	0.0000	0.0000
(-0.8, -0.7)	0.0043	0.0043	0.0101	0.0043	0.0043	0.0000	0.0014	0.0014	0.0029	0.0000	0.0000
(-0.7, -0.6)	0.0043	0.0000	0.0130	0.0014	0.0043	0.0029	0.0087	0.0058	0.0058	0.0101	0.0000
(-0.6, -0.5)	0.0072	0.0014	0.0072	0.0029	0.0029	0.0029	0.0058	0.0072	0.0043	0.0043	0.0014
(-0.5, -0.4)	0.0058	0.0043	0.0087	0.0072	0.0072	0.0029	0.0087	0.0087	0.0130	0.0043	0.0014
(-0.4, -0.3)	0.0072	0.0014	0.0072	0.0072	0.0058	0.0029	0.0159	0.0115	0.0029	0.0043	0.0043
(-0.3, -0.2)	0.0087	0.0087	0.0087	0.0087	0.0058	0.0087	0.0072	0.0101	0.0087	0.0101	0.0043
(-0.2, -0.1)	0.0101	0.0072	0.0072	0.0159	0.0101	0.0115	0.0072	0.0043	0.0072	0.0101	0.0029
(-0.1, -2.22e-16)	0.0043	0.0029	0.0014	0.0043	0.0043	0.0130	0.0029	0.0101	0.0043	0.0087	0.0101
(-2.22e-16, 0.1)	0.0072	0.0072	0.0043	0.0058	0.0058	0.0072	0.0072	0.0029	0.0087	0.0058	0.0058
(0.1, 0.2)	0.0101	0.0072	0.0029	0.0000	0.0043	0.0072	0.0043	0.0058	0.0043	0.0072	0.0087
(0.2, 0.3)	0.0087	0.0043	0.0014	0.0029	0.0000	0.0087	0.0043	0.0029	0.0029	0.0043	0.0101
(0.3, 0.4)	0.0043	0.0130	0.0014	0.0029	0.0058	0.0087	0.0014	0.0101	0.0058	0.0043	0.0087
(0.4, 0.5)	0.0014	0.0144	0.0058	0.0101	0.0231	0.0072	0.0101	0.0043	0.0072	0.0072	0.0072
(0.5, 0.6)	0.0029	0.0043	0.0014	0.0058	0.0029	0.0043	0.0043	0.0043	0.0029	0.0043	0.0130
(0.6, 0.7)	0.0014	0.0087	0.0014	0.0029	0.0000	0.0014	0.0000	0.0000	0.0029	0.0014	0.0058
(0.7, 0.8)	0.0029	0.0014	0.0000	0.0014	0.0000	0.0000	0.0014	0.0000	0.0029	0.0014	0.0043
(0.8, 0.9)	0.0000	0.0000	0.0000	0.0043	0.0014	0.0000	0.0000	0.0000	0.0000	0.0029	0.0029
(0.9, 1.0)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
mean	-0.09*	0.142*	-0.341*	-0.027	-0.017	0.011	-0.131*	-0.131*	-0.106*	-0.028	0.238*

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C. Relation Between the Third Factor and Variables

	Bank Loan Overdraft	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors	Working Capital Amount
(-1.0, -0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.9, -0.8)	0.0014	0.0000	0.0000	0.0000	0.0000	0.0029	0.0000	0.0014	0.0014	0.0000	0.0029
(-0.8, -0.7)	0.0043	0.0014	0.0014	0.0014	0.0014	0.0029	0.0043	0.0043	0.0000	0.0014	0.0014
(-0.7, -0.6)	0.0000	0.0014	0.0014	0.0014	0.0029	0.0043	0.0029	0.0029	0.0000	0.0043	0.0058
(-0.6, -0.5)	0.0058	0.0115	0.0014	0.0043	0.0029	0.0043	0.0029	0.0029	0.0043	0.0043	0.0029
(-0.5, -0.4)	0.0029	0.0043	0.0029	0.0043	0.0072	0.0072	0.0072	0.0087	0.0101	0.0058	0.0029
(-0.4, -0.3)	0.0101	0.0072	0.0101	0.0029	0.0029	0.0101	0.0058	0.0058	0.0087	0.0072	0.0058
(-0.3, -0.2)	0.0072	0.0072	0.0058	0.0058	0.0043	0.0058	0.0130	0.0130	0.0058	0.0159	0.0043
(-0.2, -0.1)	0.0072	0.0072	0.0014	0.0130	0.0058	0.0101	0.0043	0.0072	0.0144	0.0072	0.0144
(-0.1, -2.22e-16)	0.0087	0.0072	0.0130	0.0072	0.0058	0.0043	0.0072	0.0072	0.0087	0.0101	0.0029
(-2.22e-16, 0.1)	0.0058	0.0043	0.0058	0.0014	0.0231	0.0072	0.0101	0.0087	0.0043	0.0058	0.0115
(0.1, 0.2)	0.0072	0.0072	0.0159	0.0101	0.0014	0.0043	0.0058	0.0014	0.0087	0.0101	0.0072
(0.2, 0.3)	0.0101	0.0087	0.0029	0.0115	0.0029	0.0058	0.0043	0.0043	0.0101	0.0000	0.0072
(0.3, 0.4)	0.0087	0.0058	0.0130	0.0115	0.0115	0.0000	0.0072	0.0058	0.0029	0.0014	0.0072
(0.4, 0.5)	0.0058	0.0029	0.0029	0.0058	0.0043	0.0130	0.0087	0.0101	0.0072	0.0087	0.0043
(0.5, 0.6)	0.0029	0.0058	0.0043	0.0058	0.0115	0.0043	0.0043	0.0043	0.0029	0.0029	0.0058
(0.6, 0.7)	0.0000	0.0058	0.0072	0.0014	0.0000	0.0029	0.0014	0.0014	0.0000	0.0000	0.0014
(0.7, 0.8)	0.0029	0.0029	0.0014	0.0014	0.0029	0.0014	0.0000	0.0014	0.0000	0.0029	0.0014
(0.8, 0.9)	0.0000	0.0000	0.0000	0.0014	0.0000	0.0000	0.0014	0.0000	0.0014	0.0014	0.0014
(0.9, 1.0)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0014	0.0000
mean	-0.029	0.001	0.081*	0.076	0.054	-0.068	-0.029	-0.067	-0.048	-0.043	-0.013

Source: Authors' calculations.

D2. Factor Loadings (Small Sample Exercise – 10% Sample)

A. Relation Between the First Factor and Variables

	Bank Loan Overdraft	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors	Working Capital Amount
(-1.0, -0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0014	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.9, -0.8)	0.0014	0.0000	0.0014	0.0000	0.0014	0.0000	0.0029	0.0000	0.0014	0.0014	0.0014
(-0.8, -0.7)	Figure 10B	0.0029	0.0029		0.0029	0.0058	0.0043	0.0014	0.0014	0.0072	0.0029
(-0.7, -0.6)	0.0029	0.0000	0.0014	0.0043	0.0014	0.0029	0.0029	0.0043	0.0029	0.0014	0.0058
(-0.6, -0.5)	0.0058	0.0058	0.0014	0.0101	0.0014	0.0029	0.0000	0.0072	0.0000	0.0043	0.0072
(-0.5, -0.4)	0.0072	0.0130	0.0043	0.0029	0.0087	0.0029	0.0029	0.0000	0.0101	0.0029	0.0101
(-0.4, -0.3)	0.0029	0.0058	0.0029	0.0087	0.0043	0.0058	0.0072	0.0043	0.0072	0.0029	0.0029
(-0.3, -0.2)	0.0115	0.0043	0.0087	0.0072	0.0115	0.0043	0.0072	0.0087	0.0043	0.0058	0.0087
(-0.2, -0.1)	0.0014	0.0072	0.0058	0.0072	0.0029	0.0072	0.0087	0.0115	0.0058	0.0072	0.0058
(-0.1, -2.22e-16)	0.0043	0.0101	0.0014	0.0058	0.0058	0.0058	0.0043	0.0072	0.0014	0.0087	0.0000
(-2.22e-16, 0.1)	0.0101	0.0072	0.0144	0.0058	0.0087	0.0087	0.0072	0.0014	0.0072	0.0087	0.0058
(0.1, 0.2)	0.0072	0.0101	0.0029	0.0072	0.0072	0.0072	0.0072	0.0101	0.0087	0.0043	0.0101
(0.2, 0.3)	0.0043	0.0072	0.0058	0.0014	0.0072	0.0058	0.0072	0.0087	0.0058	0.0043	0.0087
(0.3, 0.4)	0.0072	0.0043	0.0115	0.0130	0.0072	0.0058	0.0072	0.0058	0.0087	0.0130	0.0014
(0.4, 0.5)	0.0043	0.0101	0.0159	0.0043	0.0087	0.0072	0.0029	0.0130	0.0072	0.0072	0.0029
(0.5, 0.6)	0.0072	0.0014	0.0029	0.0014	0.0043	0.0130	0.0087	0.0058	0.0072	0.0043	0.0072
(0.6, 0.7)	0.0043	0.0000	0.0014	0.0029	0.0014	0.0014	0.0058	0.0000	0.0043	0.0029	0.0072
(0.7, 0.8)	0.0014	0.0014	0.0029	0.0043	0.0029	0.0014	0.0029	0.0000	0.0058	0.0029	0.0029
(0.8, 0.9)	0.0014	0.0000	0.0029	0.0000	0.0029	0.0014	0.0014	0.0014	0.0014	0.0014	0.0000
(0.9, 1.0)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
mean	-0.024	-0.044	0.11*	-0.053	0.04	0.041	0.048	0.029	0.093*	0.027	-0.031

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B. Relation Between the Second Factor and Variables

	Bank Loan Overdraft	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors	Working Capital Amount
(-1.0, -0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.9, -0.8)	0.0029	0.0029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0014	0.0014	0.0014
(-0.8, -0.7)	Figure 10B	0.0000	0.0000		0.0000	0.0000	0.0000	0.0014	0.0000	0.0000	0.0014
(-0.7, -0.6)	0.0000	0.0058	0.0029	0.0043	0.0072	0.0029	0.0014	0.0000	0.0014	0.0014	0.0000
(-0.6, -0.5)	0.0014	0.0115	0.0072	0.0072	0.0130	0.0029	0.0072	0.0101	0.0014	0.0014	0.0058
(-0.5, -0.4)	0.0043	0.0072	0.0029	0.0029	0.0029	0.0029	0.0087	0.0058	0.0087	0.0029	0.0043
(-0.4, -0.3)	0.0043	0.0130	0.0058	0.0058	0.0058	0.0072	0.0014	0.0029	0.0029	0.0014	0.0043
(-0.3, -0.2)	0.0087	0.0043	0.0058	0.0072	0.0043	0.0029	0.0058	0.0029	0.0115	0.0144	0.0115
(-0.2, -0.1)	0.0115	0.0087	0.0087	0.0130	0.0087	0.0029	0.0087	0.0072	0.0087	0.0043	0.0058
(-0.1, -2.22e-16)	0.0043	0.0115	0.0043	0.0043	0.0130	0.0101	0.0130	0.0130	0.0101	0.0115	0.0101
(-2.22e-16, 0.1)	0.0072	0.0058	0.0159	0.0101	0.0029	0.0072	0.0043	0.0101	0.0087	0.0058	0.0072
(0.1, 0.2)	0.0043	0.0014	0.0043	0.0087	0.0072	0.0101	0.0043	0.0058	0.0087	0.0072	0.0072
(0.2, 0.3)	0.0072	0.0043	0.0072	0.0043	0.0087	0.0043	0.0101	0.0029	0.0101	0.0043	0.0072
(0.3, 0.4)	0.0072	0.0043	0.0058	0.0043	0.0029	0.0058	0.0072	0.0043	0.0029	0.0072	0.0101
(0.4, 0.5)	0.0115	0.0072	0.0058	0.0072	0.0058	0.0130	0.0058	0.0087	0.0029	0.0072	0.0072
(0.5, 0.6)	0.0101	0.0014	0.0058	0.0072	0.0029	0.0072	0.0058	0.0058	0.0087	0.0072	0.0029
(0.6, 0.7)	0.0014	0.0014	0.0087	0.0043	0.0029	0.0058	0.0029	0.0043	0.0014	0.0029	0.0014
(0.7, 0.8)	0.0014	0.0000	0.0000	0.0000	0.0029	0.0014	0.0029	0.0058	0.0014	0.0072	0.0014
(0.8, 0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0029	0.0014	0.0000	0.0000	0.0029	0.0014
(0.9, 1.0)	0.0014	0.0000	0.0000	0.0000	0.0000	0.0014	0.0000	0.0000	0.0000	0.0000	0.0000
mean	0.081	-0.166*	0.044	0.002	-0.06	0.156*	0.049	0.057	0.012	0.135*	0.016

C. Relation Between the Third Factor and Variables

	Bank Loan Overdraft	Employees Total	Gross Profit/Loss Amount	Net Profit Before Taxes	Sales Revenue Amount	Total Assets Amount	Total Current Liabilities Amount	Total Liabilities Amount	Trade Credit	Trade Debtors	Working Capital Amount
(-1.0, -0.9)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(-0.9, -0.8)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0014	0.0000	0.0014	0.0014	0.0000	0.0000
(-0.8, -0.7)	Figure 10B	0.0029	0.0014		0.0014	0.0014	0.0000	0.0014	0.0029	0.0014	0.0043
(-0.7, -0.6)	0.0029	0.0101	0.0000	0.0058	0.0043	0.0000	0.0072	0.0014	0.0029	0.0043	0.0014
(-0.6, -0.5)	0.0087	0.0058	0.0000	0.0043	0.0029	0.0029	0.0014	0.0029	0.0029	0.0043	0.0072
(-0.5, -0.4)	0.0029	0.0087	0.0058	0.0072	0.0087	0.0043	0.0029	0.0014	0.0087	0.0058	0.0058
(-0.4, -0.3)	0.0058	0.0072	0.0072	0.0058	0.0014	0.0101	0.0058	0.0058	0.0072	0.0058	0.0087
(-0.3, -0.2)	0.0072	0.0058	0.0072	0.0101	0.0159	0.0072	0.0043	0.0087	0.0087	0.0072	0.0087
(-0.2, -0.1)	0.0072	0.0072	0.0087	0.0087	0.0043	0.0072	0.0144	0.0043	0.0101	0.0043	0.0188
(-0.1, -2.22e-16)	0.0130	0.0101	0.0058	0.0029	0.0029	0.0058	0.0101	0.0130	0.0058	0.0144	0.0058
(-2.22e-16, 0.1)	0.0029	0.0087	0.0014	0.0029	0.0058	0.0115	0.0115	0.0115	0.0058	0.0087	0.0072
(0.1, 0.2)	0.0087	0.0087	0.0043	0.0130	0.0058	0.0115	0.0058	0.0058	0.0029	0.0043	0.0029
(0.2, 0.3)	0.0101	0.0000	0.0101	0.0101	0.0072	0.0101	0.0043	0.0072	0.0058	0.0101	0.0087
(0.3, 0.4)	0.0029	0.0043	0.0072	0.0072	0.0101	0.0043	0.0029	0.0058	0.0072	0.0029	0.0043
(0.4, 0.5)	0.0058	0.0058	0.0058	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0014	0.0043
(0.5, 0.6)	0.0043	0.0043	0.0101	0.0043	0.0087	0.0029	0.0043	0.0087	0.0058	0.0058	0.0029
(0.6, 0.7)	0.0043	0.0000	0.0101	0.0000	0.0014	0.0072	0.0072	0.0058	0.0058	0.0058	0.0000
(0.7, 0.8)	0.0043	0.0000	0.0029	0.0029	0.0072	0.0000	0.0029	0.0029	0.0014	0.0043	0.0000
(0.8, 0.9)	0.0000	0.0014	0.0014	0.0014	0.0000	0.0000	0.0029	0.0000	0.0029	0.0000	0.0000
(0.9, 1.0)	0.0000	0.0000	0.0014	0.0014	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
mean	0.03	-0.125*	0.179*	-0.001	0.047	0.012	0.04	0.074	-0.006	0.02	-0.124*

Source: Authors' calculations.