

# **THE VIRTUOUS CIRCLE OF HUMAN RESOURCE INVESTMENTS: A PRE- AND POST-CRISIS ANALYSIS**

## **ABSTRACT**

This research proposes a dynamic model of positive feedback between human resource (HR) investments and companies' economic performance. The model assumes that HR investment increases profitability through labor productivity and in turn, profitability improves HR investment through organizational slack. Based on data from a sample of 2,497 industrial companies over a seven-year period (2005-2011), longitudinal analysis corroborates the existence of a two-way relationship between HR investment and profitability over time. However, this virtuous circle can be broken by economic crisis.

**Keywords:** strategic human resource management, human resource investments, profitability, longitudinal models, economic crisis.

# **THE VIRTUOUS CIRCLE OF HUMAN RESOURCE INVESTMENTS: A PRE- AND POST-CRISIS ANALYSIS**

## **1. INTRODUCTION**

Currently the most challenging task in the field of strategic human resource management (SHRM) is the development and assessment of an overarching causal model that relates HR investment to organizational performance (Huselid & Becker, 2011). In this literature, some researchers have called for more accurate examination of the causal relationship between practices or investments in human resources and companies' economic performance, suggesting the possibility of a two-way relationship between the two concepts (e.g., Buller & McEvoy, 2012; Huselid & Becker, 2011; Ivars & Martínez, 2015; Stirpe, Bonache, & Revilla, 2014; Wright & Haggerty, 2005). These authors argue that greater economic performance (profitability) increases companies' HR investment and, at the same time, improved levels of HR investment enhance economic performance. When causality between these two concepts works in both directions, then a virtuous circle is formed in which any improvement in one of the variables transfers to an improvement in the other (Shin & Konrad, 2017). In addition, the interrelation between profitability and HR investment is complex and not direct; in other words, it is exerted through a set of intermediate or mediating variables (Jiang, Lepak, Hu, & Baer, 2012; Huselid, 1995; Van Iddekinge et al., 2009; Wright, Gardner, Moynihan, & Allen, 2005; Wright & Haggerty, 2005). Considering mediating variables allows more thorough theoretical arguments to be articulated to explain in detail the nature of the process by which profitability and HR investment are related.

Taking the SHRM approach, the main objective of our research is to examine whether there is a virtuous circle between profitability and HR investment by considering two mediating variables (labor productivity and organizational slack) in this two-way relationship. To this end we develop two “mediating” causation hypotheses. The combination of the two will form the virtuous circle of HR investment represented in Figure 1. This shows how HR investment leads to an increase in labor productivity, which in turn encourages growth in profitability; for its part, this higher profitability generates an increase in organizational slack, which will result in increased HR investment. This process recurs cyclically over time. The second objective we aim to address is whether the two-way relationship between HR investment and profitability remains constant over time. In this study we consider whether an economic crisis, such as the crisis in Europe in 2008, might alter this two-way relationship by conducting a comparative analysis of a period of economic growth and a period of decline. As d’Arcimoles (1997) suggests, a favorable or adverse economic context may condition the relationship between HR investment and economic performance.

The study makes two main contributions. First, the potential existence of a virtuous circle denotes an important theoretical derivation with which to understand the relationship between HR management and business profitability. In particular, it advances the study of the causal relationship between HR investment and business results, already empirically analyzed in previous studies in which the two hypotheses have been observed to be antagonistic (e.g., Van Iddekinge et al., 2009; Wright et al., 2005). By simultaneously considering both the *direct causation hypothesis* (firms invest in their human resources with the aim of improving their future economic performance) and the *reverse causality hypothesis* (companies invest in people once they have achieved high economic performance), a circular relationship is suggested in which HR investment and profitability are, in turn, cause and effect at different times. Proposing and examining a virtuous circle is theoretically more interesting as it reveals

and combines these two hypotheses (Shin & Konrad, 2017; Wright & Haggerty, 2005), making it possible to reconcile two visions that were previously viewed as opposites. Second, in spite of this theoretical relevance, few empirical studies have examined in depth the presence of a virtuous circle between HR investment and organizational performance (e.g., Shin & Konrad, 2017). Therefore, our research provides new evidence on this two-way relationship, which needs to be approached from a longitudinal perspective (Buller & McEvoy, 2012; Huselid & Becker, 2011; Jiang et al., 2012).

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## **2. THEORETICAL FRAMEWORK**

### **2.1. Effect of HR investment on profitability**

The resource-based view (RBV) is one of the prevailing theoretical paradigms in the field of SHRM to explain the causal effect of HR investment on firm profitability (Buller & McEvoy, 2012; Jiang et al., 2012). This theoretical framework emphasizes the importance of a company's internal resources that, when valuable, rare, inimitable, non-substitutable and non-transferable, become its distinctive competences, capable of generating sustainable competitive advantages. The SHRM perspective argues that human resources have these characteristics (Lado & Wilson, 1994). When managers are aware and genuinely recognize people as their most important asset, they strive to attract, develop and retain employees through human resource practices or investments that enhance employees' knowledge, skills and commitment to the company. Investments aimed at enhancing human capital and employees' commitment to the organization allow the creation of a company-specific workforce, which is an inimitable and valuable asset in the form of knowledge, skills and

social relationships. Human capital and social climate of attention and commitment are, thus, considered as strategic resources and a source of competitive advantage for the company (Huselid, 1995; Lee & Miller, 1999; Miller & Lee, 2001).

In particular, companies that support and promote the value of their employees invest more in education and training, in achieving good working conditions (e.g., job security) and in relatively high remuneration (Batt & Colvin, 2011; Huselid, 1995; Lee & Miller, 1999; Miller & Lee, 2001; Roca-Puig, Beltrán-Martín, & Segarra-Ciprés, 2012; Shaw, Dineen, Fang, & Vellella, 2009). These incentives and HR investment reflect the organization's sustained commitment to its employees and its attempt to build up a large stock of human capital (Shaw et al., 2009). In addition, such investments help to improve the well-being and satisfaction of the organization's employees and create a climate of collaboration within it. The greater effort, initiative and collaboration fostered by HR investment help the company to develop its creativity and organizational learning capability, allowing it to innovate and respond effectively to increased uncertainty and competitive intensity in the markets (Miller & Lee, 2001).

In this line of research, many studies have provided empirical evidence for a positive effect of HR investment on labor productivity (e.g., Birdi et al., 2008; Datta, Guthrie, & Wright, 2005; Huselid, 1995; Shin & Konrad, 2017). These authors argue that investing in human resources helps to improve the knowledge, skills and abilities employees need to perform their tasks better, as well as giving them the motivation and opportunity to do so, which in turn, has a positive impact on labor productivity. Thus, labor productivity is an indicator of the organization's level of work efficiency, and reflects the quality of its employees' work and their effort to achieve the organization's objectives (Birdi et al., 2008; Datta et al., 2005; De Menezes et al., 2010). Consequently, labor productivity is enhanced by

HR investment aimed both at improving employee training and providing employees with competitive remuneration and greater job security (Huselid, 1995).

Likewise, the existence of a positive causal relationship between labor productivity and profitability has been widely accepted in SHRM (Jiang et al., 2012). As Huselid (1995) points out, a significant amount of the impact HR investment has on firm profitability is produced through increased labor productivity. In this vein, several researchers (e.g., Huselid, 1995; Huselid & Becker, 2011; Patterson, West, & Wall, 2004) have proposed causal models that relate HR investment to business profitability through improved labor productivity.

Investment in HR improves employees' levels of motivation, commitment and skills and, consequently, their labor productivity. In turn, the improvement of labor productivity has a positive effect on company profitability. Therefore, through labor productivity HR investment indirectly affects company profitability. Based on these arguments, we propose the following mediating hypothesis of direct causality:

*Hypothesis 1: HR investment has a positive effect on profitability mediated by labor productivity.*

## **2.2. Effect of profitability on HR investment**

In the field of SHRM, organizational slack is often the reason given to explain the causal effect of business profitability on HR investment (e.g., Huselid, 1995; Shin & Konrad, 2017; Subramony, Krause, Norton, & Burns, 2008; Van Iddekinge et al., 2009; Wright et al., 2005). It is argued that good economic results create organizational slack (Bourgeois, 1981) which companies can allocate to improving HR investment levels, through higher wages, greater job security and more training.

Bourgeois (1981) defines organizational slack as the cushion or excess of resources that allows the organization to successfully adapt to internal and external pressures and

implement strategic changes. Sharfman, Wolf, Chase, and Tansik (1988) add that to be truly effective, these resources need to be visible and perceived by managers so that they can use them in a discretionary way in the future. More recently, George (2005) and Lin, Cheng, and Liu (2009) stress that organizational slack must be potentially usable, and that managers may use their discretion to redistribute it in the pursuit of organizational goals. The availability of organizational slack and discretion in its use allow companies to stimulate (i.e., by investing more) what they consider to be priority assets for their survival.

If we understand organizational slack as the resources that give organizations sufficient autonomy to invest in what they consider to be strategic assets, then it can be argued that organizational slack plays a mediating role in the hypothesis of inverse causation. First, increases in profitability positively influence the likelihood of obtaining organizational slack, since firms that have achieved better results are under less pressure and enjoy greater financial stability (Sharfman et al., 1988). Singh (1986) finds a positive relationship between economic performance and the presence of organizational slack in companies. Second, a company with room for financial maneuver is more likely to invest in the relationship with its key stakeholders, which include its employees. The relationship with employees can be enhanced by investing in higher rewards, more training, and greater job security (Huselid, 1995). On the other hand, companies with financial difficulties are often forced to reduce costs, which in many cases affects aspects related to HR investment such as lowering or freezing wages, cutting expenditure on training, and increasing use of temporary contracting (Subramony et al., 2008; Wright et al., 2005). Thus, for example, high rates of indebtedness make managers more alert to current cash flows and they may ignore the necessary investments that, ultimately, will have an impact on the generation and maintenance of future business benefit. HR investment is frequently jeopardized in these situations, since it tends to be more volatile and vulnerable than other investment options (Fulmer & Ployhart, 2014).

Consequently, profitability indirectly affects HR investment through organizational slack. Based on the above arguments we propose the following mediating hypothesis of inverse causality:

*Hypothesis 2: Profitability has a positive effect on HR investment mediated by organizational slack.*

### **2.3. Impact of the economic crisis**

Due to its dynamic nature, the virtuous circle in the relationship between HR investment and profitability described in the previous section will be sustainable over time, unless it is affected by some external factor that might modify it, either positive or negatively. One of these factors is economic crisis (d’Arcimoles, 1997). In such circumstances, one of managers’ first reactions is to try to reduce personnel costs, that is, to disinvest in human resources (Fulmer & Ployhart, 2014; Wright et al., 2005). During an economic crisis, human resource competencies tend to be undervalued by the market, the opposite situation to what occurs in times of economic growth (Lado & Wilson, 1994). Thus, in many investment decisions other functional areas of the organization with short-term and clearer economic returns prevail over investments in human resources. Furthermore, disinvestment in human resources is especially accentuated by an economic crisis if at the same time companies have high levels of indebtedness. With less financial room to maneuver, they are less likely to invest in human resources, and objectives of financial balance will prevail over those of corporate profitability (Wright et al., 2005). Thus, it is expected that in a period of economic crisis, organizational slack will not be so intensely used for HR investment, thus making the positive indirect effect of profitability on HR investment lower than in periods of economic growth. Consequently, we propose the following hypothesis about the influence of economic crisis on the mediating hypothesis of inverse causality:



*Hypothesis 3: The positive effect of profitability on HR investment, mediated by organizational slack, is lower in a period of economic crisis than in a period of economic growth.*

Economic crisis can also influence the virtuous circle of HR investment by affecting the intensity of the mediating hypothesis of direct causality. Given the scarcity characteristic that defines strategic resources according to the RBV, in a situation of widespread company disinvestment due to an economic crisis, firms that instead adopt a strategy to maintain HR investment will enjoy a relative advantage over their competitors because by improving the labor productivity differential in relation to the companies that disinvest in human resources, their HR investment will have a comparatively greater effect on results (Greer & Ireland, 1992; Greer, Ireland, & Wingender, 2001; Ordiz-Fuertes & Fernández-Sánchez, 2003). These investments will not only enable firms to have more qualified employees during a crisis period, but will also foster a social climate of collaboration without significantly degrading the level of mutual commitment between workers and the organization.

When companies that maintain or raise their levels of HR investment coexist in a general context of disinvestment in human resources, there will be greater variety in the behaviors that favor the effectiveness of investment decisions of companies that choose to select, retain and develop employees who have the skills they need to acquire new competencies necessary for survival in a recessive and uncertain environment. This would be the case of companies that take a “countercyclical” position by not reducing, or even raising, their levels of HR investment in times of economic crisis (Greer et al., 2001). Insofar as investing in HR in times of economic crisis can be perceived as an organizational innovation, or as a reaction to an adversity that seeks to safeguard a strategic asset for the organization, the argument put forward by Greer and Ireland (1992) and Greer et al. (2001) can be applied. These authors hold that a countercyclical strategy of human resources will generate

competitive advantage for the company, which ultimately translates into an improvement of its labor productivity. Thus it is expected that in a period of economic crisis investment in human resources will be a scarcer and more valuable resource that highlights its positive effect on labor productivity and, indirectly, on profitability. It may therefore be argued that:

*Hypothesis 4: The positive effect of HR investment on profitability, mediated by labor productivity, is higher in a period of economic crisis than in a period of economic growth.*

### **3. METHOD**

#### **3.1. Sample**

The empirical study was carried out in Spain, a European country that, together with Greece, Italy, Portugal and Ireland, has been badly affected by the financial and credit crisis that began in 2008. The onset of the crisis plunged Spain into deep recession, in which the credit crunch and the loss of confidence in the financial system were transferred to the real economy in the form of lower investments by firms, lower production, and considerable job losses (McDonnell & Burgess, 2013). In addition, easily obtainable credit in the years previous to 2008 was abused to some extent, resulting in high rates of indebtedness for many companies. In Spain the unemployment rate has increased significantly and frequent changes have been made to working conditions (e.g., greater labor flexibility and wage cuts) in recent years (McDonnell & Burgess, 2013).

We use data from the ESEE (*Encuesta sobre Estrategias Empresariales*; Survey on Corporate Strategies), carried out by the SEPI Foundation (*Sociedad Estatal de Participaciones Industriales*; State Society of Industrial Participations), a public institution framed within the Ministry of Finance and Public Administration. The ESEE reference

population is Spanish manufacturing companies with 10 or more workers. One of the characteristics that distinguishes ESEE from other business surveys is its explicit objective to generate information with a longitudinal panel structure. All variables have an annual time reference. This means the SEPI Foundation, responsible for the design and control of the ESEE, must make a specific effort to refine and validate the information the company provides to ensure its quality and consistency over time. All the information contained in the ESEE is subject to validation controls and logical consistency. In our study we used ESEE data for the period 2005-2011, which covers a period of economic growth (2005-2007) and one of economic crisis (2008-2011) in the Spanish context, thus allowing comparative analysis between the two periods. All irregular and atypical cases were eliminated from the original sample of ESEE companies in the indicators used to calculate the study variables.

### **3.2. Measures**

***HR investment.*** Similarly to Shaw et al. (2009), Batt and Colvin (2011) and Roca-Puig et al., (2012), we chose human resource practices that represent investments in the human capital of employees and foster their commitment to the organization, and we combined them by calculating an aggregate index. The use of this index of incentives and investments in human resources reflects the idea that human resources management practices are of little value individually, and that their joint review is more appropriate. As in Roca-Puig et al. (2012), HR investment is calculated as the arithmetic mean of the standardized values of the average remuneration of employees, investment in training, and job security. The average remuneration is calculated as the ratio between the labor cost and the total number of employees. The labor cost includes wages and salaries, indemnities, social contributions, contributions to the pension system and other social expenses. Investment in training is calculated as the ratio of training expenditure to the total number of employees in

the company. Job security is calculated as the percentage of employees who do not have a temporary contract out of the total number of employees in the company.

**Labor productivity.** As in previous studies (e.g., Birdi et al., 2008; De Menezes et al., 2010; Stirpe et al., 2014) we use value added as a measure of labor productivity and, following d’Arcimoles (1997), we apply the ratio between value added and the number of employees. Value added is an important indicator of a company’s production since it evaluates its efficiency when considering revenues in relation to operating costs and, consequently, includes both profits and expenses associated with employee productivity. Similarly to De Menezes et al. (2010) and Huselid (1995), we consider it appropriate to use a logarithmic transformation of this indicator.

**Profitability.** To evaluate company profitability we use the return on assets (ROA) since this ratio evaluates the profitability of the business itself, eliminating the accounting distortions that occur when interest, amortizations and taxes are incorporated. This procedure allows a more homogeneous comparison between companies. In addition, this ratio has been widely used in the SHRM literature (e.g., d’Arcimoles, 1997; Ivars & Martínez, 2015; Miller & Lee, 2001). Return on assets has also been used by Daniel et al. (2004) in studying the relationship between profitability and organizational slack.

**Organizational slack.** Following the indications of Bourgeois (1981), Singh (1986) and Lin et al., (2009), we measured the level of organizational slack based on a financial ratio extracted from the company’s balance sheet. Specifically, we used the equity-to-debt ratio that represents the company’s unused borrowing capacity, which is an indicator of its financial room for maneuver and stability. As estimated by Lin, Cheng, and Liu (2009), this ratio has been widely used to assess the available potential of a firm’s organizational slack.

**Control variable.** Previous research has identified organizational size as a variable that can affect the four variables of the proposed theoretical model, namely, HR investment

(e.g., Ordiz Fuertes & Fernández Sánchez, 2003; Datta et al., 2005), labor productivity (e.g., De Menezes et al., 2010, Huselid, 1995), profitability (e.g., Huselid, 1995) and organizational slack (e.g., Greer & Ireland, 1992; Sharfman et al., 1988). We therefore introduce organizational size as a control variable. As in Datta et al. (2005) and Huselid (1995), organizational size was measured by the logarithm of the total number of employees in the company.

### **3.3. Statistical procedure**

Drawing on Shin and Konrad (2017) and Van Iddekinge et al., (2009), we designed a cross-lagged panel model with structural equation modeling. Our model contains the following features. First, we applied the principle of Granger causality for time series, which involves introducing an autoregressive coefficient into the regression equation of the four variables included in the model. Second, we specified that the proposed causal relations remain constant over time and stationarity holds in the model. Researchers often assume stationarity because the greater parsimony of the model facilitates the interpretation of the results and allows strong inferences of indirect effects to be made (Cole & Maxwell, 2003). Finally, we proposed the existence of two causal relationships with a temporary delay of one year. Specifically, a time lapse can be expected between the HR investment and the subsequent change in labor productivity (Birdi et al., 2008; Wright & Haggerty, 2005; Wright et al., 2005;), as well as between the availability of organizational slack and the subsequent HR investment (Subramony et al., 2008; Wright et al., 2005). Firms would need time to “unlock” the organizational slack before converting it into usable investments (Daniel et al., 2004). The other causal relationships of the model are stipulated as simultaneous effects, that is, the effect appears in the same year.

We use the statistical software EQS 6 to estimate the theoretical model (Bentler, 2006). So as not to bias the estimates of the parameters entailed when the classical procedures for

eliminating incomplete cases are applied (Selig & Little, 2012), we use the full information maximum likelihood estimation. The scaled chi-square for continuous non-normal data is used to assess the fit of the model, along with the Bentler-Bonett non-normed fit index (BBNFI), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA). We also present the non-standardized estimated parameters, together with the robust test statistic ( $p$ ). Finally, the analysis comparing pre-crisis and post-crisis periods is performed by computing a significance test on the difference between scaled chi square statistics (Crawford & Henry, 2003).

#### **4. ANALYSIS AND RESULTS**

First, we examine the theoretical model proposed for the full seven-year period (2005-2011). Table 1 reports the descriptive statistics of the four variables used in this model at each of these moments. Note that the method of missing cases allows us to take advantage of all the available information on the 2,497 ESEE companies for that period, of which 759 companies present complete information in all the years and the remaining 1,738 have some missing values.

We obtained acceptable values in accordance with the usual criteria applied to evaluate the goodness of fit of a model to the data (scaled  $\chi^2 = 2,953.3$  d.f. 547, BBNFI = 0.950, CFI = 0.954, RMSEA = 0.042). Table 2 shows that the four causal relationships making up the two-way relationship between HR investment and profitability are positive and statistically significant (0.054; 0.326; 0.111; 0.004). In addition, the analysis of the basic hypotheses postulated in this study reveals a positive indirect effect, mediated through labor productivity, of HR investment on profitability (0.017).

Hypothesis 1 of our study is therefore supported. Likewise, the results also verify a positive indirect effect of profitability on HR investment (0.005), mediated via organizational

slack, thus confirming Hypothesis 2 of reverse causality. The empirical evidence therefore demonstrates the existence of a virtuous circle between HR investment and profitability.

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To verify any possible differences in the effect of HR investment on profitability (Hypothesis 4) between the pre-crisis and crisis periods, we estimate a less constrained model in which the effect of HR investment on labor productivity differs between the two periods. This model presents similar fit indexes (scaled  $\chi^2 = 2,952.8$  d.f. 546; BBNFI = 0.950; CFI = 0.954; RMSEA = 0.042) to the one estimated earlier. The test of the difference between the scaled chi square statistics of these two models (scaled difference = 1.212; d.f. 1; chi square probability = 0.270) shows no variation in the effect of HR investment on labor productivity between the growth and the economic crisis periods; Hypothesis 4 of our study is therefore rejected. Table 3 shows that the indirect effect of HR investment on profitability is positive and significant in both time periods.

Similarly, in order to test for any differences in the effect of profitability on HR investment before and during the economic crisis (Hypothesis 3), a less restricted model was estimated in which the effect of organizational slack on HR investment is different between those two time periods. This model presents acceptable fit indexes (scaled  $\chi^2 = 2,948.8$  d.f. 546; BBNFI = 0.950; CFI = 0.954; RMSEA = 0.042). The test of the difference between the scaled chi square statistics of these two models (scaled difference = 3.669; d.f. 1; chi square probability = 0.055) indicates variation in the effect of organizational slack on HR investment

between the growth period (0.056;  $p < 0.01$ ) and economic crisis (0.032;  $p > 0.1$ ). In addition, as Table 3 shows, this difference means that the indirect effect of profitability on HR investment during the period of economic growth is significant (0.006), while it is no longer so during the crisis period (0.004). Hypothesis 3 of our study is therefore corroborated.

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**5. CONCLUSION**

In this research we have proposed a dynamic model to analyze the relationship between companies' HR investment and their economic profitability. Specifically, this model poses that HR investment will improve future employee labor productivity, which translates into increased business profitability and hence, available financial resources. In turn, improved financial resources will allow the company to reinvest its surplus in improving its human resources in the future. This process of positive feedback between HR investment and business profitability generates a virtuous circle. The empirical verification of the model confirms the existence of a two-way causal relationship between HR investment and business profitability, mediated by labor productivity and organizational slack. In other words, the mediating hypothesis of direct causality and the mediating hypothesis of inverse causality are simultaneously confirmed.

The analysis of these causal relationships in two contrasting time periods, one of economic growth and the other of economic crisis, reveals a significant difference. Our analysis confirms that the economic crisis interrupted the relationship between organizational slack and HR investment, thus breaking the virtuous circle. While the intensity of the positive effect (via improved labor productivity) of HR investment on profitability remains constant



throughout the time period analyzed (2005-2011), the positive effect of profitability on HR investment, through the use of organizational slack, disappears with the economic crisis (2008-2011). This shows that the two-way relationship between human resources and business profitability is unstable, evidencing changes in the transition from one period of economic growth to one of economic crisis. This research allows us to highlight some theoretical implications and answer several practical questions for human resources management.

### **5.1. Theoretical implications**

As in Shin and Konrad's (2017) work, our study justifies and provides empirical evidence of a two-way relationship between HR investment and organizational performance, which has only been postulated briefly and fairly generically in the SHRM literature (e.g., Becker & Huselid, 2006). The study specifically delves into the relationship between HR investment and profitability, and examines the presence of a feedback loop between these two variables, introducing at the same time two mediating variables (labor productivity and organizational slack) that thoroughly explain the grounds of this two-way relationship. On this basis, we can construct a comprehensive framework that explains in more detail the mechanisms involved in the relationship between HR investment and economic profitability.

As in the studies of Jiang et al. (2012) and Patterson et al. (2004), our results suggest that labor productivity acts as a mediating variable between HR investment and profitability. Moreover, our study confirms the argument put forward by authors such as Huselid (1995), Subramony et al. (2008), and Wright et al. (2005) that organizational slack, derived from good economic results, is what allows companies to pay their employees competitive salaries, improve their job security and reinforce their training. In short, our results support the importance of introducing variables that mediate between HR investment and business

profitability, as proposed by authors such as Jiang et al. (2012) and Wright and Haggerty (2005).

From a comparative point of view, our results show that in times of economic crisis, companies disinvest in human resources, thus supporting the thesis defended in previous studies (e.g., McDonnell & Burgess, 2013; Wright et al., 2005). Human resources do not seem to be an investment priority during crisis periods, since there is no evidence of a significant impact of organizational slack on HR investment. Although previous research has shown that the availability of organizational slack is a precedent of HR investment (e.g., Ordiz-Fuertes & Fernández-Sánchez, 2003), according to our results this proposition is confirmed only in a period of economic growth. Our research suggests that in periods of economic crisis, competitive pressure and reduced financial resources mean companies do not reinvest a significant part of their financial resources in improving their human capital. As Fulmer and Ployhart (2014) point out, this kind of investment is often more volatile and vulnerable than other investment options. However, we found no empirical evidence to suggest that because investment in employees is a scarcer and more valuable resource in periods of economic crisis, its positive effect on corporate profitability is greater in times of crisis than in periods of economic growth, as Ordiz-Fuertes and Fernández-Sánchez (2003) and Greer et al. (2001) have argued. The intensity of the positive effect of HR investment on profitability remains constant throughout the period analyzed in our study (2005-2011).

## **5.2. Implications for practice**

Our results may have some important implications for business practice. First, the longitudinal analysis of HR investment and profitability uncovers an economically attractive two-way relationship that is sustainable over time. Most profitable companies invest more in human resources because they have organizational slack and, in turn, companies that invest more in human resources are more profitable due to their higher labor productivity. This

economic cycle of HR investment may be motivated either by a proactive approach to human resources, in which managers genuinely prioritize human capital and employees' organizational commitment as a company strategic resource to be leveraged and invested in, or by the availability of financial resources at a certain point in time that enable companies to make this investment. Whatever the initial motive, the virtuous cycle proposed in this research encourages companies to sustain this investment over time due to the positive economic return it generates. Considering human resources as an asset with an unquestionable strategic value for the company means that, as with any other asset, continuous uninterrupted investment is necessary in order to maintain and improve its competitive position (Huselid, 1995).

On the other hand, we have found that during a period of economic crisis, our results are consistent with the widespread strategy in many companies of reducing HR investment by increasing their use of temporary contracting, and reducing salary and training costs. Several authors (e.g., d'Arcimoles, 1997; Fulmer & Ployhart, 2014; Van Iddekinge et al., 2009) have suggested that the lack of research objectively analyzing the economic value of HR investment makes it difficult for managers and investors to clearly discern the extent to which sustainable improvement of business profitability is due to this type of investment. This contribution is usually not visible in the company's financial statements, and is therefore less likely to be taken into account by decision-makers in an organization. Consequently, it is subject to a greater risk than investment in other formally evaluated resources. There is therefore a need for studies such as the present one that demonstrate the economic return of these investments and that are based on financial information extracted from companies' financial statements. As Fulmer and Ployhart (2014) conclude, marginalizing or ignoring the economic evaluation of HR investment could have negative consequences, such as managers' perceptions that the requirements from human resources management are less important than

those proposed by other disciplines such as accounting or finance, which have a clearer and more understandable economic value.

### **5.3. Limitations and future research**

The virtuous circle of human resources proposed in this research should be considered as an initial model, a first step that future work can develop by introducing new variables, either at the organizational level (e.g., business strategy, staff turnover) or at the individual level (e.g., employee satisfaction). In this respect, studies such as those of Batt and Colvin (2011), Buller and McEvoy (2012) and Subramony et al. (2008) can serve as guidelines. Our study was carried out exclusively at the organizational level. Future research, insofar as it incorporates variables at the individual level, may adopt a multilevel analysis approach in which employees' perceptions are integrated with those of the organization. Integrating the two perspectives could help advance the field of SHRM. Finally, it would be interesting to examine whether the virtuous circle of human resources also occurs in other geographical contexts or in other sectors of activity, such as in the service sector. In short, the study of the virtuous circle of HR investment presents an attractive research challenge for the future.

### **5.4. Conclusion**

In summary, our study aims to contribute to the dilemma of causality between HR investment and business profitability, proposing a two-way causal relationship between the two concepts. The study empirically demonstrates the existence of this relationship. We also show that when compared with a period of economic growth, the positive indirect effect of profitability on HR investment is not only lower in an economic crisis period, but it is also no longer significant, whereas the positive indirect effect of HR investment on profitability is not altered by the emergence of an economic crisis.

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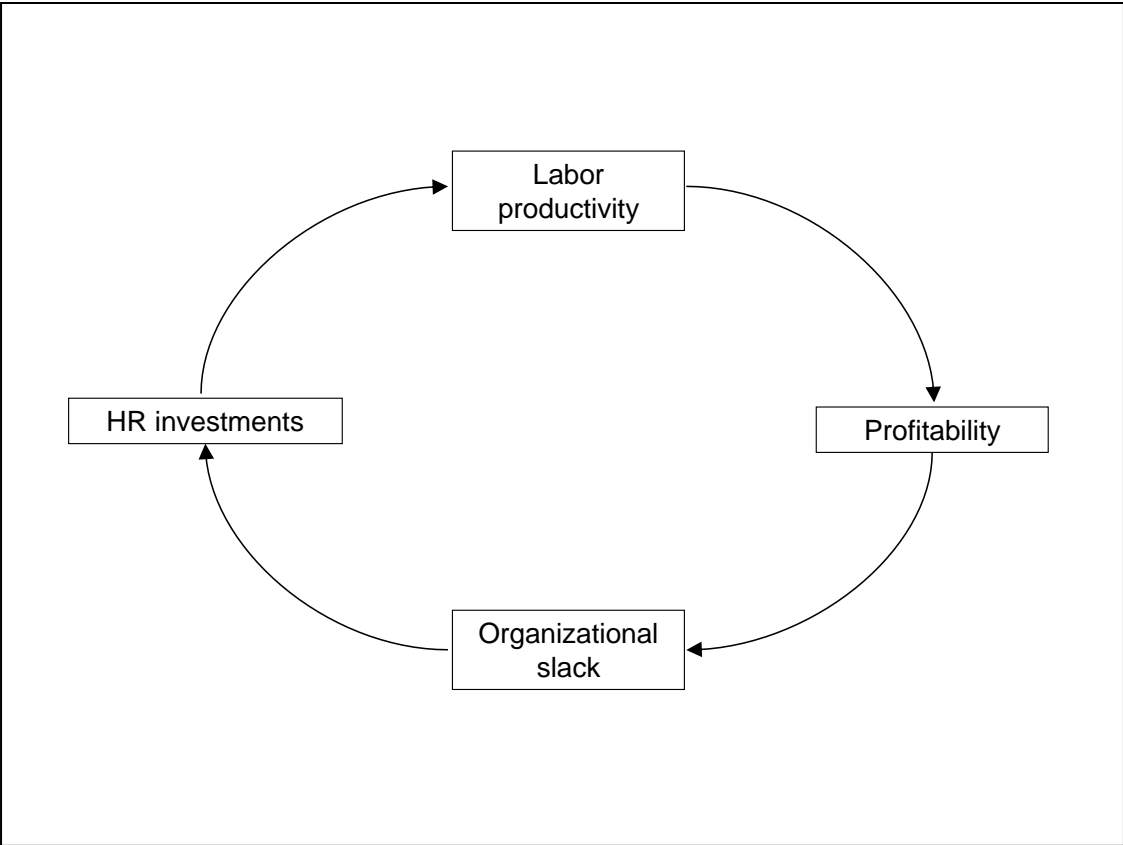
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**Figure 1.** Theoretical model



**Table 1. Univariate statistics**

	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7
HR	1. 1,586	1. 1,676	1. 1,659	1. 1,644	1. 1,668	1. 1,682	1. 1,508
investment	2. 0	2. 0	2. 0	2. 0	2. 0	2. 0	2. 0
	3. 0,693	3. 0.690	3. 0.684	3. 0.678	3. 0.678	3. 0.692	3. 0.684
Labor	1. 1,583	1. 1,670	1. 1,650	1. 1,635	1. 1,652	1. 1,662	1. 1,495
productivity	2. 1,559	2. 1.551	2. 1.598	2. 1.600	2. 1.576	2. 1.585	2. 1.577
	3. 0.276	3. 0.303	3. 0.269	3. 0.281	3. 0.296	3. 0.288	3. 0.313
Profitability	1. 1,548	1. 1,620	1. 1,605	1. 1,587	1. 1,586	1. 1,605	1. 1,440
	2. 0.120	2. 0.124	2. 0.131	2. 0.110	2. 0.080	2. 0.080	2. 0.074
	3. 0.184	3. 0.212	3. 0.178	3. 0.169	3. 0.170	3. 0.164	3. 0.157
Organizational	1. 1,547	1. 1,622	1. 1,605	1. 1,586	1. 1,587	1. 1,603	1. 1,440
slack	2. 0.425	2. 0.419	2. 0.418	2. 0.452	2. 0.460	2. 0.457	2. 0.467
	3. 0.227	3. 0.230	3. 0.226	3. 0.238	3. 0.238	3. 0.237	3. 0.240
Organizational	1. 1,586	1. 1,675	1. 1,659	1. 1,644	1. 1,668	1. 1,682	1. 1,507
size	2. 1.785	2. 1.750	2. 1.755	2. 1.743	2. 1.705	2. 1.692	2. 1.690
	3. 0.627	3. 0.610	3. 0.607	3. 0.601	3. 0.636	3. 0.580	3. 0.591

Note. 1. Sample size; 2. Mean; 3. Standard deviation.

**Table 2. Results for the period 2005-2011 ( $N = 2,497$ )**

<b>Causal relationships</b>	<b>Parameter estimates</b>
HR investment $_t \rightarrow$ Labor productivity $_{t+1}$	0.054***
Labor productivity $_t \rightarrow$ Profitability $_t$	0.326***
Profitability $_t \rightarrow$ Organizational slack $_t$	0.111***
Organizational slack $_t \rightarrow$ HR investment $_{t+1}$	0.044***
Organizational size $_t \rightarrow$ HR investment $_t$	0.071***
Organizational size $_t \rightarrow$ Labor productivity $_t$	0.055***
Organizational size $_t \rightarrow$ Profitability $_t$	-0.050***
Organizational size $_t \rightarrow$ Organizational slack $_t$	-0.004**
HR investment $_t \rightarrow$ HR investment $_{t+1}$	(0.771 – 0.883)***
Labor productivity $_t \rightarrow$ Labor productivity $_{t+1}$	(0.523 – 0.713)***
Profitability $_t \rightarrow$ Profitability $_{t+1}$	(0.197 – 0.327)***
Organizational slack $_t \rightarrow$ Organizational slack $_{t+1}$	(0.868 – 0.917)***
Organizational size $_t \rightarrow$ Organizational size $_{t+1}$	(1.001 – 1.006)***
<i>Indirect effects</i>	
HR investment $_t \rightarrow$ Labor productivity $_{t+1} \rightarrow$ Profitability $_{t+1}$ (H1)	0.017***
Profitability $_t \rightarrow$ Organizational slack $_t \rightarrow$ HR investment $_{t+1}$ (H2)	0.005***

Note. Data correspond to the respective Time ( $t$ ). Autoregression coefficients are not equal over time and therefore the range of variation (minimum - maximum) reached during the analyzed period is shown in parenthesis.

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

**Table 3. Parameter estimates for the different time periods**

<b>Indirect effects</b>	Pre-crisis	Post-crisis
HR investment $t \rightarrow$ Labor productivity $t+1 \rightarrow$ Profitability $t+1$	0.023***	0.014***
Profitability $t \rightarrow$ Organizational slack $t \rightarrow$ HR investment $t+1$	0.006**	0.004

\*p<0.10; \*\*p<0.05; \*\*\*p<0.01