Corporate Governance Changes, New Institutional ownership structures and specific investments The case of listed firms in Iberoamerican stock exchanges

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Abstract

The research aims to highlight the relationships of traditional and new ownership structures, like corporate governance's changes, on information technology (IT) investments for firms listed on Iberoamerican stock markets after the global financial crisis. The study uses a neo-institutional economic framework to show changes in corporate governance through ownership structures (including new institutional investors of common ownership such as Fidelity Investments, The Vanguard Group, State Street and BlackRock) as well as IT investments growth in Iberoamerica. Besides, a literature review addresses the relationship between corporate governance and IT investment considering the relevance of the concentrated ownership, foreign ownership and institutional investors of common ownership in relation to IT investment levels to raise the hypotheses. The study has a longitudinal method design with 2009-2015 period, using firms listed in stock market of Chile, Colombia, Mexico, Peru (MILA) and Spain (IBEX). The findings demonstrate that IT investment growth is negatively affected by concentrated ownerships and top foreign ownership , this last as unexpected situation, while it is positively affected by the new institutional investors of common ownership.

JEL Classification: B52, C33, G34, G32, G23, M15

Keywords: *Institutional Theory, Corporate Governance, Ownership Structure, Institutional Investors, IT Investments.*

Introduction

Estudiar sobre las inversiones que las empresas realizan en capital tecnológico, principalmente en tecnología de información (TI), sigue siendo una cuestión importante de dirección estratégica (Sabherwal, Sabherwal, Havakhor, & Steelman, 2019). En la práctica, las empresas han invertido ampliamente en tecnología de información, y esta tendencia continúa hoy (Kappelman et al., 2019). Por tal motivo, los estudios de las inversiones de TI han sido un campo fructífero. Por un lado, con un enfoque dirigido a comprender como estas inversiones de TI afectan el rendimiento empresarial (Brynjolfsson & Hitt, 1996; Dehning & Richardson, 2002; Dehning, Richardson, & Stratopoulos, 2005; Lim, Dehning, Richardson, & Smith, 2011). Por otro lado, cómo estas inversiones de TI se gobiernan desde las estructuras, procesos o relaciones para su implementación estratégica (Peterson, 2004; Sambamurthy & Zmud, 1999; Weill, 1992; Wu, Straub, & Liang, 2015). A pesar de ello, los estudios de inversiones de TI como consecuencia de mecanismos internos de gobierno corporativo siguen siendo tema de discusión (Drnevich & Croson, 2013; Gurbaxani & Whang, 1991; Henderson & Venkatraman, 1992), en donde aún se han desarrollado pocos estudios empíricos considerando principalmente la estructura de propiedad (Choi, Park, & Hong, 2012; Ho, Tian, Wu, & Xu, 2017; Ho, Wu, & Xu, 2011; Loh & Venkatraman, 1993; Ravichandran, Han, & Hasan, 2009; Zhang & Huang, 2012) y, sin ser ajenos a considerar economías emergentes (Choi et al., 2012; Ho et al., 2011).

Además, debido a la estrecha relación de las tecnologías de información con el problema de agencia como mitigador de la asimetría de información (Eisenhardt, 1989; Gurbaxani & Whang, 1991; Jensen & Meckling, 1976), luego de cada crisis global, como la dot.com o la crisis financiera mundial, la discusión académica resalta la necesidad de profundizar la relación entre gobierno corporativo y tecnologías de información con los niveles más altos de decisión, inclusive, contando con los consejos de administración (Andriole, 2009; Nolan & Mcfarlan, 2005), así como las causas de la inversión de TI en otras regiones bajo otras perspectivas de enfoque institucional (Rojko, Lesjak, & Vehovar, 2011).

Por tales razones, la principal motivación de este documento es investigar si los cambios en gobierno corporativo, a través de la estructura de propiedad, afectan los niveles de inversiones de TI en el contexto iberoamericano. Podemos hablar de tres razones importantes que subrayan este objetivo.

Primero, bajo una perspectiva de nueva economía institucional (Coase, 1998; North, 1986; Williamson, 2000), el crecimiento de las inversiones específicas tecnológicas ha permitido reflexionar sobre los cambios organizacionales por la reducción de los costos de agencia y los costos de transacción de las corporaciones (Gurbaxani & Whang, 1991). De hecho, como fue mencionado anteriormente, esta búsqueda por comprender la naturaleza de las inversiones de TI llevó a estudiar su impacto en el rendimiento empresarial (Lim et al., 2011), así como el gobierno que habilite su implementación estratégica (Wu et al., 2015), pero más concretamente sobre las consecuencias de los mecanismos internos de gobierno corporativo como los consejos de administración y las estructuras de propiedad (Ho et al., 2011). De esto último, los académicos tomaron el enfoque tradicional de estructuras de propiedad como la concentración mayoritaria o los propietarios familiares (Ho et al., 2017; Loh &

Venkatraman, 1993), la propiedad extranjera (Ho et al., 2011) y los inversionistas institucionales (Ravichandran et al., 2009).

Segundo, sobre la perspectiva antes mencionada, el análisis comparativo institucional (Aoki, 2001) amplía el alcance para estudiar otros contextos con sus propias reglas y creencias como las economías en desarrollo a lo largo del tiempo, además del crecimiento de nuevos inversionistas institucionales promotores del cambio de las estructuras organizacionales con impacto en el rendimiento económico y empresarial (Bushee, 2004; Bushee & Noe, 2000; Ferreira & Matos, 2008; Gillan & Starks, 2000; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1998). De hecho, los académicos estudiaron, a parte de las tradicionales estructuras de propiedad, categorías de inversores institucionales para comprender su impacto (Bushee, 1998; Johnson & Greening, 1999; Porter, 1992), diferenciando los inversores institucionales dedicados (a largo plazo) de los inversores institucionales temporales (a corto plazo). Sin embargo, estos enfoques dejaron la ventana abierta a un tipo de inversor institucional que surgió en economías desarrolladas como empresas de gestión de inversión extranjera pasiva (Crane & Crotty, 2018) con accionistas activos (Appel, Gormley, & Keim, 2016; McCahery, Sautner, & Starks, 2016; Strampelli, 2018), denominados cuasi-indexadores (Bushee, Carter, & Gerakos, 2014; Chen, Huang, Li, & Shevlin, 2018) o de propiedad común (Posner, Scott Morton, & Weyl, 2017; Wang & Barrese, 2019). Estas empresas como Fidelity Investments, The Vanguard Group, State Street y BlackRock, vienen creciendo y reconfigurando las nuevas estructuras de propiedad corporativas a través de la gestión de activos como fondos negociados en bolsa (Wang & Barrese, 2019) a través de un control común con alto riesgo de posibles problemas de concentración que podrían desencadenar una futura crisis económica (Brancaccio, Giammetti, Lopreite, & Puliga, 2018), incluso expandiendo este crecimiento a contextos de economías en desarrollo.

Tercero, considerando un análisis histórico comparativo institucional, el contexto iberoamericano se vuelve un prometedor campo de estudio tanto de la evolución del gobierno corporativo (Briano-Turrent & Rodríguez-Ariza, 2016; Kabbach de Castro, Crespí-Cladera, & Aguilera, 2013; Saona & San Martín, 2018) como de las inversiones de TI (Hofman, Aravena, & Aliaga, 2016; Malaquias & Albertin, 2018). De hecho, parte de los cambios institucionales de las economías desarrolladas han sido adoptadas por economías en desarrollo como las de américa latina con fuerte conexión ibérica por España. Además, en los últimos años posterior a la crisis financiera mundial, una consolidación institucional económica emerge desde dicha región, denominada la Alianza del Pacífico, la cual incorpora la primera integración de mercados bursátiles en américa latina (MILA), incluyendo a Chile, Colombia, México y Perú.

Por estas razones, y considerando que América del Norte y Europa tienen influencia directa en Iberoamérica, el estudio plantea la siguiente pregunta ¿Qué ocurre en Iberoamérica respecto de los efectos de las tradicionales y nuevas estructuras de propiedad sobre los niveles de inversión de TI? Por lo que para responder esta pregunta planteamos algunos puntos de investigación.

Primero, el estudio desarrolla un marco institucional del caso iberoamericano. Debido a la importancia de establecer una conexión entre la perspectiva neo institucional económica y la realidad

iberoamericana, el estudio desarrolla un análisis histórico comparativo institucional (Aoki, 2001). Este análisis contempla la evolución del gobierno corporativo desde la mirada de las políticas, reglas y estructuras de propiedad, así como de la inversión de TI en Iberoamérica.

Segundo, el estudio aborda una revisión de literatura del gobierno corporativo y la inversión de TI para enfocar claramente cómo los estudios en inversión de TI inician su relación con los mecanismos internos de gobierno corporativo (Loh & Venkatraman, 1993), hasta los últimos estudios con estructuras de propiedad desde una perspectiva institucional (Ho et al., 2017). Esta revisión permite plantear las hipótesis entre las estructuras de propiedad basadas en propiedad concentrada, propiedad extranjera y de inversionistas institucionales con los niveles de inversión de TI.

Tercero, el estudio plantea un diseño metodológico longitudinal con data del periodo 2009 al 2015 con empresas que cotizan en los mercados bursátiles de Chile, Colombia, México, Perú y España. Además, la fuente principal de los tipos de estructura de propiedad y las inversiones de TI provienen de Datastream y colección manual de los reportes anuales en gobierno corporativo de cada Supervisor de Mercado de Valor por país.

Cuarto, la contribución del estudio, a nivel académico, radica en enriquecer, desde la teoría institucional, la evidencia dejada por los estudios en gobierno corporativo e inversión de TI (Drnevich & Croson, 2013), considerando otros tipos de estructuras de propiedad no contempladas previamente, así como el desglose de niveles de inversión de TI, junto con una mirada institucional que se atreve a comparar países con condiciones comunes en su crecimiento. Asimismo, a nivel práctico, el estudio espera contribuir a los profesionales de TI como de negocios a considerar la importancia ampliamente discutida de que las inversiones de TI también son competencia de los altos niveles de decisión de las organizaciones más allá de la gestión.

An Institutional Framework in the Iberoamerican Case

Hitherto, the world is changing and Iberoamerica has gone through several institutional changes in recent decades. In fact, several Latin American emerging economies followed part of the good practices in corporate governance due to their firms' financing tended to be internal, concentrated or by over-controlled banks (Shleifer & Vishny, 1997). For instance, many countries had to overcome in the nineties macroeconomic problems improving their public and private institutions, such as their capital markets, introducing better rules to welcome institutional investors such as pension funds or mutual funds (Lefort & Walker, 2000) and, to reduce the agency problem between controlling and minority shareholders (Cueto, 2013; Lefort, 2005).

Moreover, in this regional context, one of the main problems that these countries began to face was the assumption of new leadership structures based on the privatization of former state-owned enterprises, as part of their financial restructuring and capital need (Chong & Lopez-de-Silanes, 2004). These changes generated a great stimulus to new national policies and regulations that adopted new corporate governance standards in the public and private sector due to world changes (e.g. OECD, World Bank,

Sarbanex-Oxley act, among others), creating even regional corporate governance networks (Bedicks & Arruda, 2005).

These changes allowed the growth from several countries, consolidating economic alliances such as Mercosur (1991) or Unasur (2004) or their relationships with countries from other regions. However, after the global financial crisis of 2008, only some Latin American countries consolidated their economic institutional changes, creating the Pacific Alliance and within it the first Stock Markets Integration in Latin America (MILA). For these reasons, a representative scope to study the Iberoamerican case are the Pacific Alliance countries, because they represent almost 50% of the Latin American GDP plus Spain. Besides, the study considers Spain because of the economic-commercial relationships with these countries, as well as the socio-cultural features and constraints, being a relevant reference in the region, sharing investments, common knowledge and even some subsidiary firms created at MILA group.

Hence, this empirical study is based on the listed firms of Spain (IBEX) and the countries of Chile, Colombia, Mexico and Peru, as MILA group from the Pacific Alliance. Currently, these countries are among the most liberalized in this region. In fact, Chile has 26 free trade agreements linked to 64 countries. Moreover, Peru has 21 free trade agreements linked to 50 countries. Meanwhile, Mexico and Colombia have 20 free trade agreements each, linked to 46 and 34 countries, respectively. In addition, Chile and Mexico are part of the OECD and, Colombia and Peru have applied to be members. Moreover, MILA countries have maintained stable and positive sovereign ratings in the long term, much better than other countries from the region, according to the three main credit rating agencies (Standard & Poor's, Moody's, Fitch), thus justifying our interest in this Iberoamerican case.

For instance, recently, part of scholar empirical studies has focused on understanding from an institutional perspective the concentration of the ownership structures, for example, as family owners, in Latin America and Iberoamerica, including Spain (Briano-Turrent & Rodríguez-Ariza, 2016; Galve-Górriz & Hernández-Trasobares, 2015; Kabbach de Castro et al., 2013; Saona & San Martín, 2018). And only one study of those highlights the importance of foreign ownership and new different types of institutional investors (Kabbach de Castro et al., 2013). In that sense, these last decades have been times of financial innovation and economic cultural changes where Iberoamerica has not been oblivious. Notably the movement from defined-benefit pension schemes to defined-contribution retirement plans sponsored by employers. Such changes have fed the growth of a new institutional investment firms (Posner et al., 2017). Indeed, the firms Fidelity Investments Inc. and The Vanguard Group, have enjoyed strong recognition since their beginnings and together to BlackRock Inc. and State Street in these last years, reporting over $15.5 trillion characterized as assets under management (Wang & Barrese, 2019). These institutional investors when managing important assets begin to own a significant part of firm shares that are listed on stock markets, called common ownership, so that economists have begun to study the consequences of this reality (Pozen & Harnacher, 2011; Yadav, 2018).

Even this progress makes of the relationship between these internal mechanisms of corporate governance and IT investments a new field to study for the region.

In fact, regarding investment in information technologies in Iberomerica, recent studies speak of significant growth and contribution in the region (Hofman et al., 2016; Malaquias & Albertin, 2018). For instance, one study compares developed economies with developing economies, and Latin American countries had similar IT investments growth ratios to Spain or Italy, as a percentage of total fixed capital formation, with upward trends since twenty years ago and positive contributions in all sectors of economy activity (Hofman et al., 2016). In addition, the findings of other study at the corporate level are that listed firms committed to IT investments have a larger participation of institutional investors compared to other listed firms (Malaquias & Albertin, 2018).

Thus, in this research, the main interest is to determine what ownership structures, as internal mechanisms of corporate governance, affects the returns on IT investments in firms listed on Iberoamerican stock exchanges, related to the Pacific Alliance (MILA) and Spain (IBEX), after the global financial crisis of 2008.

Corporate Governance and IT Investment

Los estudios sobre gobierno corporativo y tecnologías de información tienen su origen desde la consolidación de la teoría de agencia relacionada a la teoría de la firma (Jensen & Meckling, 1976), en donde los costos de información o búsqueda y, costos de toma de decisiones basado en costos computacionales, refuerzan la comprensión de la asimetría de información como parte del problema de principal-agente (Fama, 1980). Desde una perspectiva económica, este umbral permitió a los académicos proponer cómo las inversiones de tecnologías de información crecían creando valor a las empresas, por lo que estas inversiones ya no eran una competencia exclusiva de los departamentos de tecnología, sino también de los altos niveles de dirección (Porter & Millar, 1985). Asimismo, estas tecnologías de información podían relacionarse con los contratos basados en comportamiento u objetivos entre principal-agente reduciendo la asimetría de información (Eisenhardt, 1989); considerando que, los costos de coordinación interna o costos de agencia y, los costos de coordinación externa o costos de transacción se reducen significativamente con una inversión estratégica de las tecnologías de información (Gurbaxani & Whang, 1991).

Adicionalmente, los estudios en inversiones de tecnologías de información ampliaron su alcance. Por un lado, los académicos fortalecieron los estudios del efecto de las inversiones de tecnologías de información sobre el rendimiento de la empresa, rompiendo con la pasada paradoja de la productividad (Brynjolfsson & Hitt, 1996; Dehning & Richardson, 2002; Dehning et al., 2005; Lim et al., 2011). Por otro lado, los estudios plantearon la relación, a modo de alineamiento, de la estrategia corporativa y la estrategia de tecnologías de información (Henderson & Venkatraman, 1992), deviniendo en el planteamiento de un gobierno de tecnología de información (Loh & Venkatraman, 1992) y, abriendo paso a la relación empírica entre el gobierno corporativo y la inversión de tecnología de información (Loh & Venkatraman, 1993).

Sin embargo, respecto de un gobierno de tecnología de información, los académicos profundizaron los estudios desde una perspectiva de eficiencia operativa y proyectos (Drnevich & Croson, 2013), investigando una gobernabilidad más orientada a las contingencias, estructuras, procesos y relaciones para alinear los objetivos corporativos con la gestión de tecnología de información y el rendimiento empresarial (Peterson, 2004; Sambamurthy & Zmud, 1999; Weill, 2004).

A pesar de lo anterior, los planteamiento y discusiones para el estudio de un gobierno corporativo relacionado a la inversión de TI crecieron. De hecho, después de la crisis del dot.com se iniciaron las discusiones sobre el rol del consejo de administración respecto de las inversiones de TI (Huff, Maher, & Munro, 2006; Kambil & Lucas, 2002; Nolan & Mcfarlan, 2005). Asimismo, después de la crisis financiera mundial los estudios empíricos retomaban, desde una perspectiva institucional, el efecto de las estructuras de propiedad sobre las inversiones de TI (Ravichandran et al., 2009) o considerando bajo la teoría de agencia al consejo de administración y la estructura de propiedad como variables que moderan el retorno de las inversiones de TI en un mercado emergente (Ho et al., 2011). Complementariamente, otro estudio consideró los índices de gobernabilidad (G-index) sobre el retorno de la inversión específica de TI como un ERP (Zhang & Huang, 2012). O bajo teorías de agencia y dependencia de recursos, viendo los efectos de las estructuras de propiedad sobre el rendimiento de inversión de TI (Choi et al., 2012). Incluso, recientemente, bajo teoría institucional destacando la concentración de propiedad familiar sobre la sobreinversión o subinversión de TI (Ho et al., 2017).

Además, desde la reflexión de diferentes perspectivas teóricas, se consideró a las teorías basadas en gobernanza, de importante necesidad para profundizar los efectos del gobierno corporativo sobre las inversiones de tecnología de información, integrando tanto las visiones de la academia de sistemas de información con las de economía empresarial (Drnevich & Croson, 2013). Asimismo, sobre una base institucional de organizaciones multi-negocio, otro estudio propone cómo un nivel corporativo y una unidad estratégica de negocio podrían evidenciar diferencias respecto de los tipos de inversiones de TI (Reynolds & Yetton, 2015).

De los recientes estudios, un marco neo-institucional económico se fortalece como perspectiva apropiada para retomar las investigaciones empíricas que han prestado limitada atención a qué estructuras de propiedad determinan los niveles de inversión de TI en diferentes contextos (Choi et al., 2012; Ho et al., 2017, 2011; Ravichandran et al., 2009; Zhang & Huang, 2012).

De hecho, uno de los estudios evidenció que las presiones institucionales, definidas en parte por los grandes accionistas institucionales en la estructura de propiedad, ejercen influencia significativa positiva sobre las inversiones de TI (Ravichandran et al., 2009); discutiendo incluir al consejo de administración como parte de este efecto proveniente de la estructura de propiedad. En esa línea, otro estudio empleando un mercado emergente evidenció que la estructura de propiedad definida por inversionistas extranjeros, así como la independencia del consejo de administración, generan un efecto significativo sobre el retorno de inversión de TI en empresas pequeñas dentro de industrias altamente competitivas (Ho et al., 2011); discutiendo considerar en estudios futuros otras características del consejo de administración y

de la estructura de propiedad. Complementariamente, otro estudio emplea el índice de buen gobierno corporativo (G-índex) por parte de las empresas sobre el retorno de sus inversiones específicas de TI basadas en ERP (Zhang & Huang, 2012); evidenciando qué empresas con mejor gobierno corporativo supervisan al CEO o TMT más eficazmente reduciendo los problemas de agencia, asegurando que las primeras decisiones de inversión y procesos posteriores a la implementación sean monitoreados apropiadamente.

Del mismo modo, otra investigación, realizada en un mercado emergente, amplió los estudios de estructura de propiedad sobre el rendimiento de tecnología, empleando, por un lado, la teoría de agencia para separar los niveles de concentración de propiedad y los tipos de propiedad interna o de inversionistas institucionales, y de otro lado, la teoría de dependencia de recursos para separar los tipos de propiedad estatal o extranjera (Choi et al., 2012). Los resultados evidenciaron que principalmente los inversionistas institucionales, así como la propiedad extranjera ejercen un efecto positivo significativo sobre el rendimiento de tecnología, mientras que los otros tipos de propiedad no son significativos para este contexto. Sin embargo, las discusiones sugieren probar en futuras investigaciones la concentración o no de propiedad en otros mercados emergentes y la teoría basada en costos de transacción económica junto con análisis institucionales comparativos como una perspectiva más sólida de estudio.

Recientemente, un último estudio tomando como base la teoría institucional, pone a prueban que los impactos en el rendimiento de las inversiones de tecnología de información están condicionadas a la concentración de propiedad (Ho et al., 2017). Respecto de esto último, el estudio evidencia que a menor concentración de propiedad tiende a crecer una sobreinversión de TI, mientras que, a mayor concentración de propiedad, relacionada a propiedad familiar, tiende a crecer una subinversión de TI. Estos resultados respaldan la idea que mientras el principal sea más propenso al riesgo, invertirá más, respecto de un principal más adverso al riesgo, en donde reducirá sus inversiones.

Por todas estas razones, el estudio considera que la perspectiva institucional ofrece una alternativa integral para estudiar qué tipo de estructuras de propiedad determinan los cambios en los niveles de inversión de TI bajo diferentes contextos a través del tiempo.

Concentrated Ownership

Beyond the principle of separation between ownership-control (Berle & Means, 1932), one of the most discussed characteristics in ownership structure is the concentration (Aguilera & Crespi-Cladera, 2016; Edmans, 2014; Shleifer & Vishny, 1997). In fact, in ownership concentration large shareholders or blockholders not only have outright firm control with 51% or more ownership. In different contexts , in different contexts, it represents the institutional presence of family structures, state institutions or institutional investors (Thomsen & Pedersen, 2000). Further, blockholders on corporate governance give rise to a diverse literature, related to several topics in financial economics and management, denominated in some cases a principal-principal problem (Kabbach de Castro et al., 2013; Young, Peng, Ahlstrom, Bruton, & Jiang, 2008).

On one hand, theoretical models examine topics such as the free-rider problem, informed trading and market microstructure, strategic information transmission, the trade-off between the ex post costs and ex ante benefits of monitoring, and the role of incentives (Edmans, 2014; Shleifer & Vishny, 1986, 1997; Young et al., 2008). On the other hand, empirical studies have linked blockholdings to both corporate finance outcomes (such as firm value, profitability, leverage, investment, among others) and financial market variables (such as liquidity and price informativeness), analyzing the market reaction to block trades, and the private benefits of control (Lins, 2003).

As large shareholders controlling corporate operations, these powerful and dominant shareholders have stronger incentives to monitor and advice properly the manager investment decisions in the firm interest (Aguilera & Crespi-Cladera, 2016). Even more, its interest tends to be higher over the short-term than the long-term. Thus, in the case of IT investments, which generally have long-term results, the performance could be different by such presence. For these reason, we present the following hypothesis:

H1: The IT investment changes for listed Iberoamerican firms are negatively affected by concentrated ownership.

Top Foreign Ownership

Firms with foreign ownership search superior technological, organizational, and financial resources (Douma, George, & Kabir, 2006). These institutions can have different investment horizons and are oriented towards stock market-based measures of performance. Indeed, foreign ownerships come from portfolios with large number of investments in different industries to obtain the benefits associated with a diversified investment portfolio (Douma et al., 2006). In addition, foreign institutional investors tend to have longer investment horizons than individual investors, which decreases stock turnover (Huang & Shiu, 2009). Thus, the presence of foreign owners in the firm is highly valued.

Despite that, there are claims that domestic investors in developing economies establish overseas companies, registered as foreign investment firms, and then used them to invest in their local stock markets. This problem is more severe for small firms, because are more illiquid and attract less public scrutiny. If the seemingly genuine foreign investment affect small firms, then they will not should show a positive relationship between foreign ownership and firm performance, since the locals firms lack the foreigners' know how and resources. For instance, to examine the foreign ownership-performance relation, studies divide the samples into big and small firms (Huang & Shiu, 2009).

On the other hand, the advantages will be sustainable as long as linked to the institutional context. As consequence of imperfections in capital, labor, and technological markets, foreign shareholders are, relative to domestic shareholders, in a better position to exploit their advantages (Chhibber & Majumdar, 2005). Furthermore, countries with stronger shareholder rights and judicial systems, government incentives and higher levels of economic development attract higher levels of foreign capital (Aggarwal, Klapper, & Wysocki, 2005).

Consequently, the direct relation between foreign ownership and firm performance is consistent with a prior research in developing economies (Tan, 2002), in addition, a last study contributes to the literature by showing a significant and positive interaction between foreign ownership and IT investment for listed small firms in a developing economy (Ho et al., 2011). According to that, foreign investors may inject IT expertise that is likely to be applicable across industrialized and developing economies. Hence, foreign ownership may help small firms to deploy IT more effectively.

H2: *The IT investment changes for listed Iberoamerican firms are positively affected by top foreign ownership.*

Institutional Investors with Common Ownership

Literature on institutional owners is rapidly evolving. Existing studies note that institutional owners affect the corporate policies of those firms in which they invest in research and development (Aghion, Van Reenen, & Zingales, 2013; Bushee, 1998), in corporate governance and payout policy (Aggarwal, Erel, Ferreira, & Matos, 2011; Appel et al., 2016; Crane, Michenaud, & Weston, 2016), among others.

Just recently, studies have also begun to consider the effects that institutional investors may have on the interaction among those firms where institutional investors hold equity stakes at the same time. Topics already approached include the effect of common ownership on mergers and acquisitions (Harford, Jenter, & Li, 2011; Matvos & Ostrovsky, 2008) and on industry competition (Azar, Schmalz, & Tecu, 2018; He & Huang, 2017). In this common ownership literature, researchers have also identified BlackRock, and a few legal journals have extended the linkage to groupings of institutional investors, specifically, Fidelity Investments Inc., The Vanguard Group, BlackRock Inc. and State Street (Yadav, 2018).

Thus, the institutional investors' behavior gives rise to another ownership pattern recently studied. Individuals who invest with mutual funds or institutional investors are less interested in the performance of a specific firm than in the aggregate performance of a grouping of firms represented in the fund portfolio. The large concentration of wealth held in these funds gives opportunities for the funds to concentrate on any one firm (Wang & Barrese, 2019).

The role of institutional investors in corporate governance is changing. A review of the 20-year period prior to 2000 claims, "despite the substantial growth of institutional ownership of corporations ... there is little evidence that institutional investors have acquired the kind of concentrated ownership positions required to be able to play a dominant role in the corporate governance process" (Edwards & Hubbard, 2000). For these reasons, its present the following:

H3: *The IT investment changes for listed Iberoamerican firms are positively affected by common ownership.*

Methodology

Design and Sample

The study is a non-experimental longitudinal design based on panel data with firms listed on stock exchange markets from 2009 to 2015. The stock exchange markets used are the MILA group (Chile, Colombia, Mexico and Peru) and the IBEX (Spain). The MILA group exists after the global financial crisis as part of the Pacific Alliance creation. In addition, the study includes Spain because it is the most influential country in the Latin American region with his firms present through branches and local firms in the MILA's countries.

The selection criteria for the observations was the following: companies founded in their own country where they started their initial public offering, with complete information since the global financial crisis and with common industries in the five countries. More specifically, these observations included seven common industries in the studied countries.

Regarding the data collection, we reviewed the firms listed on each stock exchange market. Likewise, the study reviewed each superintendence of stock exchange market to download the audited annual reports by firm for the selected years. Further, the study collected information on corporate governance, financial statements and balance sheets with Bloomberg Terminal, Thomson Reuters Eikon and Economatica platforms to contrast the data.

Measurements

Regarding the measurements, the dependent variable is the IT investment. The measurement is related to the growth rate. Considering the seminal empirical paper of corporate governance on IT investment (Loh & Venkatraman, 1993), The study takes as an IT investment the spending in hardware, software, personnel, projects, consulting and service contracts .

The independent variables are related to the property structure. The first independent variable is the concentrated ownership. This variable is widely discussed in various empirical studies, where its orientation tends to be related to risk aversion or more control by the principal on the agent's decisions, for instance, to invest on IT. The second variable is the top foreign ownership. Although the variable that is discussed in this field is usually the total foreign ownership of the firm that contributing positively to the agent's decisions as IT investment, the study considers only from the top shareholders in order to reflect if there is any variation in this field towards IT investments. Finally, the third variable is the institutional investors of common property. Here the study considers the participation of Fidelity Investments Inc., The Vanguard Group, BlackRock Inc. and State Street.

In relation to the control variables, they are divided into three types. The first type corresponds to the corporate governance variables represented by the top shareholders, family shareholders, and the board independence. The second type corresponds to the variables related to the investment represented by the growth in research and development, the growth based on sales, the return on sales, the debt ratio (leverage) and the firm size. Finally, the third type corresponds to the variables related to the context

represented by the industry, the country and the years. According to the study, the main measurements are the following.

Variable	Definition	Data Source
IT investment	a) Annual IT spending growth rate, % change of annual IT spending amount by firm. b) Annual IT spending amount, measured as proportion of net sales due to annual IT investment index (Kapelmann et al., 2019, 2018, 2017, 2016, 2014, 2013)	Thomson Reuters Eikon / Bloomberg Terminal
Concentrated Ownership	Dummy that capture the percentage of common stock outstanding held by the top shareholders with more than 50% of firm participation.	Audited Annual Reports
Top Foreign Ownership	Dummy that capture the percentage of common stock outstanding held by the top shareholders with foreign participation.	Audited Annual Reports
Common Ownership (Institutional Investor)	Percentage of common stock outstanding held by institutional investor with common ownership members (Fidelity Investments, The Vanguard Group, State Street, BlackRock)	Thomson Reuters Eikon
Top Shareholders	Percentage of common stock outstanding held by the top ownership members.	Thomson Reuters Eikon / Audited Annual Reports
Family Shareholders	Dummy that capture the percentage of common stock outstanding held by family members.	Audited Annual Reports
Board Independence	Proportion measured as the number of independent directors serving on the board divided by the board size.	Thomson Reuters Eikon / Audited Annual Reports
Δ R+D	Annual R+D spending growth rate based on percentage change of annual R+D spending amount by firm.	Thomson Reuters Eikon / Bloomberg Terminal
Δ Net Sales	Annual growth rate of net sales	Thomson Reuters Eikon / Bloomberg Terminal
Return on Sales (ROS)	Annual ratio of operating profit to net sales	Thomson Reuters Eikon / Bloomberg Terminal
Leverage	Financial leverage, measured as long-term debt divided by total assets	Thomson Reuters Eikon / Bloomberg Terminal
Firm Size	Firm size, measured as the natural logarithm of total assets	Thomson Reuters Eikon / Bloomberg Terminal
Industry	Industries according to Standard Industrial Classification (SIC) code. 1=Agriculture, Forestry and Fishing (0100-0999); 2=Mining (1000-1499); 3=Construction (1500-1799); 4=Manufacturing (2000-3999); 5=Transportation, Communications, Electric, Gas and Sanitary service (4000-4999); 6=Retail Trade (5200-5999); 7=Finance, Insurance and Real Estate (6000-6799)	Standard Industrial Classification
Country	Countries analized. Peru=1, Chile=2, Mexico=3, Colombia=4, Spain=5	MILA and IBEX
Years	Study years (from 2009 to 2015)	

Descriptive Analysis: General

For research purposes, the study proceeds with a descriptive analysis by year, country and industry.

Panel A: Firms distribution by country over time

Year	Chile	Colombia	Mexico	Peru	Spain	Total
2009	78	21	62	99	48	**308**
2010	78	21	62	99	48	**308**
2011	78	21	62	99	48	**308**
2012	78	21	62	99	48	**308**
2013	78	21	62	99	48	**308**
2014	78	21	62	99	48	**308**
2015	78	21	62	99	48	**308**
Total	546	147	434	693	336	**2,156**

Panel B: Industry distribution by country

	Chile		Colombia		Mexico		Peru		Spain		Total	
Industry	N	%	N	%	N	%	N	%	N	%	N	%
Agriculture, Forestry and Fishing (SIC 0100-0999)	49	0.09	0	0.00	28	0.06	35	0.05	7	0.02	**119**	0.06
Mining (SIC 1000-1499)	28	0.05	7	0.05	14	0.03	112	0.16	14	0.04	**175**	0.08
Construction (SIC 1500-1799)	56	0.10	28	0.19	21	0.05	56	0.08	56	0.17	**217**	0.10
Manufacturing (SIC 2000-3999)	126	0.23	7	0.05	126	0.29	168	0.24	56	0.17	**483**	0.22
Transportation, Communications, Electric, Gas and Sanitary service (SIC 4000-4999)	126	0.23	49	0.33	28	0.06	77	0.11	119	0.35	**399**	0.19
Retail Trade (SIC 5200-5999)	98	0.18	7	0.05	91	0.21	35	0.05	21	0.06	**252**	0.12
Finance, Insurance and Real Estate (SIC 6000-6799)	63	0.12	49	0.33	126	0.29	210	0.30	63	0.19	**511**	0.24
Total	546	1.00	147	1.00	434	1.00	693	1.00	336	1.00	**2,156**	1.00

Panel C: IT investment growth rate by country over time

	Chile			Colombia			Mexico			Peru			Spain			Total		
Year*	N	mean	s.d.	N	mean	s.d.	N	mean	s.d.	N	mean	s.d.	N	mean	s.d.	N	mean	s.d.
2010	77	0.38	1.20	19	0.36	0.61	60	0.23	0.23	98	0.29	0.29	43	0.01	0.16	297	0.27	0.67
2011	77	0.13	0.30	21	0.28	0.80	62	0.10	0.20	99	0.12	0.22	44	0.08	0.30	303	0.12	0.32
2012	77	0.55	0.47	21	0.53	0.43	62	0.47	0.31	99	0.67	1.02	48	0.36	0.22	307	0.54	0.66
2013	77	0.45	2.57	21	0.17	0.58	62	0.08	0.14	99	0.04	0.21	48	0.00	0.13	307	0.15	1.31
2014	77	0.01	0.29	21	0.11	0.16	62	0.07	0.13	99	0.08	0.33	48	0.14	0.52	307	0.07	0.32
2015	77	-0.10	0.17	21	0.01	0.53	62	-0.06	0.12	99	-0.04	0.22	48	0.00	0.43	307	-0.05	0.27
Total	462	0.24	1.20	124	0.24	0.57	370	0.15	0.26	593	0.19	0.53	279	0.10	0.35	1828	0.18	0.72

*Year 2009 was not used for the models due to calculate the growth rate, because it is necessary to extract the IT spending from

According to the results, the trend of IT investment growth is clear after the global financial crisis. However, after three years, this trend decreases, contracting even in some countries. In addition, these specific investments show differences according to the ownership structures identified.

Descriptive Analysis: Concentrated Ownership

Differences in means based on independent variables describe whether the dependent and control variables are likely to show significant differences between two groups. For the study, and following the institutional framework, these groups represent institutional characteristics that define a firm. From the first test based on concentrated ownership (and dispersed as opposition) are the IT investment, the top shareholders, the board independence, and the firm size the variables that show significant differences. The negative differences indicate that the average towards the concentrated ownership is lower than when it is with dispersed ownership.

	Dispersed Ownership (N=972)		Concentred Ownership (N=1174)		Differences in Means	
Variable	mean	s.d.	mean	s.d.	t-test	s.d.
IT investment (spending)	217.292	539.95	149.658	408.97	**-67.634*****	[20.518]
Δ IT investment	0.183	0.52	0.186	0.85	0.003	[0.034]
Top Shareholders	0.304	0.13	0.747	0.17	**0.443*****	[0.007]
Family Shareholders	0.298	0.46	0.267	0.44	-0.032	[0.019]
Board Independence	0.343	0.22	0.301	0.23	**-0.042*****	[0.010]
Δ R+D	0.069	2.06	0.153	0.87	0.084	[0.072]
Δ Net Sales	0.071	2.12	1.001	25.79	0.930	[0.841]
Return on Sales (ROS)	0.403	6.08	-0.099	8.53	-0.502	[0.327]
Firm Size (ln Total Assets)	7.759	2.03	7.358	1.88	**-0.401*****	[0.085]
Leverage	1.161	5.69	1.035	4.78	-0.127	[0.227]

Significance levels are boldfaced at * p<0.05, ** p<0.01, *** p<0.001.
Standard errors of t-test in brackets.

Descriptive Analysis: Top Foreign Ownership

In the case of the test based on the top foreign ownership (and top local ownership as opposite), the IT investment as spending, the top shareholders, the family shareholders, the board independence and the firm size show significant differences. In this case, IT investment, top shareholders and board independence have positive differences towards top foreign ownership. Contrary situation regarding family ownership and the firm size.

	Top Local Ownership (N=1605)		Top Foreign Ownership (N=541)		Differences in Means	
Variable	mean	s.d.	mean	s.d.	t-test	s.d.
IT investment (spending)	161.254	411.21	236.714	620.73	**75.460*****	[23.515]
Δ IT investment	0.190	0.80	0.169	0.39	-0.021	[0.038]
Top Shareholders	0.526	0.26	0.609	0.29	**0.084*****	[0.013]
Family Shareholders	0.349	0.48	0.079	0.27	**-0.269*****	[0.022]
Board Independence	0.309	0.22	0.355	0.24	**0.046*****	[0.011]
Δ R+D	0.104	1.75	0.146	0.48	0.041	[0.082]
Δ Net Sales	0.733	22.15	0.129	0.38	-0.604	[0.964]
Return on Sales (ROS)	0.197	8.63	-0.072	1.91	-0.269	[0.374]
Firm Size (ln Total Assets)	7.643	1.84	7.234	2.27	**-0.409*****	[0.097]
Leverage	1.124	4.84	0.998	6.19	-0.126	[0.260]

Significance levels are boldfaced at * p<0.05, ** p<0.01, *** p<0.001.
Standard errors of t-test in brackets.

Descriptive Analysis: Institutional Investor with Common Ownership

Finally, in the test based on institutional investors with common ownership (as opposed to firms without this institutional investor), the variables IT investment such as spending and growth, the top shareholders, family shareholders, board independence, firm size and leverage show significant differences. For this test, IT investment as spending, family ownership, board independence, firm size and leverage have positive differences related to common-owned institutional investors. Contrary situation regarding top shareholders and IT investment growth.

	Without Common Ownership (N=1220)		With Common Ownership (N=926)		Differences in Means	
Variable	mean	s.d.	mean	s.d.	t-test	s.d.
IT investment (spending)	34.539	69.98	371.875	670.05	**337.336*** **	[19.343]
Δ IT investment	0.216	0.88	0.145	0.43	**-0.071** **	[0.034]
Top Shareholders	0.595	0.28	0.483	0.24	**-0.111*** **	[0.012]
Family Shareholders	0.241	0.43	0.334	0.47	**0.093*** **	[0.019]
Board Independence	0.280	0.24	0.373	0.20	**0.093*** **	[0.010]
Δ R+D	0.130	2.01	0.096	0.45	-0.034	[0.072]
Δ Net Sales	0.215	2.92	1.045	28.67	0.831	[0.844]
Return on Sales (ROS)	-0.047	8.46	0.360	6.08	0.408	[0.328]
Firm Size (ln Total Assets)	6.465	1.45	8.954	1.62	**2.489*** **	[0.067]
Leverage	0.909	5.09	1.331	5.36	**0.422***	[0.228]

Significance levels are boldfaced at * p<0.05, ** p<0.01, *** p<0.001.
Standard errors of t-test in brackets.

These descriptions show that institutional characteristics of firms based on their ownership structures determine significant differences in aspects of corporate governance and IT investments principally. With these descriptions, the results below attempt to define the control variables use that will accompany the models on each ownership structure raised as hypothesis.

Results

In previous tests on significant differences based on ownership structures, mainly IT investment and corporate governance variables show significant differences, while those related to sales and research and development do not. Despite this, in the correlation analysis, the control variables of R&D growth, net sales growth and return of sales have significant relations with the IT investment.

In fact, the results show that R+D growth and the net sales growth have a significant positive relationship with the IT investment growth. In contrast, the return on sales has a negatively significant relationship with the IT investments growth.

On the other hand, regarding the independent variables of ownership structure, although they do not have significant levels on IT investment growth, their relationships are positive. However, in the rest of the control variables, the relations on IT investment are negative, except the board independence.

Correlation Analysis

	mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12
1. Δ IT investment	0.185	0.72	1											
2. Concentrated Ownership	0.547	0.50	0.004	1										
3. Top Foreign Ownership	0.256	0.44	0.018	-0.048	1									
4. Common Ownership (Institutional Investor)	0.038	0.06	0.005	**-0.180*** **	0.041	1								
5. Top Shareholders	0.547	0.27	-0.021	**0.837*** **	-0.039	**-0.196*** **	1							
6. Family Shareholders	0.281	0.45	-0.031	**0.110** **	**-0.143*** **	0.046	0.041	1						
7. Board Independence	0.320	0.23	0.009	**-0.094** **	**0.132*** **	**0.148*** **	**-0.092** **	0.069	1					
8. Δ R+D	0.115	1.53	**0.865*** **	-0.001	0.001	-0.003	-0.025	-0.046	0.019	1				
9. Δ Net Sales	0.581	19.15	**0.109** **	0.016	0.000	0.008	-0.007	-0.035	0.006	**0.121*** **	1			
10. Return on Sales (ROS)	0.129	7.52	**-0.080***	-0.036	-0.033	-0.029	-0.010	-0.017	-0.018	**-0.071***	0.037	1		
11. Firm Size (ln Assets)	7.539	1.96	-0.050	0.053	0.064	0.013	**0.141*** **	**-0.090***	**0.126*** **	**-0.073***	-0.045	-0.049	1	
12. Leverage	1.092	5.21	-0.063	0.015	-0.019	-0.019	0.042	-0.030	0.002	-0.062	-0.043	-0.011	**0.104** **	1

Correlation figures are boldfaced if significan at * p<0.05, ** p<0.01, *** p<0.001

Ownership Structures on IT Investment Growth

After the correlation analysis, the regression models of the data panels show results that open the discussion on the subject.

First, the first model offers the control variables proof on IT investments. The results show that the variables of top shareholders, R+D growth, net sales growth, return on sales and firm size have significant effects on IT investment. Of these, only R+D growth has positive effect.

	Dependent Variable: Δ IT Investment			
	(1)	(2)	(3)	(4)
	Control	H1	H2	H3
Independent Variable:				
Top Shareholders *Concentrated Ownership (d)		**-0.193**** **(-2.42)**		
Top Shareholders *Foreign Ownership (d)			**-0.170*** **(-1.75)**	
Institutional Common Ownership				**0.288**** **(1.98)**
Control Variable:				
Top Shareholders	-0.191*** (-2.65)	-0.198* (-1.68)	-0.198* (-1.68)	-0.030 (-0.34)
Family Shareholders (d)	0.070 (1.13)	0.070 (1.13)	0.070 (1.14)	-0.027 (-0.74)
Board Independence	-0.073 (-1.12)	-0.073 (-1.11)	-0.075 (-1.16)	-0.009 (-0.18)
Δ R+D	0.906*** (27.46)	0.906*** (27.44)	0.906*** (27.45)	0.875*** (26.25)
Δ Net Sales	-0.010** (-2.13)	-0.010** (-2.13)	-0.010** (-2.12)	-0.010 (-1.56)
Return on Sales (ROS)	-0.004*** (-4.23)	-0.004*** (-4.24)	-0.004*** (-4.26)	-0.003*** (-10.97)
Firm Size (ln Total Assets)	-0.102*** (-2.74)	-0.102*** (-2.74)	-0.103*** (-2.75)	-0.020 (-0.68)
Leverage	0.000 (0.47)	0.000 (0.47)	0.000 (0.48)	-0.001*** (-2.90)
Fixed Effect:				
Industry (SIC)	YES	YES	YES	YES
Country	YES	YES	YES	YES
Year	YES	YES	YES	YES
N	1795	1795	1795	800
df_m	12	13	13	13
df_r	307	307	307	153
F	194.188	180.247	180.672	510.49
p	0.000	0.000	0.000	0.000
r2_w	0.882	0.882	0.882	0.914
r2_b	0.559	0.559	0.554	0.916
r2_o	0.815	0.815	0.814	0.913

Marginal effects; t statistics in parentheses
(d) for discrete change of dummy variable from 0 to 1
* p<0.1, ** p<0.05, *** p<0.01

Regarding the second model, it retains the same control variables with significant levels on IT investment growth. On the concentrated ownership side, it shows effects with negatively significant levels on IT investments. This confirms the institutional implications of concentrated ownership structures, in which, under their power and control, the principals can demonstrate their risk aversion by conditioning the agent's decision to low IT investment. In that sense, the hypothesis ***H1 is supported***.

Similarly, the third model shows that the control variables of the first and second models maintain significant levels in IT investments. Likewise, the main foreign ownership structure, as an institutional feature, has an important negative effect on the growth of IT investment. This result demonstrates that foreign ownership does not necessarily positively affect investments. Possibly, because these foreign owners, being the main ones, could show some risk aversion face to the Ibero-American context, discouraging the agent's decisions. Therefore, its effect ends up being negatively significant on the growth of IT investment. For these reasons, the hypothesis ***H2 is rejected***.

Finally, the fourth model varies in terms of the control variables that support it. While the R+D growth and the return on sales are preserved, the top shareholders, the net sales growth and the firm size no longer significantly influence. Despite this, leverage shows effects negatively significant on IT investment growth. Similarly, institutional investors with common ownership show effects positively significant on IT investment growth. Unlike the top foreign ownership, the institutional investors with common ownership are in a continuous growth of the Iberoamerican countries assuming the challenge of better integrating the information, information asymmetry reduction, of the agents with the principals. In fact, these institutional investors are already part of practically all the firms listed on IBEX in Spain. In that sense, the hypothesis ***H3 is supported***.

Discussion

The study contextualizes its research objectives in Iberoamerica using a framework of institutional comparative analysis. Likewise, under the institutional perspective, it takes ownership structures as institutions capable of affecting the investments over which it has participation and power. Further, under that perspective, this internal mechanism of corporate governance shows its significant importance in face to IT investment.

The study findings have several implications of theoretical and practitioner approach.

Theoretical Implications

At a theoretical level, the study contributes to knowledge by expanding the studies that relate corporate governance to IT investments. In fact, the study focus on the institutional perspective to take ownership structures as institutions and compare them, within Iberoamerican stock markets, in different industrial markets and iberoamerican countries after the global financial crisis. This denotes a control by both time, countries, industries and even the firm size under study. Scholars could deepen multilevel studies of how institutional constraints have an important role in defining agents' decisions related to IT investment. Another important point is to consider the full participation of foreign property, or family

participation. Even a recent study addresses the initiative to see the impact of the concentrated ownership structure with family participation on IT overinvestment or subinvestment (Ho et al., 2017). Future studies could consider the other possible ownership structures, including new institutional investors of common participation if they condition the IT overinvestment or subinvestment.

Practitioner Implications

At the practitioner level, the study provides a critical look at the reality of corporate governments on IT investments in Iberoamerica. Discussions in other contexts are clear, high levels of control and participation of companies must take action on IT investment decisions. Mainly, this allows us to understand that owners and shareholders cannot be oblivious to the information technology decisions that the firm makes. Above all, because these IT investments would support part of the internal mechanisms to reduce the information asymmetry between principal and agent.

Conclusions

The study has hypothesized and tested how the ownership structures called concentrated ownership (H1), top foreign ownership (H2), or common ownership of institutional investors (H3) affect IT investment in firms listed in Iberoamerican stock markets. The study demonstrates through difference in means that IT investment, seen as spending, can be significantly different depending on the ownership structure groups studied. Likewise, in the regression of data panel with robustness and several models for each ownership structure it is demonstrated that there are significant effects of these internal corporate governance mechanisms on the IT investment growth.

Respect to concentrated ownership, the result is negatively significant on IT investment growth. This confirms that in Iberoamerica the theory related to ownership and control is also fulfilled, as well as risk aversion due to concentration and consequently reluctance to the agent's decisions on IT investment.

In the case of the top foreign ownership, the study shows a particular effect negatively significant on IT investment. Although prior studies regarding total foreign ownership consider positive effects on investments, in the case of the top foreign property, the case goes to a level similar to that of concentrated property, being the foreign owner responsibility to control the agent decisions related to IT investment.

Finally, in relation to the institutional investors with common ownership, the results show a effect positively significant on IT investment. This result is relevant to reaffirm that a future study may consider total foreign ownership and compare it with the result of the second model mentioned above. Likewise, the result shows that these types of institutional investors gain relevance on IT investment. In fact, several recent studies highlight the importance of monitoring the behavior of these institutional investors, as they could trigger profound changes in ownership structures and consequently on the agent decisions in the firms.

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