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Modeling the Sustainability of Bank Profitability Using Partial Least Squares

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Abstract: This study sought to develop a model that can predict banks' profitability and help the corporate governing bodies of financial institutions to define strategies that address possible adverse scenarios. The partial least squares approach to structural equation model (SEM) was used to process data on the 100 largest banks in the world by volume of assets, between 2011 and 2015, as well as macroeconomic variables of the countries in which the banks were headquartered. A model able to predict the banks' profitability was created using the latent variables of capital adequacy, operations, asset quality, size, and profile of the countries in which the banks were based. The model also relied on indicators of these concepts, namely, 30 accounting, financial, and economic ratios. The results have important practical implications since they enable banks' corporate governing bodies to make decisions on issues such as size, location, or solvency and facilitate predictions of banks' profitability. In addition, the approach applied (i.e., SEM analysis) contributes to improving the methodology used in studies of the banking sector as a result of the information that the proposed model provides.

Keywords: Partial least squares (PLS); structural equation modeling (SEM); bank profitability; financial crisis; banking ratios; sustainability

1. Introduction

After the most recent financial-economic crisis's outbreak, the governments of various countries carried out financial reforms through legislation in order to strengthen banks' solvency rates. According to Baker [1], this growing trend, as seen from a political economy perspective, constitutes an effort to avoid the onset of a new crisis in the financial system. However, the reforms have translated into a crisis of trust in the banking sector, causing a liquidity crunch and disruption in the stock markets.

The bankruptcy of various global systemically important banks (G-SIBs) in 2007 affected the entire financial system worldwide, which in turn had an impact on the sustainability of global economic activity in most industries. The present study did not examine the origins of—or the factors that caused—the financial crisis or seek to identify all the measures taken to combat the crisis's effects. Instead, the objective was to create a model that would facilitate predictions of G-SIBs' profitability and that could take into account the different reforms affecting interim measures and solvency that were instituted as a result of the financial crisis. These predictions can facilitate decision making for corporate governing bodies of financial entities.

An analysis of prior studies that sought to determine which factors affect banks' profitability revealed that some researchers have focused on the relationship between profitability and economic activity [2]. Other studies have been done on profitability and banks' corporate governing bodies [3] or performance as a function of a bank's organizational structure [4]. Another common focus has

been performance and capital in the financial markets [5]. However, no prior study has attempted to combine all these variables together into a single model while taking into account the direct and indirect relationships between them.

The literature also contains much research analyzing banks from the same country or geographical area. The following studies can be highlighted as examples—for the United States (US), Serrano-Cinca and Gutiérrez-Nieto [6], for Spain, Crespí et al. [3], for Venezuela, Ayala et al. [7], for Switzerland, Dietrich, and Wanzenried [8], for Europe, Choudhry and Jayasekera [9], and for Asia, Soedarmono, Machrouh, and Tarazi [10].

The present study sought to contribute to the existing literature in three distinct ways. First, this research applied a new methodology as investigations have rarely used partial least squares (PLS) to predict banks' profitability. Second, the variables included were combined together into one model that used financial institutions' accounting and financial ratios, as well as the ratios of the countries in which these banks were headquartered, in order to predict banks' profitability. Last, the approach applied was expected to contribute to the current literature because of the quite recent period chosen (i.e., 2011–2015) with the objective of analyzing the impact of measures taken in December 2010 after the implementation of the Basel III legislation. This legislation established a set of banking regulations meant to reinforce banks' regulation, supervision, and risk management in response to the financial crisis.

The rest of this paper is structured as follows. The next section reviews the relevant literature and discusses the proposed hypotheses. The third section describes the methodology, while the fourth and fifth sections cover the results, discussion, and conclusions.

2. Literature Review and Hypotheses

2.1. Literature Review

Diverse statistical techniques have been used in the literature to explain bank profitability and to understand specific financial variables' effect on profitability, such as size, the form of organization, capital, operating ratio, or economic activity. The most commonly used method is multiple regression analysis (e.g., Beltratti and Stulz's work [5]). The cited authors reached two main conclusions, of which the first was that banks with less leverage engage in more profitable behaviors than do banks financed through short-term capital markets. The second conclusion was that the banks who perform the best are those operating in countries with major restrictions on banking activities.

In Dietrich and Wanzenried's study [8], multiple regression was combined with the generalized method of moment estimator, a technique developed by Arellano and Bover [11]. Dietrich and Wanzenried's results [8] further showed that profitability could mainly be explained by operational efficiency, a greater volume of loans, financial costs, and business models. A higher than average growth in the volume of loans positively affects banks' profitability, whilst higher financing costs negatively affect profitability. Overall, banks that depend strongly on interest income are less profitable than those with more diversified sources of income.

Regression has also been combined with survival analyses, as in the case of Berger and Bouwman's study [12], which analyzed how capital affects banks' behaviors (i.e., survival and market share). The cited research also examined how behaviors varied in banking crises, market crises, and normal periods in the US, from 1948 to 2010. Berger and Bouwman [12] reported two main findings, of which the first was that capital helps small banks increase their probability of survival and market share at all times (i.e., normal periods, banking crises, and market crises). The second finding was that capital improved the behavior of medium and large banks mainly in banking crisis periods. Crespí et al. [3], in turn, used a multinomial logit model to examine Spanish banks' corporate governing bodies. The cited authors' results show a negative correlation between performance and government intervention, but this correlation changes for each form of ownership and type of intervention. Overall, savings banks' control mechanisms proved to be the weakest.

These studies' main problem is that, although they were able to identify the factors affecting profitability, the methodologies applied did not allow analyses of all the variables in a single model. The methodologies also did not permit the creation of multiple regression models including observable and unobservable or latent variables. In the present research, the PLS technique was used, which, in addition to allowing analyses of relationships in a single model, facilitates the definition of relationships between observable and unobservable variables and predictions about the latent variable, in this case, bank profitability.

Few researchers have employed this technique in studies focusing on the banking sector. Of the existing research in this area, Serrano-Cinca and Gutiérrez-Nieto's work [6] should be highlighted. The cited authors developed a PLS regression model based on discriminant analyses, which was used to predict the financial crisis among US banks in 2008.

2.2. Factors Affecting Profitability and Proposed Hypotheses

2.2.1. Operations

Operations have previously been defined as a construct variable that measures operational efficiency. The present study employed the following observable variables to carry out adjustments: net interest margin, net interest revenue/average assets, noninterest expense/average assets, dividend payout, cost-to-income ratio, and recurring earning power. Of the research that has analyzed banking efficiency, Bautista Mesa et al. and Dietrich and Wanzenried's studies [8,13] can be highlighted. The cited authors indicate in their conclusions that operational efficiency is one of the principal factors determining banks' profitability. The first hypothesis developed for the current research was thus as follows:

Hypothesis 1. *Operational efficiency improves bank profitability.*

2.2.2. Asset Quality

Asset quality has been defined as a latent variable that analyzes the risk of credit associated with bank assets, also known as the failed debt-to-loan ratio. To determine this construct in the most exact way possible, the present study included the following financial ratios: loan loss reserves/gross loan, loan loss provisions/net interest revenue, loan loss reserve/impaired loans, impaired loans/gross loan, impaired loans/equity, and unreserved impaired loans/equity. Mostak Ahamed's [14] research is a recent example of an analysis of this variable's relationship with profitability. Asset quality thus defines each bank's credit policy. The current study formulated its second hypothesis as follows:

Hypothesis 2. *Credit risk associated with banks' assets negatively influences bank profitability.*

2.2.3. Capital Adequacy

Capital adequacy is an unobservable variable that measures banks' solvency in order to comply with liabilities and other risks. This research included the postulation that a greater acquisition of capital improves financial entities' solvency levels, thus having a positive effect on banks' operational efficiency and profitability. Among the studies that relate capital to profitability, Abad-Gonzalez and Gutierrez-Lopez's [15] work can be highlighted. The cited researchers hypothesized and found proof that banks' profitability is positively correlated to their level of solvency.

In the present study, the latent variable of capital adequacy was adjusted based on the following financial and accounting ratios: Tier 1 capital ratio, total capital ratio, equity/total assets, equity/liabilities, capital funds/total assets, and capital funds/liabilities. The third hypothesis was developed to address this variable's impact:

Hypothesis 3. *Improvements in capital adequacy positively affect operational efficiency and improve bank profitability.*

2.2.4. Size

Size has been one of the most commonly used variables in studies of banks' profitability. This variable's significance is based on the idea that the bigger these entities' size, the less exposed they are to existing credit risk and the more adequate their impaired loan provisions will be. Berger and Bouwman's research [12] stands out from the literature relating size to solvency. The cited study examined data on small, medium, and large banks, confirming that entities' size and capital contribute to improving profitability, especially in financial crisis periods.

To analyze the size construct, the present research employed the following observable variables: total assets, customer deposits plus short-term funding, net equity, and number of employees. The fourth hypothesis postulated a relationship between size and profitability:

Hypothesis 4. *Banks' size contributes to improvements in these entities' exposure to existing credit risks, thereby enhancing bank profitability.*

2.2.5. Country Profile

Some studies have related the macroeconomic variable of banks' home country to their profitability. For example, Bolt et al. [2] concluded that each percentage of contraction in countries' real gross domestic product (GDP) during economic recessions implies a decrease of a quarter of one percent in active banks' performance within those nations. To examine the latent country profile variable, the present research used the following observable variables: real GDP growth, GDP constant, GDP per capita at constant prices, budget balance, unemployment, and current account balance. The fifth hypothesis was developed to address this variable:

Hypothesis 5. *Improved macroeconomic indicators decrease banks' existing credit risk and contribute to strengthening bank profitability.*

2.2.6. Proposed Hypotheses

Figure 1 presents the proposed model structure, including the above hypotheses and type of relationship (i.e., direct or indirect) established between the latent variables.

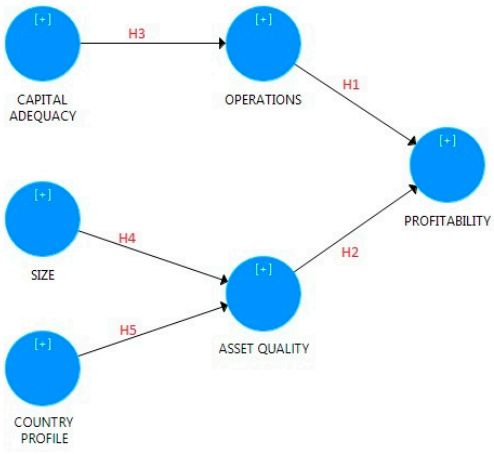

Figure 1. Proposed hypotheses.

Table 1 displays the observable variables, each of which corresponds to a construct or latent variable.

Table 1. Latent and observables variables.

Constructs	Observable Variables	Acronyms
Size	Total Assets	SZ1
	Customer Deposits & Short-Term Funding	SZ2
	Net Equity	SZ3
	Number of Employees	SZ4
Asset Quality	Loan Loss Reserve/Gross Loans (%)	AQ1
	Loan Loss Provisions/Net Internal Revenue (%)	AQ2
	Loan Loss Reserve/Impaired Loans (%)	AQ3
	Impaired Loans/Gross Loans (%)	AQ4
	Impaired Loans/Equity (%)	AQ5
	Unreserved Impaired Loans/Equity (%)	AQ6
Capital Adequacy	Tier 1 Capital Ratio (%)	CA1
	Total Capital Ratio	CA2
	Equity/Total Assets (%)	CA3
	Equity/Liabilities (%)	CA4
	Capital Funds/Total Assets (%)	CA5
	Capital Funds/Liabilities (%)	CA6
Operations	Net Interest Margin (%)	OP1
	Net Interest Revenue/Average Assets (%)	OP2
	Noninterest Expense/Average Assets (%)	OP3
	Dividend Payout (%)	OP4
	Cost-to-Income Ratio (%)	OP5
	Recurring Earning Power (%)	OP6
Profitability	Return on Average Assets (%)	PF1
	Return on Equity (%)	PF2
Country Profile	Real GDP Growth (%)	CP1
	GDP Constant (%)	CP2
	GDP Per Capita at Constant Prices (%)	CP3
	Budget Balance (%)	CP4
	Unemployment (%)	CP5
	Current Account Balance (%)	CP6

3. Materials and Methods

3.1. Selection of Structural Modeling Technique

Structural equation modeling (SEM) is a multivariate statistical analysis technique used to contrast different models that propose causal relationships between variables, as shown by Fornell and Larcker's [16] research. Jöreskog [17] developed an algorithm for estimating the maximum likelihood of structural models with latent variables and created the LISREL software package, with which researchers can conduct SEM. Subsequently, Wold [18] pointed out that Jöreskog [17] had included many restrictions due to the software's properties, which had to have specific data and sample sizes. Wold [18], therefore, developed PLS, which is characterized by a less demanding sample size that allows researchers to work with more realistic data and permits research on latent variables.

The present study used SmartPLS 3 software, which was developed by Ringle et al. [19]. This program can include both formative and reflective constructs in analyses, thereby avoiding the errors described by Diamantopoulos and Winkhofer and Jarvis et al. [20,21]. The cited authors realized they were modeling mostly reflective constructs because they were unable to add formative latent variables in order to improve on the available methodology.

Whether constructs are reflective or formative has virtually no implications for PLS-SEM, which has contributed to the relaunch of the SEM technique. The work done by Hair et al., Henseler et al., and Reinartz et al. [22–24] has been seminal in this area of research. PLS was preferred over other techniques in the present study for the following reasons:

- The model structure was extremely complex.
- A small, but representative, set of data was available.
- The presence of direct and indirect relationships was established.
- PLS works with observable and latent or unobservable variables.
- Latent variable indicators are both formative and reflective, which is why PLS was used rather than SEM alone.
- The main objective was to predict the dependent variable's behavior.

3.2. Data and Methodology

Bureau Van Dijk's Orbis Bank Focus—formerly Bank Scope—is a database on all the world's banks, which is commonly used by those doing research on banking topics. This database was used as the main source of information in the current study. The information obtained was a combination of annual reports and information from suppliers and regulatory sources. In addition, data from the Bank of Spain, European Central Bank, World Bank, International Monetary Fund, and the Federal Reserve were used.

The research population was defined as major financial entities active around the globe from 2011 to 2015. As a result, filters were established to exclude non-commercial banks and those with a smaller volume of assets. A potency test was carried out in order to minimize data loss, and the results indicated the study should focus on the 100 largest entities by total volume of assets in US dollars in 2015. Diverse studies reported in the literature have also been limited to the 100 largest banking entities, for example, Cerutti et al. and Tsai et al.'s research [25,26].

G*Power software was designed by Faul et al. and Faul et al. [27,28] to be used to calculate potency (i.e., sample size and statistical power). The program applies Cohen's criteria [29], which establish a minimum level of 80% probability to reject a null hypothesis, in order to determine the minimum sample size. In the present study, a potency of 0.8035289 was achieved, implying that the sample size was large enough for the research to continue.

The current study analyzed the main banks worldwide, which represented countries from all continents with the exception of Africa, which did not have any banks that qualified as one of the world's top 100 banks. Data from Australia, Canada, China, Denmark, France, Germany, Hong Kong, India, Italy, Japan, Luxembourg, Holland, Norway, Spain, Sweden, Switzerland, the United Kingdom, and the US were analyzed.

3.3. Proposed Structural Model

The proposed model is presented in Figure 2, in which the following independent constructs appear: capital adequacy, size, and country profile. The dependent constructs include operations, which depends directly on capital adequacy, asset quality, which depends directly on size and country profile, and profitability, which depends directly on operations and asset quality and indirectly on capital adequacy, size, and country profile. Concurrently, size and country profile are formative constructs, while capital adequacy, asset quality, and profitability are reflective constructs.

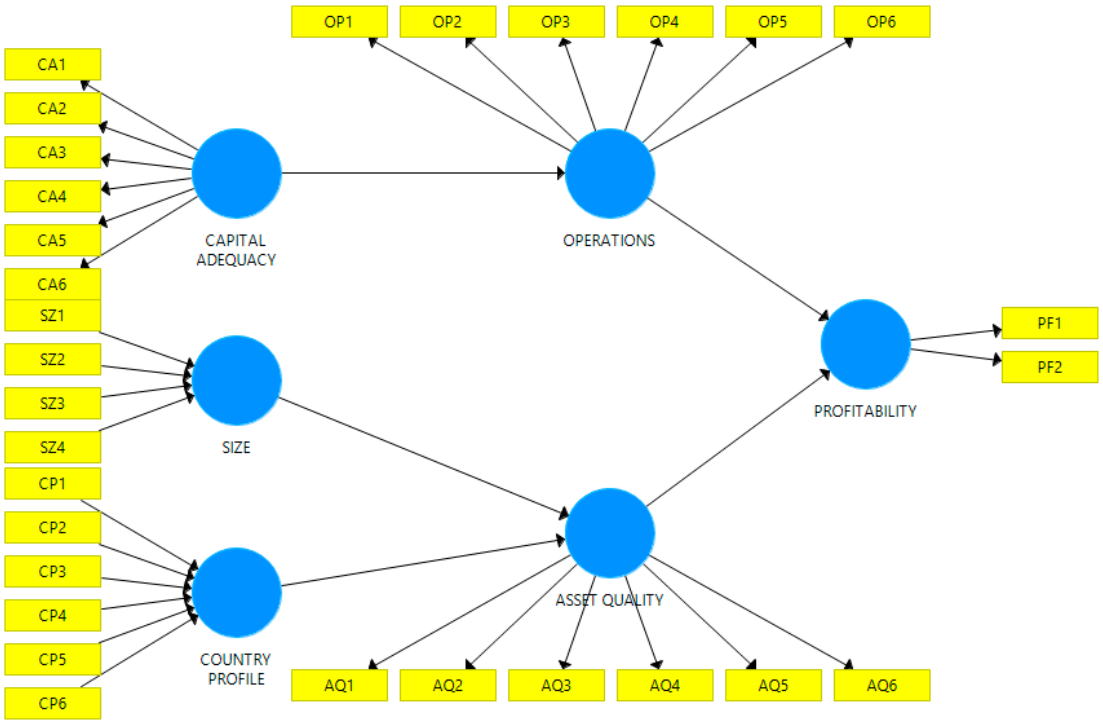

Figure 2. Proposed structural model.

4. Results and Discussion

The analyses were carried out in two stages. Confirmatory factor analysis (CFA) was first conducted to assess the measurement model's suitability, and then the constructs' validity was evaluated by means of reliability analysis, followed by convergent and discriminant validity assessments. CFA was used to verify the measurement scale's reliability and validity. The results revealed that a series of indicators needed to be eliminated, namely, AQ3, AQ6, CA5, CA6, SZ1, SZ2, SZ3, OP4, OP5, CP2, CP4, CP5, CP6, PF1, and PF2. Once these indicators were removed, the model showed an adequate specification for the proposed factorial structure.

Subsequently, an assessment was conducted of the reliability and validity of the instrument used to measure the reflective constructs (i.e., asset quality, capital adequacy, operations, and profitability). This evaluation was necessary to check that the results are shown in Table 2 comply with simple reliability criteria, including Cronbach's alpha (CA), which must be superior to 0.70, according to Nunnally and Bernstein [30]. In addition, the assessment checked composite reliability (CR), which must be higher than 0.6, according to Bagozzi [31], and convergent validity based on the average variance extracted (AVE), which must be over 0.5, according to Fornell and Larcker [16]. To evaluate the size of the factor loadings, Hair et al.'s criteria [32] were used, thus ensuring that all loadings in Table 2 are greater than 0.70.

To evaluate the model's discriminant validity, Fornell and Larcker's criteria [16] were applied in order to estimate the correlation matrix between latent variables and the heterotrait-monotrait (HT/MT) ratio of correlations [33]. Inadequate discriminant validity exists if the HT/MT ratio is over 0.85, according to Clark and Watson and Kline [34,35], or 0.90, according to Gold et al. and Teo et al. [36,37]. The present analysis found an HT/MT ratio below these values, as shown in Table 3, so the model's discriminant validity was confirmed.

Table 2. Reliability and convergent validity of the measurement instrument.

Constructs	Indicators	Loadings		Weights		*T*-Statistic	CA	CR	AVE
Asset Quality	AQ1	0.772	***			7.238	0.870	0.911	0.719
	AQ2	0.829	***			14.019			
	AQ4	0.921	***			38.059			
	AQ5	0.862	***			12.096			
Capital Adequacy	CA1	0.689	***			5.812	0.718	0.821	0.535
	CA2	0.724	***			6.048			
	CA3	0.821	***			11.918			
	CA4	0.682	***			4.165			
Size	SZ4			1.000			n/a	n/a	n/a
Operations	OP1	0.923	***			38.508	0.854	0.902	0.699
	OP2	0.910	***			33.487			
	OP3	0.693	***			8.113			
	OP6	0.798	***			11.306			
Country Profile	CP1			0.984	***	10.971	n/a	n/a	n/a
	CP3			0.971	***	10.877			
Profitability	PF1	0.957	***			111.632	0.889	0.947	0.900
	PF2	0.941	***			76.379			

Note: *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.10$, n/a = not applicable.

Table 3. Discriminant validity.

	Asset Quality	Capital Adequacy	Operations	Country Profile	Profitability	Size
Asset Quality	0.848	0.284	0.169	n/a	0.350	0.199
Capital Adequacy	0.081	0.731	0.528	n/a	0.234	0.164
Operations	0.015	0.433	0.836	n/a	0.786	0.480
Country Profile	−0.506	0.093	0.043	n/a	n/a	n/a
Profitability	−0.332	0.201	0.711	0.202	n/a	0.257
Size	−0.182	−0.131	−0.446	0.115	−0.243	n/a

Note: n/a = not applicable, values in the diagonal: square roots of AVE, below the diagonal: correlations between factors, on the diagonal: HT/MT ratios.

Finally, the bootstrapping technique was used to estimate these parameters' significance, and the Student's *t* and *p*-value were determined. A series of random samples were obtained from the original sample in order to replace it. The new samples' average values were estimated and compared with those of the original sample to assess whether the estimates of the original parameters were statistically significant. The analysis was carried out based on the following premises:

- Individual sign change is permissible, according to Hair et al. and Henseler et al.'s [23,32] criteria.
- A total of 5000 subsamples must be used, that is, a larger quantity than the original sample of 4500, to comply with Hair et al.'s [32,38] criteria.
- Each subsample's size is always that of the original sample, in accordance with Hair et al.'s [32,38] criteria.

As can be seen from Table 2 above, in all cases, a *p*-value under 0.01 was obtained, so the results support the conclusion that the parameter estimates are statistically significant.

Collinearity analysis was conducted to assess the validity and reliability of the measurement instrument for the formative constructs (i.e., size and country profile). As Table 4 shows, all the variance inflation factor (VIF) indicators are inferior to 5, so, based on Hair et al.'s criteria [38], no collinearity problem was found.

Table 4. Collinearity statistics (VIF).

Factor	Indicator	Outer VIF Value
Size	SZ4	1.022
Country Profile	CP1	2.108
	CP3	1.996

Similarly, an analysis was carried out of the relationship between the indicators' weight and load and their significance using bootstrapping. If indicators have a significant weight higher than 0.50, the indicators receive empirical support and need to be kept in the model, according to Hair et al.'s criteria [32] (see Table 2 above).

Once the measurement instrument had been refined and the structural model's evaluation was complete, the model was estimated once again, and the significance of the relationships between structures was evaluated a second time using bootstrapping. In this way, the latent dependent variables' variance explained by their predicting construct (i.e., *R*-squared [R^2]) could be examined. The results in Table 5 reveal that in no case is R^2 inferior to 0.1. In other words, the constructs' variance explained by the model is always above 0.1, thereby complying with Falk and Miller's criteria [39].

Table 5. Dependent latent variables' variance explained by constructs that predict them (R^2).

Factor	R^2	Adjusted R^2
Asset Quality	0.272	0.257
Operations	0.187	0.179
Country Profile	0.622	0.614

Given that the size of R^2 has been acknowledged to be relevant predictive criteria on numerous occasion, this study applied the blindfolding technique developed by Geisser and Stone [40,41] to evaluate the model's predictive validity. The technique required the omission of some data during estimations in the present research. This included profitability, operations, and asset quality from the latent dependent variables, as well as capital adequacy, size, and country profile from the latent independent variables. Thus, attempts were made to adjust these data using the information obtained previously. In this study, the omission distance was fixed at 7, which is a prime number between 5 and 10 that is not an exact divisor of the sample size, as required by Wold's criteria [42]. The results support the conclusion that the proposed model has predictive validity since, in all cases, Q^2 is superior to 0 (see Table 6), which fits the criteria described by Geisser and Stone [40,41].

Table 6. Predictive validity.

Factor	SSO	SSE	$Q2 = (1 - SSE/SSO)$
Asset Quality	400,000	326,676	0.183
Capital Adequacy	400,000	400,000	
Operations	400,000	348,906	0.128
Country Profile	200,000	200,000	
Profitability	200,000	93,247	0.534
Size	100,000	100,000	

Once the model had been checked for predictive validity, the structural relationships' significance was evaluated to determine which hypotheses were confirmed, by applying the previously mentioned bootstrapping technique. Based on the results (see Table 7), all the hypotheses put forward were confirmed, as no risk of rejecting a null hypothesis exists. The final adjusted model is shown in Figure 3, which includes the weight and load of each formative and reflective indicator, as well as the dependent constructs' variance explained by the variables that predict them.

Table 7. Contrast of hypotheses.

	Hypotheses	SD	Sig.	*T*-Statistic
H1	Operations -> Profitability	0.066	***	10.919
H2	Asset Quality -> Profitability	0.061	***	5.584
H3	Capital Adequacy -> Operations	0.085	***	5.102
H4	Size -> Asset Quality	0.053	**	2.390
H5	Country Profile -> Asset Quality	0.057	***	8.624

Note: SD = standard deviation, Sig. = significance, R^2 (Operations) = 0.187, R^2 (Asset Quality) = 0.272, R^2 (Profitability) = 0.622, Q^2 (Asset Quality) = 0.183, Q^2 (Operations) = 0.128, Q^2 (Profitability) = 0.534, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

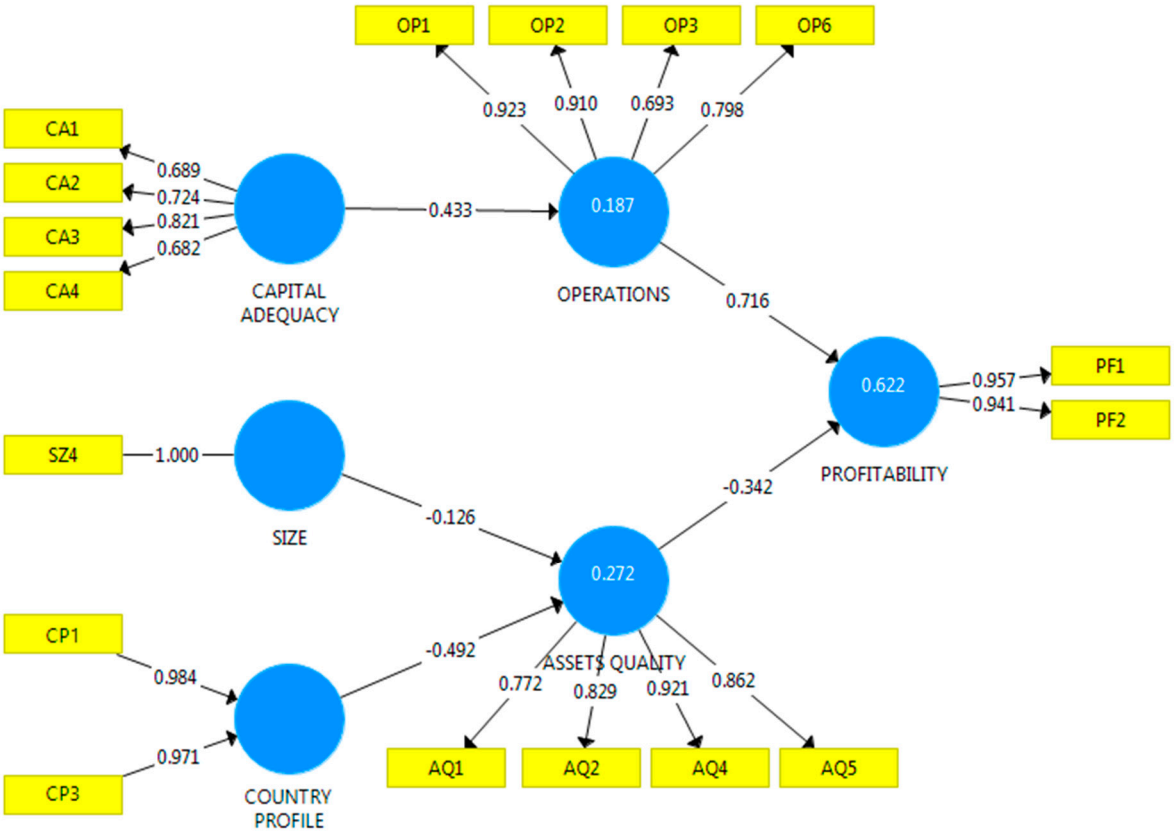

Figure 3. Estimated final model.

5. Conclusions

5.1. Implications

This research sought to use SEM to analyze factors affecting banks' profitability. The resulting model can be used to determine which constructs affect profitability in direct or indirect and positive or negative ways. Five main findings were obtained. First, operational efficiency improves bank profitability. Second, the credit risk associated with banks' assets negatively influences these entities' profitability. Third, major capital acquisitions positively affect operational efficiency and improve bank profitability. Fourth, banking entities' size contributes to improving their exposure to existing credit risk, thereby enhancing banks' profitability. Last, improved macroeconomic indicators reduce credit risk and contribute to increasing bank profitability.

The present study's results have important theoretical implications. The first is the methodology applied since previously published research has rarely used PLS to predict banks' profitability. The second implication is the variables employed, as they were combined into a single model that links financial entities' accounting and financial ratios as macroeconomic indicators. The last implication

is the period covered in order to examine the impact of Basel III legislation put into effect during December 2010, which means a quite recent period was analyzed (2011–2015).

In addition, the present research's findings have important practical implications because the new model proposed permits banks' corporate governing bodies to make strategic decisions in terms of operations, solvency, capital, size, and location and to gain more control over their banks' profitability. Variations in profitability due to changes in any of the indicators included can also be quantified.

5.2. Limitations and Future Lines of Investigation

The present study's sample was limited to the 100 most important banks worldwide in order to achieve the objectives of minimizing lost values and working with data on the largest financial entities in terms of volume of assets around the globe. Although the sample's size was confirmed as adequate by the potency test conducted, the number of banks could be expanded in future research or duplicated in studies of specific countries or regions to check if the results are consistent.

A second limitation is the period of time examined. The sustainability of banks' profitability needs to be evaluated over a longer time horizon so that crises and normal periods are also represented. The 2011–2015 period was selected because this study sought to analyze the immediate consequences of specific reforms beginning with December 2010, namely, after Basel III legislation came into force.

Future lines of investigation could include studies of specific regions. Further research can also extend the present study's approach to incorporate other variables that more closely reflect, for example, each bank's credit policy or new trends such as advances in information technology (e.g., digitalization).

Author Contributions: P.G. collected the data. P.G. and G.G. analyzed the data. The introduction and literature review were written by P.G., G.G., and V.G.-P. Materials, Methods, Results, and Discussion were written by P.G. and G.G. Conclusions were written by P.G., G.G., and V.G.-P.

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