**UNIVERSITY OF SAO PAULO
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**MANAGEMENT CONTROL MECHANISMS AND STEWARDSHIP IN FAMILY
FIRMS: AN ANALYSIS OF ANTECEDENTS AND CONSEQUENCES**

**MECANISMOS DE CONTROLE GERENCIAL E STEWARDSHIP EM EMPRESAS
FAMILIARES: UMA ANÁLISE DE ANTECEDENTES E CONSEQUÊNCIAS**

**BEHEERSCONTROLEMECHANISMEN EN STEWARDSHIP IN FAMILIE
BEDRIJVEN: EEN ANALYSE VAN ANTECEDENTEN EN GEVOLGEN**

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**MANAGEMENT CONTROL MECHANISMS AND STEWARDSHIP IN FAMILY
FIRMS: AN ANALYSIS OF ANTECEDENTS AND CONSEQUENCES**

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To my parents Paulo and Berenice, Marcela and my family.

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ABSTRACT

Mucci, D. M. (2018). MANAGEMENT CONTROL MECHANISMS AND STEWARDSHIP IN FAMILY FIRMS: AN ANALYSIS OF ANTECEDENTS AND CONSEQUENCES. Doctoral Dissertation, Faculty of Economics, Business and Accounting, University of Sao Paulo and Faculty of Applied Economics, University of Antwerp.

This dissertation aims to enhance the understanding of stewardship in family firms by studying its antecedents related to the controlling family's ability and willingness to influence the firm, management control mechanisms design and procedural justice and its consequences regarding its moderating effect on the relationship between family involvement and performance. First, we explore the heterogeneity among family businesses, by considering the influence of a family's ability and willingness on the design of formal and participative management control mechanisms. We define ability as the level of family involvement in ownership and in management. Willingness is based on the socioemotional wealth (SEW) literature, which refers to the controlling family's affect-related value invested in the firm. We focus on the following SEW sub-dimensions (1) family control and influence (2) and renewal of family bonds. Second, we investigate whether management control mechanisms such as goal setting and performance evaluation often installed to curb manager's opportunistic behavior, stimulate stewardship in family firms. We focus on the degree of participation and formality applied to these management control mechanisms, which elements are studied in the procedural justice literature. Therefore, we discuss how management control mechanisms' design and procedural justice are associated with stewardship. Stewardship implies a collective-serving and pro-organizational attitudes and behaviors and constitutes a distinctive characteristic of family firms. Third, we examine whether a stewardship-oriented culture moderates the association between family involvement and family firm performance, whereby family involvement is a sub-item of the familiness construct, which focuses on the interaction between family members and its business. To test these relationships in an empirical way, we developed a survey and selected data from medium and large Brazilian family firms. We applied Structural Equation Modeling (SmartPLS) as the main data analysis method to test our hypotheses. The contributions of this study are multiple to the literature. First, more insights are provided in the adoption of participative and formal management control mechanisms in family firms and how a family's willingness to influence the firm creates different adoption patterns. We also demonstrate that different SEW intentions must be treated separately since each sub-dimension influences the design of management control mechanisms in the family business in a different way. Second, the results show how formal and participative goal setting and performance evaluation stimulate stewardship identification and stewardship-oriented culture in the family firm. This study provides evidence to practitioners that goal setting and performance evaluation, usually studied as agency mechanisms can foster stewardship in the family firm if they are designed based on the fairness principles. Third, the study reveals that the relationship between familiness and family firm performance is moderated by a stewardship-oriented culture, indicating patterns that lead to a higher financial performance.

Keywords: Family businesses; Stewardship theory; Management control mechanisms; Socioemotional Wealth; Procedural justice; Family firm performance.

RESUMO

Mucci, D. M. (2018). MECANISMOS DE CONTROLE GERENCIAL E STEWARDSHIP EM EMPRESAS FAMILIARES: UMA ANÁLISE DE ANTECEDENTES E CONSEQUÊNCIAS. Tese de Doutorado, Faculdade de Economia, Administração e Contabilidade, Universidade de São Paulo e Faculdade de Economia Aplicada, Universidade da Antuérpia.

Esta tese visa aprimorar a compreensão sobre *stewardship* nas empresas familiares, estudando seus antecedentes relacionados à capacidade e às intenções da família controladora de influenciar a empresa, o desenho dos mecanismos de controle gerencial e a justiça processual, e suas consequências ao moderar a relação entre envolvimento da família e desempenho. Primeiro, exploramos a heterogeneidade entre as empresas familiares, considerando a influência da habilidade e da intenção da família sobre o desenho de mecanismos de controle gerencial formais e participativos. Definimos habilidade como o nível de envolvimento familiar na propriedade e na gestão. As intenções são baseadas na literatura da riqueza sócio-emocional (SEW), que se refere ao valor do afeto da família controladora investido na empresa. Estudamos as seguintes sub-dimensões da SEW (1) controle e influência familiar (2) e renovação dos laços familiares. Em segundo lugar, investigamos se os mecanismos de controle gerencial, como a definição de objetivos e a avaliação de desempenho, geralmente estabelecidos para reduzir o comportamento oportunista do gestor, estimulam o *stewardship* nas empresas familiares. Focamos no grau de participação e formalidade aplicados a esses mecanismos de controle gerencial, cujos elementos são estudados na literatura de justiça processual. Portanto, discutimos como o desenho dos mecanismos de controle gerencial e a justiça processual estão associados ao *stewardship*. *Stewardship* implica em atitudes e comportamentos coletivos e pró-organizacionais e constitui em uma característica distintiva das empresas familiares. Em terceiro lugar, examinamos se uma cultura orientada para o *stewardship* modera a associação entre envolvimento da família e desempenho da empresa familiar, onde o envolvimento da família é um subitem do construto *familiness* que por sua vez foca na interação entre os membros da família e o negócio. Para testar essas relações de forma empírica, desenvolvemos uma pesquisa e obtivemos dados de empresas familiares brasileiras de médio e grande porte. Aplicamos a Modelagem de Equações Estruturais (SmartPLS) como o principal método de análise de dados para testar nossas hipóteses. As contribuições deste estudo são múltiplas para a literatura. Em primeiro lugar, são fornecidas mais ideias sobre o desenho de mecanismos de controle gerencial participativos e formais nas empresas familiares e como a intenção da família de influenciar a empresa cria diferentes padrões de adoção. Também demonstramos que as diferentes intenções da SEW devem ser tratadas separadamente, uma vez que cada sub-dimensão influencia o desenho dos mecanismos de governança na empresa familiar de uma maneira diferente. Em segundo lugar, os resultados mostram como a definição de objetivos e a avaliação do desempenho formais e participativos estimulam a identificação cultura orientada para o *stewardship* na empresa familiar. Este estudo fornece evidências aos profissionais de que a definição de objetivos e a avaliação do desempenho, geralmente estudados como mecanismos de agência podem promover o *stewardship* na empresa familiar, se forem delineados com base nos princípios da justiça. Em terceiro lugar, o estudo revela que a relação entre envolvimento da família e desempenho da empresa familiar é moderada pela cultura orientada para o *stewardship*, indicando padrões que levam a um maior desempenho financeiro.

Palavras-chave: Empresas familiares; Teoria do *stewardship*; Mecanismos de controle gerencial; Riqueza sócio-emocional; Justiça processual; Desempenho da empresa familiar.

ABSTRACT

Mucci, D. M. (2018). BEHEERSCONTROLEMECHANISMEN EN STEWARDSHIP IN FAMILIE BEDRIJVEN: EEN ANALYSE VAN ANTECEDENTEN EN GEVOLGEN. Doctoraal Proefschrift, Faculteit Economie, Bedrijfskunde en Accounting, Universiteit van Sao Paulo en Faculteit Toegepaste Economische Wetenschappen, Universiteit Antwerpen.

Dit proefschrift bestudeert de invloed van stewardship in familiebedrijven door enerzijds mogelijke antecedenten te onderzoeken zoals het vermogen en de bereidheid van de controlerende familie om het bedrijf te beïnvloeden en de aanwezige beheerscontrolemechanismen in de onderneming. Anderzijds wordt ook onderzocht of stewardship de relatie tussen familie-invloed en bedrijfsprestaties modereert. Eerst bekijken we in welke mate diverse vormen van familiale invloed geassocieerd zijn met de aanwezige beheerscontrolemechanismen in de familie-onderneming. De familiale invloed wordt op tweeërlei wijze benaderd. Ten eerste wordt de mogelijkheid die de familie heeft om de onderneming te controleren bekeken aan de hand van het aandelenkapitaal en de deelname door familieleden aan het top management van de onderneming. Ten tweede wordt de bereidheid van de familie om de onderneming te beïnvloeden in kaart gebracht. Hiervoor wordt een beroep gedaan op het concept van Socio-Emotional Wealth (SEW). We bekijken hierbij de volgende twee SEW sub-dimensies (1) familiecontrole en invloed en (2) het overdragen van de familie-onderneming naar toekomstige generaties. Ten tweede onderzoeken we of beheersmechanismen zoals planning en prestatie-meting, die vaak geïnstalleerd worden in bedrijven om het opportunistische gedrag van managers te beperken, stewardship-gedrag en stewardship-cultuur in familiebedrijven versterken. Bij de controlemechanismen planning en prestatiemeting hebben we vooral aandacht naar de mate waarin het hele management participeert in de planning en de prestatie-evaluatie, alsook naar de mate van formaliteit van deze twee controlemechanismen. Bij het bestuderen van de relatie tussen die beheerscontrolemechanismen en stewardship-cultuur en -gedrag in de onderneming, betrekken we de modererende rol van de perceptie die managers hebben ivm de rechtvaardigheid van deze controlemechanismen. Ten derde onderzoeken we of een stewardship-georiënteerde cultuur de relatie tussen familiale invloed op het bedrijf en de prestaties van het familiebedrijf versterkt. Om deze relaties empirisch te testen, gebruiken we gegevens die werden verkregen uit een enquête die werd ontwikkeld op basis van de literatuur en verstuurd naar middelgrote en grote Braziliaanse familiebedrijven. Om de vooropgestelde relaties en hypothesen te toetsen werd gebruik gemaakt van de techniek van Structural Equation Modeling (SmartPLS). De resultaten van deze studie vullen de literatuur op diverse punten aan. Ten eerste stellen we vast dat vooral de bereidheid van een familie om het bedrijf te beïnvloeden mede de vorm (mate van participatie en formaliteit) bepaalt van de aanwezige controlemechanismen eerder dan de mogelijkheid van een familie om de onderneming te beïnvloeden. We tonen ook aan dat verschillende SEW-voornemens beter afzonderlijk bestudeerd worden, daar elke subdimensie op een andere manier het ontwerp van de beheersmechanismen in het familiebedrijf beïnvloedt. Ten tweede tonen de resultaten aan hoe deze controlemechanismen bijdragen tot een stimulering van stewardship gedrag en een stewardship-georiënteerde cultuur in het familiebedrijf. De resultaten tonen verder aan dat controlemechanismen die traditioneel bekeken worden als agentschapsmechanismen ('agency control mechanisms') toch stewardship kunnen versterken als ze gepercipieerd worden als rechtvaardig. Ten derde blijkt uit de studie dat de relatie tussen familiale invloed op het bedrijf en familieprestatie gemodereerd wordt door een stewardship-georiënteerde cultuur.

Trefwoorden: Familiebedrijf; Stewardship theorie; Beheerscontrolemechanismen; Socio-gemotiveerde rijkdom; Procedurele rechtvaardigheid; prestaties van de familie-bedrijven.

LIST OF FIGURES

Figure 1. Dissertation's theoretical portrait	23
Figure 2. Summary of the papers and literature review issues	31
Figure 3. Papers, samples and subsamples information.....	56
Figure 4. Constructs measures – after language changes in the questionnaire – Part I	62
Figure 5. Control Variables.....	64
Figure 6. Theoretical research model – paper 1	82
Figure 7. Theoretical research model and hypotheses – paper 1	91
Figure 8. Structural model – Model 1	113
Figure 9. Structural model (Interaction pfamilyTMT and FamilyCEO) – Model 2	113
Figure 10. Theoretical research model – paper 2	124
Figure 11. Theoretical research model and hypotheses – paper 2	132
Figure 12. Theoretical model – Paper 3	169
Figure 13. Theoretical model and hypotheses – Paper 3	175
Figure 14. Quadratic effect pfamilyTMT – dependent variable industry-adjusted ROA (orthogonal approach).....	184
Figure 15. Quadratic effect pfamilyTMT – dependent variable industry-adjusted ROS (orthogonal approach).....	184
Figure 16. Moderating effect of stewardship – orthogonal approach – dependent variable industry-adjusted ROA	186
Figure 17. Moderating effect of stewardship – orthogonal approach – dependent variable industry-adjusted ROS	186
Figure 18. Theoretical portrait and empirical results.....	194

LIST OF TABLES

Table 1. Summarizing agency and stewardship theories	32
Table 2. Family affiliation: agency and stewardship assumptions	35
Table 3. Family firm's constructs	38
Table 4. Summary of papers and constructs from our bibliographical survey in Brazilian journals	48
Table 5. Overview of publication Topics (Id) and year	48
Table 6. Overview of publication Topics (Id) and Journal Articles	50
Table 7. Comparison of respondents versus EMIS database – Total Operating Revenue (BRL in 2015).....	58
Table 8. Comparison of respondents versus EMIS database – States Federation	59
Table 9. Comparison of respondents versus EMIS database – Industry	60
Table 10. Sample Size for a Statistical Power of 0.80.....	67
Table 11. Family businesses' descriptive information – Sample 152	69
Table 12. Family businesses' descriptive information – Sample 120	71
Table 13. Family businesses' descriptive information – Sample 59	73
Table 14. Respondents' descriptive information	76
Table 15. Items descriptive statistics (n=120) - Paper 1	93
Table 16. Items descriptive statistics (n=152) - Paper 1	94
Table 17. Family firms' characteristics and management control mechanisms design (n=120)	96
Table 18. Family firms' characteristics and management control mechanisms design (n=152)	97
Table 19. Cross loadings between the items and the construct (n=152).....	100
Table 20. Cross loadings between the items and the construct (n=120).....	101
Table 21. First-Order Latent Variable Correlations (n=152).....	102
Table 22. First-Order Latent Variable Correlations (n=120).....	102
Table 23. Structural model (Model 1)	109
Table 24. Structural model (Model 2) – Interaction FIM and FamilyCEO	111
Table 25. Items' descriptive statistics (n=152) - Paper 2	135
Table 26. Items' descriptive statistics (n=120) - Paper 2	136
Table 27. Items' descriptive statistics (nonfamily managers, n=99)	137
Table 28. Items' descriptive statistics (founders and family managers, n=53)	138
Table 29. Items' descriptive statistics (family managers, n=36)	139
Table 30. Respondents' characteristics and stewardship (n=120 and n=152).....	141
Table 31. Family firms' characteristics and stewardship (n=120 and n=152).....	142
Table 32. First-Order Latent Variable Correlations (n=152).....	145
Table 33. First-Order Latent Variable Correlations (n=120).....	145
Table 34. Cross loadings between the items and the construct (n=152).....	146
Table 35. Cross loadings between the items and the construct (n=120).....	147
Table 36. Structural Model	153

Table 37. Structural Model – Comparison about the subsamples of managers’ family affiliation.....	158
Table 38. Indirect effects - Models presented in Table 36	159
Table 39. Summary of the results.....	159
Table 40. Sample descriptive statistics.....	176
Table 41. First-Order Latent Variable Correlations (n=59)	178
Table 42. Crossloadings between the items and the constructs (n=59).....	178
Table 43. Structural model – Dependent variable industry-adjusted Return on Assets (ROA)	180
Table 44. Structural model – Dependent variable industry-adjusted Return on Equity (ROE)	181
Table 45. Structural model – Dependent variable industry-adjusted Return on Sales (ROS)	182

LIST OF ABBREVIATIONS

AVE – Average Variance Extracted
CEO – Chief Executive Officer
CFA – Confirmatory Factor Analyses
CR – Composite Reliability
FCI – Family control and influence
FIM – Family Involvement in Management
FIO – Family Involvement in Ownership
FRFB – Renewal of family bonds through dynastic succession
GS – Goal setting
HTMT – Heterotrait-Monotrait Ratio of Correlations
MCS – Management Control Systems
MLMV – Measured Latent Marked Variable
PE – Performance Evaluation
PLS – Partial Least Squares
PMS – Performance Measurement Systems
SEM – Structural Equation Modeling
SEW – Socioemotional Wealth
TMT – Top Management Team
US – United States of America
VIF – Variance Inflation Factor

SUMMARY

1. INTRODUCTION	21
1.1. Ph.D. dissertation's theoretical portrait	21
1.2. Empirical studies	22
1.2.1. Study 1: Controlling family's ability and willingness, and the design of management control mechanisms in family firms	24
1.2.2. Study 2: Management control mechanisms' fair design and procedural justice as antecedents of stewardship in family firms	26
1.2.3. Study 3: Family involvement in management and family firm's performance: the moderating role of stewardship-oriented culture	28
1.3. Ph.D. dissertation's structure	29
2. LITERATURE REVIEW AND DISSERTATION'S CONSTRUCTS	31
2.1. Agency and stewardship theories	31
2.2. Constructs in the family firm literature	36
2.2.1. Controlling family's influence: ability and willingness	37
2.2.2. Socioemotional Wealth	39
2.2.3. Familiness	43
2.3. Management control mechanisms design characteristics and Procedural Justice ..	44
2.4. A review of family firms' literature in Brazilian journals	47
2.4.1. Management control mechanisms in family firms	50
2.4.2. Stewardship in family firms	52
2.4.3. Socioemotional wealth	52
2.4.4. Familiness	52
2.4.5. Procedural justice	53
2.4.6. Summary of the findings from the review of the literature in Brazil	53
3. METHODOLOGY	55
3.1. Sample Selection	55
3.2. Data Collection Method	57
3.3. Descriptive analyses about respondents	58
3.4. Measurement of Constructs and Instruments	60
3.5. Data Analyses Methods	66
3.6. Family firms' and respondents' descriptive statistics	67

4. STUDY 1: CONTROLLING FAMILY’S ABILITY AND WILLINGNESS AND THE DESIGN OF MANAGEMENT CONTROL MECHANISMS IN FAMILY FIRMS	77
4.1. Introduction.....	77
4.2. Theoretical model and hypotheses.....	81
4.2.1. The relationship between family involvement in ownership and a family’s willingness to influence the firm.....	83
4.2.2. The relationship between family control and influence intention SEW and family involvement in management.....	84
4.2.3. The relationship between family involvement in management and management control mechanisms design.....	85
4.2.4. The relationship between family control and influence SEW intention and management control mechanisms design.....	87
4.2.5. The relationship between the renewal of family bonds through dynastic succession SEW intention and management control mechanism design.....	89
4.3. Data analyses	91
4.3.1. Descriptive Statistics.....	91
4.3.2. Structural Equation Modeling.....	98
4.3.2.1. Measurement model assessment	98
4.3.2.2. Structural model analyses.....	103
4.3.2.3. The relationship between family involvement in ownership and a family’s willingness to influence the firm	104
4.3.2.4. The relationship between family control and influence SEW intention and family involvement in management	105
4.3.2.5. The relationship between family involvement in management and management control mechanisms design.....	105
4.3.2.6. The relationship between family control and influence SEW intention and management control mechanisms design	106
4.3.2.7. The relationship between the renewal of family bonds through dynastic succession SEW intention and management control mechanism design	107
4.3.2.8. Control variables	107
4.4. Conclusions.....	114
5. STUDY 2: MANAGEMENT CONTROL MECHANISMS’ FAIR DESIGN AND PROCEDURAL JUSTICE AS ANTECEDENTS OF STEWARDSHIP IN FAMILY FIRMS	119
5.1. Introduction.....	119
5.2. Theoretical model and hypotheses.....	124

5.2.1. Management control mechanisms' fair design and procedural justice perceptions.....	126
5.2.2. Management control mechanisms' fair design and stewardship.....	128
5.2.3. Procedural justice perceptions and stewardship.....	131
5.2.4. Mediation hypothesis	132
5.3. Data analyses.....	133
5.3.1. Descriptive Statistics	133
5.3.2. Measurement model assessment	143
5.3.3. Structural Equation Modeling	148
5.3.4. Results and discussion - full samples	150
5.3.4.1. Management control mechanisms' fair design and procedural justice ..	150
5.3.4.2. Management control mechanisms' fair design and stewardship	151
5.3.4.3. Procedural justice and stewardship	152
5.3.5. Results and discussion - subsamples.....	155
5.3.5.1. Management control mechanisms' fair design and procedural justice ..	155
5.3.5.2. Management control mechanisms' fair design and stewardship	156
5.3.5.3. Procedural justice and stewardship	156
5.3.6. Mediation results.....	157
5.4. Conclusions	160
6. STUDY 3: FAMILY INVOLVEMENT IN MANAGEMENT AND FAMILY FIRM'S PERFORMANCE: THE MODERATING ROLE OF STEWARDSHIP-ORIENTED CULTURE	165
6.1. Introduction	165
6.2. Theoretical model and hypotheses	169
6.2.1. The relationship between family CEO and firm performance	170
6.2.2. The relationship between the ratio of family managers in the TMT and firm performance	171
6.2.3. Moderation of stewardship-oriented culture.....	173
6.3. Data analyses.....	175
6.3.1. Descriptive Statistics	175
6.3.2. Structural Equation Modeling.....	177
6.3.2.1. Measurement model assessment.....	177
6.3.2.2. Structural model analyses	179
6.3.2.3. The relationship between family CEO and firm performance.....	183
6.3.2.4. The relationship between the ratio of family managers in the TMT and firm performance.....	183

6.3.2.5. Moderation of stewardship-oriented culture	185
6.4. Discussion and conclusions	187
7. FINAL REMARKS	191
7.1. Ph.D. dissertation's theoretical portrait and results	191
7.2. Summary of the results	196
7.3. Implications for the literature	198
7.4. Implications for practitioners	201
REFERENCES.....	205
APPENDIX – Section 2	224
Appendix 1. Overview of publication Topics (Id) and objective – Part I.....	224
Appendix 2. Overview of publication Topics (Id) and Methodology description – Part I....	227
Appendix 3. First Letter (Portuguese).....	229
APPENDIX – Section 5	230
Appendix 4. Measurement model evaluation for subsamples of family and nonfamily managers	230
APPENDIX – Section 6	233
Appendix 5. Sample versus industry information.....	233

1. INTRODUCTION

In this introduction, we present the Ph.D. dissertation's theoretical portrait, the elements, and rationales that we consider in each of the three empirical studies and the structure of the dissertation.

1.1. Ph.D. dissertation's theoretical portrait

This dissertation aims to enhance the understanding of stewardship in family firms by investigating its antecedents related to the controlling family's ability and willingness to influence the firm, management control mechanisms design and procedural justice and the consequences of stewardship with respect to its moderating effect on the relationship between family involvement and family firm performance. We are interested in studying the foundations and the constructs of the stewardship literature in the context of family businesses, regarding, particularly, management control mechanisms and manager's attitudes and behaviors in family businesses.

Our exclusive focus on family firms is necessary since family firms have unique characteristics, that result from the controlling family's ability and willingness to influence the firm's processes and decisions, the diversity of goals that the family firm pursue, and managers' attitudes and behaviors (Chrisman, Chua, Pearson, & Barnett, 2012; Dawson & Mussolino, 2014). Family firms are expected to pursue multiple noneconomic and family-centric goals which have been recently studied in the Socioemotional Wealth (SEW) theoretical perspective (Berrone, Cruz, & Gomez-Mejia, 2012; Gomez-Mejia, Cruz, Berrone, & De Castro, 2011). In addition, prior literature indicates that managers' family affiliation might be a relevant attribute of managers' attitudes and behaviors in these organizations, which should be considered by researchers (Davis, Allen, & Hayes, 2010; James, Jennings, & Jennings, 2017; Verbeke & Kano, 2012). Hence, the family firm's heterogeneity and distinctiveness might have influence on management practices and organizational behaviors that require in-depth investigations (Chrisman, Chua, & Sharma, 2005; Gagné, Sharma, & De Massis, 2014; Helsen, Lybaert, Steijvers, Orens, & Dekker, 2017; Songini, Gnan, & Malmi, 2013).

Due to the complexity of this subject, we developed, in this Ph.D. dissertation, three empirical studies to shed more light and generate additional insights on the association between (i) the controlling family's ability and willingness to influence the family firm and the design of management control mechanisms, (ii) management control mechanisms' fairness design,

procedural justice and stewardship, (iii) and familiness and family firm's financial performance moderated by stewardship. We summarize in Figure 1 this Ph.D. dissertation's theoretical portrait and indicate the studies, the constructs, the associations and the boundaries among those studies.

The rationale of this Ph.D. dissertation starts by looking at how a controlling family's ability and willingness influence the level of participation and formality in goal setting and performance evaluation (Helsen et al., 2017; Songini & Gnan, 2015; Speckbacher & Wentges, 2012). Thereafter, we study how the design of these management control mechanisms foster stewardship attitudes and behaviors in family firms, among family and nonfamily managers (Davis, Schoorman, & Donaldson, 1997; Neubaum, Thomas, Dibrell, & Craig, 2017), taking into consideration the procedural justice literature (Langevin & Mendoza, 2013). Particularly, this discussion is aligned with the underlying situational mechanisms that constitute organizational level antecedents of stewardship (Davis et al., 2010, 1997; Madison, Holt, Kellermanns, & Ranft, 2016; Neubaum et al., 2017). Finally, we investigate how a stewardship-oriented culture (Zahra, Hayton, Neubaum, Dibrell, & Craig, 2008) is associated with the familiness construct in the family firm, and specifically, how it enhances the benefits of a family involvement in the business on a family firm's performance (Garcia-Castro & Aguilera, 2014; Kim & Gao, 2013; Minichilli, Corbetta, & MacMillan, 2010; Sciascia & Mazzola, 2008).

1.2. Empirical studies

In the sequence, we briefly present the three empirical studies conducted in this dissertation (Figure 1) and introduce the research questions and the theoretical bases of each paper, which we explore with more substance in the further sections of this Ph.D. dissertation. So, the theoretical discussion, hypotheses, findings, and contributions will be presented individually in each of the three studies.

Figure 1. Dissertation's theoretical portrait

Source: Authors

Study 1: Controlling family's ability and willingness, and the design of management control mechanisms in family firms (Green);

Study 2: Management control mechanisms' fair design and procedural justice as antecedents of stewardship in family firms (Purple)

Study 3: Family involvement in management and family firm's performance: the moderating role of stewardship-oriented culture (Brown)

The theoretical motivation and underpinnings of these three studies are mainly supported by the stewardship theory, which is grounded on a sociological and psychological perspective with respect to manager's behaviors and the role of management control mechanisms in these organizations (Davis et al., 1997; Madison et al., 2016; Neubaum et al., 2017). As we employ a broader perspective about both the antecedents and the consequences of stewardship in family firms, we also found strong support on the family firm literature regarding its constructs and on the management accounting literature.

1.2.1. Study 1: Controlling family's ability and willingness, and the design of management control mechanisms in family firms

The basic idea of the first study is that the controlling family's influence in the business impacts how management control mechanisms are designed in those firms (Helsen, Lybaert, Steijvers, Orens, & Dekker, 2017; Speckbacher & Wentges, 2012). Recent studies have been linking this association to contingency theory (Chenhall, 2003) and naming these family firm factors as family contingencies (Helsen et al., 2017; Songini, Vola, & Gnan, 2017). The research question that guides the first study is: how the controlling family's ability and willingness are associated with the design of management control mechanisms in family firms?

A controlling family's influence in the business is being attributed to two complementary elements that are (1) a controlling family's ability and (2) a controlling family's willingness (Chrisman, Chua, Pearson, & Barnett, 2012; De Massis, Kotlar, Chua, & Chrisman, 2014). With respect to the determinants of management control mechanisms design, we consider in this study these two elements. We follow previous empirical research and study the controlling family's ability in terms of family involvement in ownership and family involvement in management (Chrisman et al., 2012).

In addition, we study a controlling family's willingness based on the Socioemotional Wealth (SEW) construct (Berrone et al., 2012; Gomez-Mejia et al., 2011). The socioemotional wealth (SEW) consists in one of the main paradigms from the family business literature (Berrone et al., 2012; Gomez-Mejia et al., 2011). SEW intentions conceives in the "preservation of socioemotional" and "affective endowments" that may be seen as the core goal of the family firm (Gomez-Mejia et al., 2011). As SEW construct covers multiple controlling family's intentions as reference points for decision-making, for our purposes we delimit two sub-

dimensions that are (1) family control and influence, and (2) renewal of family bonds through dynastic succession (Berrone et al., 2012).

Our focus on both ability and willingness has the following main reasons. First, only the controlling family's ability has so far been discussed in prior studies that investigate the association between family contingencies and Management Control Systems design characteristics (Songini & Gnan et al., 2013; Helsen et al., 2017; Hiebl, Duller, Feldbauer-Durstmüller, & Ulrich, 2015; Michiels, Voordeckers, Lybaert, & Steijvers, 2013; Speckbacher & Wentges, 2012). These studies mainly relied on the agency theory arguments that family firms do not need agency mechanisms because they do not face typical agency problems (Madison, Holt, Kellermanns, & Ranft, 2016). Second, a controlling family's willingness has not yet attracted much empirical attention in this field. Therefore, although prior literature indicates associations between a controlling family's ability (Michiels et al., 2013; Songini & Gnan, 2015; Speckbacher & Wentges, 2012), our central argument is that a family's willingness drives the design of management control mechanisms and depending on the controlling family's focus will be differently associated with management control mechanisms' design.

With respect to management control mechanisms, we investigate goal setting and performance evaluation mechanisms that are focused on top managers of family firms. These mechanisms are used to assist the strategic and management processes (Ferreira & Otley, 2009). We focus on two design characteristics of these mechanisms that are formality and participation (Hartmann & Slapničar, 2009, 2012). Our argument is that, beyond the agency monitoring perspective of controls, formal and participative mechanisms can foster transparency in the firms' processes and knowledge sharing among managers in the firm.

Formality has been linked to the family firm's level of professionalization and hypothesized based on the agency perspective, which has been partially addressed by prior literature (Chua, Chrisman, & Bergiel, 2009; Dekker, Lybaert, Steijvers, Depaire, & Mercken, 2013; Songini & Gnan, 2015; Speckbacher & Wentges, 2012; Stewart & Hitt, 2012). However, participation design characteristic might also be a relevant element to be studied in family firms due to the complexity of its relationships, among family and nonfamily managers, that exists in family firms (Dawson & Mussolino, 2014; Songini, Gnan, & Malmi, 2013). Dekker et al. (2013) investigates participation in terms of decentralization of authority, which they consider one of the elements of a family firm's professionalization.

Finally, these characteristics are also relevant since they have been treated in the management accounting and procedural justice literature as determinants of pro-organizational

attitudes and behaviors in the firm (Hartmann & Slapničar, 2009, 2012; Langevin & Mendoza, 2013; Voußem, Kramer, & Schäffer, 2016), which discussion we explore in the second study of this Ph.D. dissertation.

1.2.2. Study 2: Management control mechanisms' fair design and procedural justice as antecedents of stewardship in family firms

The second study focus on the antecedents of stewardship (Hernandez, 2012) in family firms (Davis, Allen, & Hayes, 2010; Neubaum, Thomas, Dibrell, & Craig, 2017), considering management control mechanisms design and procedural justice. Stewardship has been hypothesized as an important construct in the family firm literature (Davis et al., 2010; Davis, Schoorman, & Donaldson, 1997; Madison et al., 2016; Neubaum et al., 2017) to which it is credited the distinctiveness (Simon, Marquès, Bikfalvi, & Dolors Muñoz, 2012) and competitive advantage of family firms (Corbetta & Salvato, 2004; Zahra et al., 2008). Stewardship is argued to reflect a competing paradigm to the agency theory, in which managers are expected to act pro-organizationally and support the long-term wealth of the company and its principals (Davis et al., 1997; Donaldson & Davis, 1991). The stewardship theory provides a counterpoint to the agency theory regarding managers' behavioral assumptions and the need for governance and management control mechanisms (Davis et al., 1997; Donaldson, 2008).

The stewardship literature determines that when individuals behave as stewards, there is no need to implement traditional agency mechanisms such as monitoring and incentive systems. Monitoring and incentive systems are used to curb agent's opportunistic behavior in the agency theory paradigm (Eisenhardt, 1989; Madison et al., 2016). Conversely, informal and social controls might better suit the stewardship perspective, since there is no need for aligning stewards' behaviors with the principals' interests (Davis et al., 2010, 1997; Neubaum et al., 2017). James et al. (2017) theoretically explain that should be an appropriate fit between management control mechanisms and managers' behaviors in family firms, based on the agency theory or stewardship theory lenses.

Based on the relevance of the stewardship construct on the family firm field, we study in the second paper the following research question: Are management control mechanisms' fair design and procedural justice perceptions associated with manager's stewardship identification and with a stewardship-oriented culture in family firms? Therefore, we address this question and examine the relationship between the level of participation and formality in goal setting

and performance evaluation and manager's perceptions about stewardship, whereby this relationship is mediated by procedural justice (Hartmann & Slapničar, 2009, 2012; Sieger, Bernhard, & Frey, 2011). Due to the complexity of the stewardship construct, we consider both at the individual level and at the organizational level, respectively stewardship identification and stewardship-oriented culture.

The reasoning for the hypotheses is supported by the stewardship literature particularly related to situational mechanisms (Davis et al., 1997; Donaldson & Davis, 1991), on the recent empirical evidence that investigates whether agency and stewardship mechanisms relate to family and nonfamily manager's attitudes and behaviors in the family firm (e.g., James et al., 2017; Madison et al., 2016; Neubaum et al., 2017) and on the procedural justice literature (e.g., Langevin & Mendoza, 2013). The basic argument in the second study is that management control mechanisms that are designed based on the fairness principles and that enhance procedural justice perceptions are expected to foster pro-organizational attitudes and behaviors in the firm such as identification, trust and affective commitment (Cugueró-Escofet & Rosanas, 2013; Hartmann & Slapničar, 2009; Langevin & Mendoza, 2013).

Based on this idea, we propose that management control mechanisms that have been widely investigated in the agency theory literature (Anthony, Govindarajan, Hartmann, Kraus, & Nilsson, 2014; Eisenhardt, 1989; Merchant & Van der Stede, 2007), such as goal setting and performance evaluation, can also be considered as stewardship situational mechanisms, depending on how they are designed (Hernandez, 2012). Among the design characteristics of stewardship situational mechanisms are the use of power, collectivism orientation, involvement orientation, and level of power distance (Davis et al., 2010, 1997; Madison et al., 2016; Neubaum et al., 2017).

Particularly, traditional agency management control mechanisms that are discussed in the Performance Measurement Systems framework (Ferreira & Otley, 2009) and Management Control Systems (Malmi & Brown, 2008) can also be used to improve communication, transparency, coordination, and knowledge in organizations. In the stewardship lens, when these mechanisms are installed to serve these purposes, they may foster, for example, managers' motivation, identification, and trust in the organization. Therefore, depending on their design, traditional agency mechanisms, such as goal setting and performance evaluation, can be seen as instruments that encourage communication, trust, empowerment, and transparency toward the firm (Langevin & Mendoza, 2013; Van der Heyden, Blondel, & Carlock, 2005) and in this

sense, are aligned with the stewardship situational mechanisms construct (Davis et al., 1997; Neubaum et al., 2017).

1.2.3. Study 3: Family involvement in management and family firm's performance: the moderating role of stewardship-oriented culture

In the third study, we are motivated by the stewardship theoretical perspective in family firms, with respect to the stewardship implications over family firm's performance since prior literature conceptually suggests that stewardship would lead to a family firm's competitive advantage (Corbetta & Salvato, 2004; Davis et al., 2010; Zahra et al., 2008). Therefore, we link the stewardship literature to the familiness framework, which provides a particular perspective on the firm's internal resources and their relationship with competitive advantage (Dawson & Mussolino, 2014; Habbershon & Williams, 1999). By combining both familiness and stewardship literature, the third study aims to address the gap that exists in the literature regarding inconclusive findings of prior empirical studies (Garcia-Castro & Aguilera, 2014; Rutherford, Kuratko, & Holt, 2008).

The basic idea of the third study is that a stewardship-oriented culture enhances the positive association between familiness, measured through family involvement, and a family firm performance. We rely on the familiness construct and on the consequences of a stewardship-oriented culture to investigate how those constructs are associated with a family firm's performance. The research question that guides the third study is: does a stewardship-oriented culture moderate the association between the level of family involvement in management and a family firm's performance?

Our arguments rest on the familiness and on the stewardship literature. Based on familiness construct, we discuss the relationship between a family involvement in management and family firm's financial performance (Garcia-Castro & Aguilera, 2014; Minichilli et al., 2010; Rutherford et al., 2008). In the context of family firms, the familiness construct has mostly been applied as an antecedent of family firm's performance, which concept is grounded on the resource-based view (Chrisman, Chua, & Sharma, 2005; Dawson & Mussolino, 2014; Habbershon, Williams, & MacMillan, 2003). Familiness has been hypothesized as originating from the interaction between the family and family firm systems, which creates idiosyncratic firm-level resources and capabilities that drive a family firm's competitive advantage (Habbershon et al., 2003; Irava & Moores, 2010).

We follow Minichilli et al. (2010) and capture familiness by family involvement in management and study its relationship with family firm performance. We treat family involvement in management as the presence of a family Chief Executive Officer (CEO) and as the percentage of family managers in the Top Management Team (TMT) as fostering a family firm's performance. Particularly, we hypothesize two contradicting hypotheses related to the association between the ratio of family managers in the TMT and performance, since prior literature has also suggested nonlinear effect (De Massis, Kotlar, Campopiano, & Cassia, 2015; González-Cruz & Cruz-Ros, 2016; Mazzola, Sciascia, & Kellermanns, 2013; Minichilli et al., 2010; Sciascia & Mazzola, 2008). However, these studies that treat the association between family involvement and performance lead to inconclusive findings, which might be explained by the complexity of familiness construct and relationships (Anderson & Reeb, 2003; Garcia-Castro & Aguilera, 2014; Minichilli et al., 2010; Rutherford et al., 2008).

Therefore, we extend previous discussions about familiness, by exploring the stewardship organizational-level construct (stewardship-oriented culture), which is seen as a “secret sauce” of family firms (Davis et al., 2010) in fostering the positive association between familiness and family firm's performance (Corbetta & Salvato, 2004; Simon, Marquès, Bikfalvi, & Dolors Muñoz, 2012; Zahra et al., 2008). A stewardship-oriented culture indicates the extent to which a collective, supportive, and caring environment exists in the firm (Zahra et al., 2008). Our central argument in the third study is that as family managers are expected to behave as stewards in the family firm (e.g., Davis et al., 2010), a stewardship-oriented culture might foster the positive influence that a family involvement in management has on the firm's performance.

1.3. Ph.D. dissertation's structure

This dissertation is divided into seven sections. First, in this introductory section, we presented the theoretical portrait and the three empirical studies. It is important to mention that each of the three papers has a particular problematization and research question to address a specific issue. Therefore, in this first section, we provide a broad picture of how the three empirical studies are, at the same time, independent and complementary from each other.

In the second section, we present previous research and the concepts of the underlying constructs, where we discuss the following elements: Stewardship and Agency theories, Controlling family influence (ability and willingness), Management control mechanisms design characteristics and procedural justice. This review is mainly based on the international literature

considering papers published in highly ranked journals in family firms, management accounting, and general management. We also add a subsection in the Literature Review section, to discuss previous research about these issues, especially about management control mechanisms and family firms, developed in Brazil. This is important to provide a big picture about this Ph.D. dissertation's contribution to the Brazilian research community. In general, the literature review gives an understanding of the current discussion in the literature and the constructs that we investigated in the three papers.

In the third section, we present the methodology and describe the sample, data collection, the respondents' characteristics, the measurement of constructs and data analyses methods. We indicate in the methodology section that the three papers derive from one survey developed with Brazilian family firms, however, due to the objective and constructs of each paper, we work in each paper with a different number of respondents to the survey.

In the fourth, fifth and sixth sections, we present the three papers of this dissertation. These papers are each divided in the following subsections: (i) introduction, (ii) theoretical model and hypotheses, (iii) data analyses (iv) and conclusions. In the first paper, we address the relationship between a family's ability and willingness and the design of management control mechanisms regarding the level of participation and formality concerning goal setting and performance evaluation. The second paper, presented in section five, studies the relationship between the design of management control mechanisms and stewardship in family firms, which is mediated by procedural justice. In the third paper, presented in section six, we focus on the familiness construct, stewardship-oriented culture, and firm financial performance. Finally, we present the final remarks in the seventh section, indicating this Ph.D. dissertation's contributions to the academic community and to practitioners.

2. LITERATURE REVIEW AND DISSERTATION'S CONSTRUCTS

In this literature review, we present previous research that provides more information on these dissertation's constructs, which is vital for the interpretation of the Ph.D. dissertation portrait. We present in Figure 2 below the title of the papers, the literature review subsections and the constructs used in the research design of the three papers. Although each paper is based on different constructs, the stewardship theoretical lens is the propellant engine throughout this dissertation.

Paper title	Literature review subsections	Constructs
Paper 1: Controlling family's ability and willingness and the design of management control mechanisms in family firms	Constructs in the family firm literature and Management control mechanisms design characteristics literature	Controlling family's ability, controlling family's willingness (Socioemotional wealth), participation and formality in management control mechanisms
Paper 2: Management control mechanisms' fair design and procedural justice as antecedents of stewardship in family firms	Management control mechanisms design characteristics literature, procedural justice literature and Stewardship literature	Participation and formality in management control mechanisms, procedural justice, stewardship-oriented culture and stewardship identification
Paper 3: Family involvement in management and family firm's performance: the moderating role of stewardship-oriented culture	Constructs in the family firm literature and Stewardship literature	Familiness (Family involvement in management), performance and stewardship-oriented culture

Figure 2. Summary of the papers and literature review issues

In the sequence, we present the literature about agency and stewardship theories, focusing on both conceptual background and family firm's studies that used stewardship as their theoretical lens. We additionally present the constructs related to the controlling family's ability and willingness to influence the family firm. Then we present the literature about management control mechanisms (control systems and mechanisms used by organizations), which concept is aligned to the agency and stewardship lens. We discuss those management control mechanisms design based on the procedural justice theoretical background. Finally, we present a review of papers published in Brazilian journals that explore the constructs used in the three papers of this dissertation.

2.1. Agency and stewardship theories

Agency theory and stewardship theory are both concerned with managers' behavior and their roles in achieving the organization's goals (Donaldson & Davis, 1991; Tosi, Brownlee,

Silva, & Katz, 2003; Wasserman, 2006). The tenets of agency and stewardship theories include individual-level attitudes and behaviors, and firm-level management control mechanisms (Davis et al., 1997; Madison et al., 2016). Based on a recent literature review developed by Madison et al. (2016, p. 67), we present in Table 1 the basic principles of agency and stewardship theories that can be applied to any organizational form (for example family firms).

The basic difference between agency and stewardship theories underlies the ‘model of man’ (Davis et al., 1997; Donaldson & Davis, 1991). For agency theory, managers are economically rational and self-interested, and for the stewardship theory, they are pro-social. Agency theory is grounded on the economic model of man where individuals seek to maximize their own utility. Agency theory suggests a relationship between two parties, the principal (owner) and the agent (manager) where it is expected that the later will behave in a self-interested manner that conflicts with the principal’s interests (Chrisman, Chua, Kellermanns, & Chang, 2007; Jensen & Meckling, 1976).

Table 1

Summarizing agency and stewardship theories

	Agency theory	Stewardship theory
Foundational work	Jensen and Meckling (1976)	Davis et al. (1997)
Relationship	Based on the principal-manager relationship: describes the individual-level agent behaviours and the firm-level agency governance mechanisms that are implemented in response	Based on the principal-manager relationship: Describes the individual-level steward behaviours and the firm-level stewardship governance mechanisms that are implemented in response
Assumption of Behaviour	Economic model of man Opportunistic: Individual/self-serving	Humanistic model of man Pro-organizational: Collective/other-serving
Governance	Monitoring and incentive systems: mechanisms to curb opportunistic behaviour by aligning the interests of the manager with those of the principal	Trust systems: Mechanisms to encourage cooperation and involvement to facilitate the natural alignment of interests between the manager and principal
Outcome	Pro-organizational outcomes; Firm performance by way of cost minimization	Pro-organizational outcomes; Firm performance by way of wealth maximization

Source: Madison et al. (2016, p. 67)

Alternatively to the agency perspective, the stewardship approach determines that individuals are trustworthy, collectivists, and pro-organizational so it provides an opposite perspective to the agency anti-management view (Donaldson, 2008). The stewardship theory is based on the humanistic model of man, which has its roots in sociology and psychology (Davis

et al., 1997; Donaldson & Davis, 1991). Stewardship may be defined in terms of human caring, generosity, loyalty, and devotion to a social group or institution (Donaldson, 1990).

Stewardship theory is about the relationship between two parties, the principal (owner) and the steward (manager). A steward aims to protect and maximizes shareholders' wealth because in this situation the steward's utility function is maximized. The steward's motivations are directed to organizational rather than personal objectives, so it prescribes that the interests of the managers are aligned with the principals' interests (Davis et al., 1997). This conceptualization is consistent with Hernandez' (2008, p. 122) definition of stewardship as "*the attitudes and behaviors that place the long-term best interest of a group ahead of personal goals that serve an individual's self-interests*".

In addition to the individual-level tenets, the agency and stewardship theories also discuss the firm-level governance mechanisms that are appropriate to the managers' behavioral assumptions. The agency theory proposes a control-oriented management philosophy (Davis et al., 1997; Jensen & Meckling, 1976), which leads to monitoring and incentive mechanisms being installed to curb opportunistic behavior, and to align manager's and principal's interests (Madison et al., 2016). In contrast, the stewardship theory suggests an involvement-oriented management philosophy and that mechanisms are put in place to encourage managers' cooperation and involvement (Davis et al., 1997; Madison et al., 2016; Neubaum et al., 2017). In this sense, the stewardship theory proponents indicate that stewardship is different from the agency theoretical lens in terms of management philosophy and cultural dimension (situational mechanisms), and individual psychological mechanisms such as motivation, social comparison, identification and power (Davis et al., 1997; Donaldson & Davis, 1991).

Recently, Neubaum et al. (2017) developed an empirical study about the above-mentioned elements. They named these elements the stewardship climate, which they define as "*the extent to which individuals perceive that their firm's policies, practices, and procedures foster stewardship behaviors and stewardship values, which are widely shared across the organization*" (Neubaum et al., 2017, p. 38). Therefore, these authors widen the discussion of stewardship by proposing this second-order construct, which consists of the following dimensions (i) intrinsic motivation, (ii) organizational identification, (iii) use of personal forms of power, (iv) collectivism, (v) low power distance, (vi) and involvement orientation.

According to the literature, the family business context and relationships are consistent with the assumptions of these stewardship-like behaviors (Neubaum et al., 2017). Family firms are considered organizations whose members are bound by social ties, organizational

identification, emotional attachment, and other affective endowments appointed by the socioemotional wealth perspective (Davis et al., 2010; Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007; Le Breton-Miller, Miller, & Lester, 2011). Stewardship was conceptualized as a ‘secret sauce’ of family firms, which can lead to competitive advantage (Davis et al., 2010; Dibrell & Moeller, 2011; Eddleston, Kellermanns, & Sarathy, 2007; Zahra et al., 2008).

In this dissertation, we investigate stewardship in family firms considering the firm-level management control mechanisms that we study in the umbrella of Management Control Systems (e.g., Malmi & Brown, 2008) and Performance Measurement Systems (Ferreira & Otley, 2009). We consider management control mechanisms as explicit and implicit practices of the organization, which assist the strategic and management processes with respect to “*managing performance, and for supporting and facilitating organizational learning and change*” (Ferreira & Otley, 2009, p. 264). Specifically, we operationally interpret stewardship in the context of family businesses and considered management control mechanisms fairness design and procedural justice regarding goal setting and performance evaluation. We provide more information about this construct on the management control mechanism’s literature review subsection.

Following prior literature (e.g., Zahra et al., 2008), we investigate the association between management control mechanisms design and stewardship attitudes and behaviors in the family firm. We considered stewardship both at an individual level attitude and at an organizational level, as a ‘collective phenomenon’, according to Neubaum et al. (2017).

The construct ‘stewardship-oriented culture’ (Dibrell & Moeller, 2011; Zahra et al., 2008) is defined as “*the degree to which a stewardship culture exists within the family firm*” (Zahra et al., 2008, p. 1042). Following Zahra et al. (2008, p. 1043) a stewardship-oriented culture indicates the “*extent to which the family firm developed a collective, supportive, and caring environment for their employees, and provided opportunities for them to reach their potential*”. We study the stewardship-oriented culture as an outcome that is influenced by the exchanges that occur in the business social setting and management practices (Hernandez, 2012).

In addition, we also focus on an individual-level stewardship attitude. Some studies focused on stewardship motivation (Eddleston, 2008; Zahra et al., 2008) while others on the stewardship identification (Craig, Dibrell, & Neubaum, 2011; James et al., 2017; Vallejo, 2009). In this dissertation, we study stewardship identification, which refers to the extent of

manager's identification with the firm by “*accepting the organization's mission, vision, and objectives*” (Davis et al., 1997, p. 29). This element was previously conceptualized as one of the key features of stewardship (Davis et al., 1997; Neubaum et al., 2017).

We investigate both organizational-level and individual-level stewardship since complex interactions exist in the context of family firms between family and nonfamily managers. A manager's family affiliation is a characteristic that determines different behaviors in the family firm (Davis et al., 2010; James et al., 2017; Verbeke & Kano, 2012), which adds more complexity to the interpretation of stewardship in the family business setting (Madison et al., 2016).

For Corbetta and Salvato (2004), the stewardship behavior is presumably expected just for family managers that are members of the owning family but are not themselves the principal owner. In this sense, family managers are supposed to subordinate personal goals to family goals and pursue relational contracts that govern family firm behavior and which are immersed in emotions and sentiments. We summarize these assumptions in Table 2, adapted from James et al. (2017).

Table 2

Family affiliation: agency and stewardship assumptions

Assumptions	Nonfamily managers	Family managers
Divergent tendencies of nonfamily vs. family managers	The majority of nonfamily managers will think and act like agents	The majority of family managers will think and act like stewards
Bifurcated enactment of governance approaches	Nonfamily managers are more likely to be governed by an agency than a stewardship approach	Family managers are more likely to be governed by a stewardship than an agency approach

Source: Adapted from James et al. (2017, p. 264)

When Corbetta and Salvato (2004) mention that a steward behavior is expected just for family managers, they are consistent with the concept of bifurcation bias introduced by Verbeke and Kano (2012). The bifurcation bias is related to an asymmetric treatment whereby “*family employees are treated by default as highly valuable, firm-specific assets, being ‘on the inside for the long run’ and as loyal stewards with a long-term commitment to the firm*” (Verbeke & Kano, 2012, p. 1189). And, in contrast, “*nonfamily managers are dealt with as easily substitutable, commodity-like, short-term assets, and as self-serving agents who ultimately remain ‘outsiders’ even if used/internalized temporarily by the firm*” (Verbeke & Kano, 2012, p. 1189).

Stewardship behavior is expected by default for family managers and agency behavior for nonfamily managers (see Table 2). However, previous research has challenged these behavioral family affiliation assumptions and has shown that family managers can also behave as agents while nonfamily managers can also behave as stewards (James et al., 2017; Madison et al., 2016). James et al. (2017) empirically demonstrate a different perspective to the assumption that nonfamily managers might be governed by agency mechanisms while family managers may be governed by stewardship mechanisms. These authors show that stewardship-type mechanisms are positively associated with stewardship attitudes and behaviors independently of managers' presence of a family affiliation (James et al., 2017). These authors did not consider a specific management practice, and portrayed these mechanisms in terms of the sense of autonomy, belonging and competence that the owning family provides to managers in family firms. On the other hand, for the agency-type mechanisms, James et al. (2017) investigated the existence of incentive-based compensation and monitoring by family managers.

Therefore, Madison et al. (2016) suggest that stewards' behaviors can also be stimulated in nonfamily managers. We argue that the fairness perception on the management control mechanisms in place in the family firm may play a role on that. This is consistent with Verbeke and Kano (2012), who claim that mechanisms that signals the values of fairness and equality to family outsiders might mitigate the bifurcation bias effect (Verbeke & Kano, 2012).

2.2. Constructs in the family firm literature

Previous literature in family firms has applied a large range of constructs to capture family firm heterogeneity and distinctiveness (Dawson & Mussolino, 2014). These constructs evolve from more objective perspectives (Astrachan, Klein, & Smyrnios, 2002) to more subjective perspectives (Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007). Following Dawson and Mussolino (2014) and Chrisman, Kellermanns, Chan, and Liano (2010), there are three main theoretical lenses to investigate family firms' heterogeneity.

First, the Socioemotional Wealth (SEW) construct proposes an analysis of the controlling family's noneconomic goals in family firms, which drive decision-making processes and management control mechanisms (Berrone, Cruz, & Gomez-Mejia, 2012; Gómez-Mejía et al., 2007). Second, the literature beyond the components of family involvement in the business, known as the essence of family business approach, looks at elements that

characterize family firms in terms of a configurational approach (Chrisman, Chua, & Sharma, 2005; Chrisman, Chua, & Steier, 2003; Chua, Chrisman, & Sharma, 1999; Dawson & Mussolino, 2014). The essence of family firms relates to the vision held by the dominant family coalition and their intention to sustain such vision across generations (Chua et al., 1999; Dawson & Mussolino, 2014). Third, the familiness perspective highlights the distinctiveness of family business based on the family businesses resources in comparison to nonfamily firms (Habbershon & Williams, 1999; Sirmon & Hitt, 2003).

In sum, these three main theoretical frameworks provide diverse and complementary understanding about family firms, regarding definition, dimensions, level of analyses, and theoretical background (Dawson & Mussolino, 2014). We present a summary of these constructs definition, dimensions and theoretical basis in Table 3, adapted from Dawson and Mussolino (2014, pp. 175–176).

2.2.1. Controlling family's influence: ability and willingness

De Massis et al. (2014), following to a large extent these theoretical constructs, provide a critical discussion of the sufficient and necessary conditions for family involvement to produce particularistic family-centric behaviors. They claim that the previous empirical literature about family firms has not recognized this distinctive behavior to influence the firm, which can result in theoretical limitations of previous research.

For De Massis et al. (2014) it is important to consider both ability and willingness as key drivers of family firm's distinctiveness. Ability is the “*discretion of the family to direct allocate, add to or dispose of a firms' resources*” (De Massis et al., 2014, p. 346), which relates to the family power and legitimacy (Chrisman, Chua, De Massis, Frattini, & Wright, 2015). Family ability takes an objective perspective and uses the family involvement constructs such as family involvement in management and family involvement in ownership (Carney, 2005; Chrisman, Chua, Pearson, & Barnett, 2012; De Massis et al., 2014).

Table 3

Family firm's constructs

Construct	Socioemotional wealth (SEW)	The essence of family business	Familiness
Definition	Family's stock of affect-related value invested in the family firms (Berrone, Cruz, Gomez-Mejia, & Larraza-Kintana, 2010) Noneconomic utilities or affective endowments (Berrone et al., 2010) The array of non-financial benefits specifically associated with the well-being and affective needs of family members that are derived from operating a business enterprise (Debicki, Kellermanns, Chrisman, Pearson, & Spencer, 2016, p. 48)	The vision of the dominant family coalition and the intention of that dominant condition to sustain such vision across generations (Chua et al., 1999) A core essence statement encapsulates the values that serve as the foundation for the vision and mission (Craig & Moores, 2010)	A unique bundle of resources resulting from the interaction of the family and business systems (Habbershon & Williams, 1999; Habbershon, Williams, & MacMillan, 2003) It is represented via the bundle of decision premises that expresses the influence of the business family on its business (Frank, Kessler, Rusch, Suess-Reyes, & Weismeier-Sammer, 2016, p. 5)
Dimensions	Family control and influence Family members' identification with the firm Binding social ties Emotional attachment Renewal of family bonds to the firm through dynastic succession (Berrone et al., 2012) Family prominence Family continuity Family enrichment (Debicki et al., 2016)	Vision (Chua et al., 1999) Transgenerational intention (Chrisman et al., 2005; Chua et al., 1999) The following have also been put forward in the literature: Familiness (Chrisman, Chua, & Litz, 2003; Chrisman et al., 2005) Commitment (Chrisman et al., 2012) Family's influence over the strategic direction of the family firm and family firm behaviour (Chrisman et al., 2005)	Human resources (reputation and experience), organizational resources (decision making and learning), and process resources (relationships and networks) (Irava & Moores, 2010) Structural (social interactions and networks), cognitive (shared vision and purpose, as well as unique language, stories, and culture), and relational (trust, norms, obligations, and identity) dimensions (Pearson, Carr, & Shaw, 2008) Involvement, essence, and organizational identity (Zellweger, Eddleston, & Kellermanns, 2010) Decision premises such as ownership, management and control; proficiency level of active family members; sharing of information between active family members; transgenerational orientation; family-employee bond; family business identity (Frank et al., 2016, p. 5)
Theoretical basis	Behavioral theory; Agency theory; Prospect theory	Various (e.g., configurative approach; Behavioural and stakeholder theories)	Resource-based view; systems theory, New Systems theory

Source: Adapted from Dawson and Mussolino (2014, pp. 175–176)

In addition, willingness is defined as the “*favorable disposition of the involved family to engage in distinctive behavior*” (De Massis et al., 2014, p. 347), which relates to the controlling family goals and intentions toward the family business. In this Ph.D. dissertation, we use socioemotional wealth preservation as construct to capture a family’s willingness to influence the business decisions (De Massis et al., 2014). This approach is also supported by Veider and Matzler (2016), who argue that SEW consists in reference points for decision-making in family firms. Socioemotional wealth elements can vary considerably across family firms (Berrone et al., 2012), which theoretical foundations we explore in the following subsection.

2.2.2. Socioemotional Wealth

Socioemotional wealth is a construct that captures the stock and flows of affective endowments of the dominant coalition in the business (Berrone et al., 2012; Chua, Chrisman, & De Massis, 2015; Gomez-Mejia, Cruz, Berrone, & De Castro, 2011). SEW or affective endowments comprise “... *the stock of affect-related value that a family derives from its controlling position in a particular firm*” (Berrone et al., 2012, p. 259). For Debicki et al. (2016, p. 48), SEW is “*the array of nonfinancial benefits specifically associated with the well-being and affective needs of family members that are derived from operating a business enterprise*”.

SEW is founded on behavioral agency theory which proposes that the maximization of financial results is just one of the objectives of a family firm but not always the most important one (Wiseman & Gomez-Mejia, 1998). Additionally, the behavioral agency theory suggests that family firms are loss-averse with respect to SEW (Gomez-Mejia et al., 2011). Particularly in family firms, it is expected that the behaviors and decision-making processes are directed by a major objective that is to preserve or increase socioemotional endowments (Berrone et al., 2012; Gomez-Mejia et al., 2011).

The study from Berrone et al. (2012) is considered to be the seminal paper to distinguish different sub-dimensions of Socioemotional Wealth. Berrone et al. (2012) proposed five sub-dimensions of SEW, which they named the FIBER model, including (i) family direct and indirect control and influence over strategic business decisions; (ii) identification of family members with the firm where the firm is seen as an extension of the family for both internal and external stakeholders; (iii) binding social ties related to family firms’ social relationships;

(iv) emotional attachment of family members that is a source of emotions in the family business context; (v) and renewal of family bonds to the firm through dynastic succession.

Recently, researchers have tried to validate this theoretical model proposed by Berrone et al. (2012) and delved deeper into the sub-dimensions of socioemotional wealth (Chua et al., 2015; Debicki et al., 2016; Hauck, Suess-Reyes, Beck, Prügl, & Frank, 2016; Schulze & Kellermanns, 2015). Hauck et al. (2016) developed a survey aiming to validate the dimensions and items proposed by Berrone et al. (2012). Hauck et al. (2016) validated three of the five dimensions of the FIBER model which they named REI scale: Renewal of family bonds through dynastic succession; Emotional attachment of family members; Identification of family members with the firm. Furthermore, Debicki et al. (2016), proposed an investigation of the SEW intentions, which they grouped along the following three dimensions: (i) prominence of the family image, (ii) continuity and succession, and (iii) providing happiness and harmony to the family. The SEW construct is an emergent topic of research in the family firm domain and it offers many possibilities to researchers (e.g., Berrone et al., 2012; Debicki et al., 2016) including in management accounting domain (Songini, Gnan, & Malmi, 2013).

Considering the multidimensional nature of SEW (Berrone et al., 2012) and the heterogeneity in terms of antecedents and outcomes of each of the SEW sub-dimensions (Berrone et al., 2012; Chua, Chrisman, & De Massis, 2015; Dawson & Mussolino, 2014; Debicki et al., 2016), previous studies have limited their research design to one or some of these SEW dimensions, in alignment with the focus of each study. For example, Gómez-Mejía, Cruz, and Imperatore (2014) focused on family control and influence and identification dimensions, since they argue that they are the most salient dimensions of SEW for the gambling process in earnings management and voluntary disclosure.

Taking this rationale (Gómez-Mejía et al., 2014) and the lack of consensus in the literature about the SEW dimensions (Chua, Chrisman, & De Massis, 2015; Schulze & Kellermanns, 2015), we focus on two dimensions of FIBER model (Berrone, Cruz, & Gomez-Mejia, 2012), which have been considered by recent studies (Chua et al., 2015; Debicki, Kellermanns, Chrisman, Pearson, & Spencer, 2016). These are (i) family control and influence and (ii) renewal of family bonds through dynastic succession. These two dimensions are present in the main theoretical frameworks described on the family firm literature (Chrisman, Kellermanns, Chan, & Liano, 2010; Dawson & Mussolino, 2014). For example, in the essence approach (Chrisman, Chua, & Sharma, 2005; Chrisman, Chua, & Steier, 2003; Chua, Chrisman, & Sharma, 1999) family control and influence have been treated as a family's ability to

influence related to family's involvement in management control, management, and ownership, however in the SEW it is treated as a controlling family's willingness.

Additionally, in the essence approach, the renewal of family bonds is consistent with the construct of family transgenerational control intention. This element has been explored by Chrisman et al. (2003) as the transgenerational perspective of vision set by the dominant family coalition. In the definition of family firms reported by Chua et al. (1999, p. 25), this concept is recognized as "*potentially sustainable across generations of the family or families*".

Moreover, these elements are also present in the familiness literature (Frank, Kessler, Rusch, Suess-Reyes, & Weismeier-Sammer, 2016; Habbershon & Williams, 1999; Sirmon & Hitt, 2003). For example, Frank et al. (2016) use the New Systems Theory Perspective (Luhmann, 2013) to redefine the familiness construct, which they call decision premises. Among the elements of familiness, they discuss ownership, management and control, and transgenerational control orientation, that are related respectively to family control and influence and renewal of family bonds SEW intentions.

Therefore, we develop our hypotheses, in the first empirical study, based on the SEW framework (Berrone et al., 2012; Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007) because we use two SEW reference points to capture a controlling family's willingness. There is still lack of evidence about how a family's willingness is associated with management accounting practices in family firms (Helsen, Lybaert, Steijvers, Orens, & Dekker, 2017; Prencipe, Bar-Yosef, & Dekker, 2014; Songini, Gnan, & Malmi, 2013). We hypothesize that family control and influence and the renewal of family bonds through dynastic succession intentions may be differently associated with management control mechanisms' design.

Family control and influence is related to the intention to keep the power in the hands of the controlling family (founder or a dominance coalition) and exert influence over business decisions. This influence can be exerted directly by the roles that the family owners assume in the company or indirectly by the delegation of power to nonfamily managers (Berrone et al., 2012). Additionally, there are other ways by which the controlling family can achieve control over the business (Berrone et al., 2012), for example by the founder reputation and status in the firm, which are considered informal mechanisms. In sum, control and influence SEW intentions are usually highly desired elements for family members (Berrone et al., 2012; Zellweger, Eddleston, & Kellermanns, 2010).

The renewal of family bonds through dynastic succession points to the family's intention to maintain the company for future generations – also recognized in the literature as

transgenerational sustainability or transgenerational orientation (Berrone et al., 2012; Chrisman, Chua, Pearson, & Barnett, 2012; Suess-Reyes, 2016; Zellweger & Dehlen, 2012). In this sense, the enterprise is seen as a family's heritage and tradition (Berrone et al., 2012; Casson, 1999), and it indicates that the firm is not just an asset held by the family. We argue in the hypotheses of Paper 1 that this element has important implications on the time horizons of plans and decisions in the business. Finally, the renewal of family bonds SEW intentions indicate that "*family members view the firm as a long-term family investment to be bequeathed to descendants*" (Berrone et al., 2012, p. 264). This concept is tied to the transgenerational orientation element that has been widely studied in the family business research (Chrisman et al., 2012). Suess-Reyes (2016, p. 1) defines transgenerational control orientation as "*a decision premise to maintain the family's control over the business across generations*". Transgenerational orientation is a central point in the main frameworks of family distinctive characteristics and intentions (Suess-Reyes, 2016), such as familiness, essence, and socioemotional wealth.

We treated empirically these two SEW dimensions based on Frank et al. (2016). First, we show that the elements of SEW that we have chosen in this study, are consistent with the other main theoretical lenses in the family firm literature. Second, the instrument of Frank et al. (2016) is argued to capture decision premises in the organizational level, which is consistent with the willingness concept (De Massis, Kotlar, Chua, & Chrisman, 2014) and also with the reference point concept from the SEW perspective (Berrone et al., 2012; Debicki et al., 2016; Gomez-Mejia, Cruz, Berrone, & De Castro, 2011). Frank et al. (2016) have developed the concept of familiness on decision premises based on the New Systems Theory (NST) Perspective. Frank et al. (2016, p. 712) "*define a family business as a communication system incorporating the decision premises shaped by a family [...] to enable business-related communication*". For these authors, decision premises (Simon, 2012) are "*communicatively constructed realities that frame the decision-making processes in organizations*" (Frank et al., 2016, p. 713). Despite the differences around SEW and familiness (in the NST perspective) approaches, the concept around decision premises is similar to the discussion of reference points of decision in the SEW theoretical framework.

In this sense, we argue that the measures of Frank et al. (2016) are more consistent with the willingness and reference point concepts than the other measures, such as those of Berrone et al. (2012). Hence, despite the fact that we treat empirically the SEW intentions based on the Frank et al. (2016), we argue that they are consistent with the SEW literature. In the first

empirical study, we develop the research hypotheses based on both the family's ability and willingness to influence the firm, which explanations were presented previously.

2.2.3. Familiness

With regard to the third empirical study, we adopt the theoretical lens provided by the familiness framework since it proposes an organizational-level construct which is conceptualized in the resource-based view. Familiness is studied as the unique bundle of resources that emerge from the interaction of family and business systems which leads to competitive advantage (Dawson & Mussolino, 2014; Habbershon & Williams, 1999; Habbershon, Williams, & MacMillan, 2003).

In the resource-based view perspective, resources can be considered as human resources (reputation and experience), organizational resources (decision making and learning) and process resources (relationships and networks). The dimensions of familiness represent the interactions between these resources. Chrisman et al. (2003) proposes four aspects for familiness that are the: “(i) *intention to maintain family control of the dominant coalition*; (ii) *unique, inseparable, and synergistic resources and capabilities arising from family involvement interactions*; (iii) *a vision set by the family controlled dominant coalition and intended for transgenerational pursuance*; (iv) *and pursuance of such vision*” (Chrisman, Chua, & Litz, 2003, pp. 470–471).

Other studies have also explored familiness dimensions. Irava and Moores (2010), for example, suggests familiness comprise the following dimensions (i) human (reputation and experience), (ii) organizational (decision making and learning) and (iii) process resources (relationships and networks). Moreover, Pearson et al. (2008) indicate the structural dimension (social interactions and networks), cognitive dimension (shared vision and language) and relational dimension (trust, norms, obligations, and identification), which leads to a competitive advantage.

Hence, we follow previous studies that have treated familiness as the family involvement in the business since it captures the family firm's resources and capabilities derived from the family and business interactions, which are expected to be positively associated to family firms' performance. Motivated by the controversial findings in the current literature (Anderson & Reeb, 2003; Garcia-Castro & Aguilera, 2014; Minichilli, Corbetta, & MacMillan, 2010; Rutherford, Kuratko, & Holt, 2008), we explore the stewardship

organizational-level construct (stewardship-oriented culture), as a positive moderator for the association between family involvement in management and family firm performance (Dibrell & Moeller, 2011; Eddleston, Kellermanns, & Sarathy, 2007; Zahra, Hayton, Neubaum, Dibrell, & Craig, 2008). Finally, we apply the familiness framework in the third study to discuss that the association between family involvement in management and family firm financial performance will be stronger for higher levels of stewardship-oriented culture.

2.3. Management control mechanisms design characteristics and Procedural Justice

We investigate management control mechanisms based on the Performance Measurement Systems (PMS) and procedural justice literature. First, we present the purposes of management control mechanisms in organizations in the agency and stewardship perspective, and then we introduce the procedural justice lens regarding those mechanisms' design characteristics. Finally, we present the constructs that will be explored in this Ph.D. dissertation in terms of management control mechanisms' design characteristics.

Conceptually, we use the term management control mechanisms to refer to “*the explicit and implicit control systems or mechanisms of the organizations*” (Madison, Holt, Kellermanns, & Ranft, 2016, p. 68). Management control mechanisms can be considered a broad concept, in which umbrella we can place, for example, management accounting practices and control mechanisms such as monitoring and trust systems (Davis, Schoorman, & Donaldson, 1997; Madison et al., 2016), which might include both formal and informal mechanisms studied in the Management Control Systems' literature (Malmi & Brown, 2008) and in the Performance Measurement Systems' literature (Ferreira & Otley, 2009; Otley, 1999).

Management control mechanisms have been traditionally treated as agency control mechanisms, which purpose is to align managers and principals' interests in the organization. They exist to limit actions, direct attention and constrain managers' discretion over business decisions, curbing opportunistic behaviors (Eisenhardt, 1989). Most of the definitions of management mechanisms in the management accounting domain meets this theoretical background. For example, Anthony et al. (2014, p. 4) indicate that management control is a “*systematic process by which the organization's higher-level managers influence the organization's lower-level managers to implement the organization's strategies*”.

However, management control mechanisms can also foster trust, preserve managers' autonomy, authority, and discretion, and create transparency in organizations, which are related

to the stewardship literature (Ahrens & Chapman, 2004; Madison et al., 2016; Simons, 2013). These management control mechanisms can be depicted in terms of many organizational processes, ranging from setting goals, evaluating performance and rewarding, depending on the purpose of those management control mechanisms.

Ferreira and Otley (2009) provide an insightful definition and framework about those mechanisms, which they named as Performance Measurement Systems (PMS). For Ferreira and Otley (2009, p. 264), PMS are:

[...] the evolving formal and informal mechanisms, processes, systems, and networks used by organizations for conveying the key objectives and goals elicited by management, for assisting the strategic process and ongoing management through analysis, planning, measurement, control, rewarding, and broadly managing performance, and for supporting and facilitating organizational learning and change. (2009, p. 264)

From this definition and based on the procedural justice lens, we focus on goal setting and performance evaluation mechanisms since they are considered to play a vital role in performance evaluation systems (Otley, 1999). In this sense, we combine, in this study, goal setting and performance evaluation management control mechanisms that are studied in the Management Control Systems' literature (Malmi & Brown, 2008) as a planning and a cybernetic mechanism (usually for a 12-month period). Those mechanisms have been partially discussed in the family business literature (Helsen et al., 2017; Songini et al., 2013) and some evidence can be found in the stewardship literature (e.g., Hernandez, 2012).

Therefore, while the agency paradigm follows the economic perspective, the stewardship paradigm is supported by the psychological and the sociological views. Subsequently, we introduce the procedural justice framework to discuss the design characteristics of management control mechanisms in fostering stewardship in family firms. Previous literature has suggested that procedural justice is a key mediating variable that links management control mechanisms design and managers' attitudes and behaviors (Beuren, Klein, Lara, & Almeida, 2016; Hartmann & Slapničar, 2009; Langevin & Mendoza, 2013; Voußem, Kramer, & Schäffer, 2016).

Prior literature has suggested that those management control mechanisms (e.g. goal setting, performance evaluation and rewarding) might be considered as procedures in the procedural justice theoretical framework (Hartmann & Slapničar, 2012; Kim & Mauborgne, 1993; Langevin & Mendoza, 2013; Voußem, Kramer, & Schäffer, 2016), which are expected to generate procedural justice feelings toward managers (Langevin & Mendoza, 2013; Libby, 1999). Before discussing procedural justice in the management accounting domain, we present

some elements to characterize procedural justice supported by traditional scholars in this field (e.g., Leventhal, Karuza, & Fry, 1980).

Procedural justice is one of the approaches under the organizational justice umbrella (Fortin, 2008) that has been first discussed by two social scientists from judicial processes perspective (Thibaut & Walker, 1975). Procedural justice (Colquitt, Conlon, Wesson, Porter, & Ng, 2001; Leventhal et al., 1980) is related to the perception of managers on the procedures that determine the allocation of organizational resources and decisions. Lind and Tyler (1988, p. 1) define procedural justice as the “*judgments that procedures and social processes are just and fair*”. The literature points that fair decisions should be accurate, free from information bias, consistently through people and over time, and should have mechanisms to correct flaws of opinions from affected groups and follow the prevailing personal ethical standards (Leventhal et al., 1980). These are considered the normative rules of procedural justice (Leventhal et al., 1980).

In the organizational setting and management accounting domain, Lau and Oger (2012, p. 324) suggest that procedural fairness “*refers to judgments on how fair are the means or the rules and processes people use to make decisions*”. Lau and Oger (2012) state that since the mid-1990, management accounting researchers have been interested in this subject. One of the reasons for this growing attention to procedural justice can be found in Anthony and Govindarajan (1995, p.556), who point out that “*objectives, goals, and standards are likely to provide strong incentives only if the manager perceives them as fair*”. Therefore, management accounting scholars should understand the fairness elements in management accounting practices, since fairness may potentially support the alignment of behaviors in the organization (Malmi & Brown, 2008; Merchant & Van der Stede, 2007; Otley, 1999).

Langevin and Mendoza (2013) highlight that, in previous empirical and theoretical research, Management Control Systems’ fairness characteristics relate to: (i) participation in target-setting (Lau & Tan, 2005; Libby, 1999); (ii) level of formality and quality of feedback (Hartmann & Slapničar, 2009); (iii) use of multiple nonfinancial measures in performance evaluation (Bellavance, Landry, & Schiehl, 2013; Burney, Henle, & Widener, 2009; Lau & Moser, 2008). These characteristics point to the whole management process, from goal setting and ending up with performance evaluation process (Langevin & Mendoza, 2013).

In this dissertation, we focus on two fairness characteristics of management control mechanisms design, which are participation and formality, specifically with respect to goal setting and performance evaluation processes. First, participation can be understood as an

expression of voice in the management context (Langevin & Mendoza, 2013). Hartmann and Slapničar (2012, p. 21) argue that “*voice is a central process variable*” because it “*establishes a feeling of being valued as an equal organizational member*”. Following Anthony and Govindarajan (2007, p. 10) participation points to the “*involvement of employees in and their influence over*” the family business decisions.

Second, formality means to have explicit, objective and quantitative targets and measures respectively for goal setting and performance evaluation (Hartmann & Slapničar, 2009, 2012). It is different from informal performance evaluation systems that are designed with implicit and qualitative criteria and which are characterized by a high level of subjectivity (Hartmann & Slapničar, 2009).

In the context of family business, Lansberg (1989) was one of the first authors to bring the discussion of justice to the family business field (Van der Heyden, Blondel, & Carlock, 2005). These authors recognized the concept of justice as a messy and complicated subject especially in family firms due to the existence of many systems (family, business, and ownership). These issues may be more complex, due to the characteristics of the family business, the business system and the family system, which certainly tends to influence a firm’s processes.

We explore this discussion of management control mechanisms fairness design in papers 1 and 2. In paper 1, we study the controlling family’s ability and willingness influence on the design of those management control mechanisms. In paper 2, we combine the management control mechanisms’ fair design and procedural justice in family firms with the stewardship theoretical lens. In this sense, we propose that those design characteristics in goal setting and performance evaluation, mediated by procedural justice perceptions, can be interpreted as stewardship situational mechanisms in family firms.

2.4. A review of family firms’ literature in Brazilian journals

We developed a bibliographic survey to identify previous research that has been settled in the context of family firms in Brazil, which has discussed one of the following keywords: (i) governance mechanisms and management control systems, (ii) stewardship, (iii) socioemotional wealth, (iv) procedural justice, (v) and performance or familiness. We focus on the Brazilian journals that are listed in the SPELL (Scientific Periodicals Electronic Library) Brazilian database. Our goal is to provide a big picture about our contribution to the Brazilian research community since our theoretical models, hypotheses and discussions are supported

mainly by international publications in family business and management accounting top journals.

We searched the SPELL database for journal articles published in Portuguese between January 2007 to the end of December 2016 (10-year period) using the following search expressions in abstract or keywords (“family business*”) AND one of those presented in Table 4. We target journals from the general business and accounting literature.

Table 4 shows that 144 papers were published within the ‘family firm’ expression during this 10-year period of which 20 (twenty) contain the terms related to management control mechanisms, 3 (three) to stewardship, 1 (one) to Socioemotional wealth and 8 (eight) to familiness. Looking at the terms in the general management literature, we identified 2 (two) studies that discussed stewardship, 7 (seven) for procedural justice and 1 (one) for familiness. Some of these studies were also identified in the family firm literature. In total, we present the results of 39 papers from which 3 were classified in more than one topic.

Table 4

Summary of papers and constructs from our bibliographical survey in Brazilian journals

Id	Keywords (English)	Keywords (Portuguese)	Papers published
1	Family firm or family firms	Empresa familiar ou Empresas familiares ou Controle familiar ou Indústrias familiares ou Gestão familiar ou Organização familiar	144
2	(1) AND governance mechanisms or management control systems or management control or management accounting	Mecanismos de gestão ou Mecanismos de governança ou Sistemas de controle gerencial ou Controle gerencial ou Contabilidade gerencial ou Práticas gerenciais ou Práticas de gestão ou Controladoria	20
3	(1) AND stewardship	Stewardship* ou teoria da agência ou problemas de agência ou custos de agência	3
4	(1) AND socioemotional wealth	Riqueza socioemocional ou SEW ou socioemotional wealth	1
5	(1) AND procedural justice or procedural fairness	Justiça processual ou justiça organizacional	0
6	(1) AND performance or familiness	Desempenho ou Familiness* ou Visão baseada em recursos ou RBV	8
7	Stewardship	Stewardship*	2
8	Procedural justice or procedural fairness	Justiça processual	7
9	Performance or familiness	Familiness*	1

* No translation to Portuguese.

The number of papers published is similar in each year. Table 5 shows that in 2009, 2010, and 2011 there is a prevalence of studies about management control mechanisms in family firms. In addition, in 2015 and 2016 there is a concentration of studies about procedural justice in organizations in general.

Table 5

Overview of publication Topics (Id) and per year

Years	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	Total
2007	1	1	-	-	1	-	-	-	3
2008	-	-	-	-	2	1	-	-	3
2009	4	-	-	-	-	-	-	-	4
2010	6	-	-	-	1	-	-	-	7
2011	5	-	-	-	-	-	-	-	5
2012	1	-	-	-	1	-	1	-	3
2013	1	2	-	-	1	-	-	-	4
2014	1	-	-	-	1	-	-	1	3
2015	1	-	-	-	-	-	2	-	3
2016	-	-	1	-	1	1	4	-	7
Total	20	3	1	0	8	2	7	1	42

Note: Family firm or family firms (2) AND governance mechanisms or management control systems or management control or management accounting, (3) AND stewardship, (4) AND socioemotional wealth, (5) AND procedural justice or procedural fairness, (6) AND performance or familiness. In the general management literature (7) Stewardship, (8) Procedural justice or procedural fairness, and (9) Performance or familiness

Table 6 indicates that there is a predominance of papers published about management control mechanisms in family firms in “Revista de Administração FACES Journal”, “Revista Brasileira de Gestão de Negócios” and “Revista Pensamento Contemporâneo em Administração”. Moreover, there is a concentration of papers about procedural justice in “Advances in Scientific and Applied Accounting”. Different from international journals such as Journal of Family Business Strategy and Family Business Review, in Brazil there is not a journal dedicated to publishing mainly or exclusively family business studies. From our review only 7 papers that discussed about a topic of our search criteria in family firms were published in the Brazilian top journals which are ranked as A2 Qualis evaluation process¹.

Based on this sample, we read the papers and made notes about their objectives and methodological approach, which we present respectively on Appendix 1 and Appendix 2. We classified the papers based on the topic of interest and the author’s alphabetical sequence. Appendix 1 shows the heterogeneity of purposes that have driven each of the studies. We highlight some of the reviewed studies, due to the intersection with this dissertation’s constructs

¹ Qualis indicate the level of impact of these Journals, which is measured each three year-period by CAPES that is a Foundation within the Ministry of Education in Brazil. The journals are grouped into strata that are based primarily on indexing and impact. Among the indexers are JCR, H-Scopus and Scielo. The classification groups are A1, A2, B1, B2, B3, B4 and B5. The highest rank is A1 (which just international journals in Business Area) and the lowest rank is B5. As the highest level of classification of Brazilian Journals is A2 (in the 2013-2016 evaluation cycle), we present the following criteria for a journal to be classified as A2: (i) ISSN number, (ii) at least two volumes per year; (iii) JCR > 0.7 (63%); (iv) H-Scopus > 9 (50%).

and associations. We also present some considerations about the methodological approaches applied by the reviewed studies on each topic.

Table 6

Overview of publication Topics (Id) and Journal Articles

Journals	Qualis	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	Total
Revista Brasileira de Gestão de Negócios	A2	2	-	-	-	1	-	-	-	3
Advances in Scientific and Applied Accounting	A2	-	-	-	-	-	-	2	-	2
Organizações & Sociedade	A2	1	-	-	-	1	-	-	-	2
Revista de Administração	A2	-	-	1	-	-	1	-	-	2
Revista de Administração Contemporânea	A2	-	1	-	-	-	-	1	-	2
Revista de Contabilidade e Organizações	A2	-	-	-	-	1	-	1	-	2
Revista Contemporânea de Contabilidade	A2	1	-	-	-	-	-	-	-	1
Contabilidade, Gestão e Governança	B1	1	-	-	-	1	-	-	-	2
Revista de Negócios	B1	1	1	-	-	-	-	-	-	2
BASE - Revista de Administração e Contabilidade da UNISINOS	B1	1	-	-	-	-	-	-	-	1
Contextus - Revista Contemporânea de Economia e Gestão	B1	1	-	-	-	-	-	-	-	1
Enfoque Reflexão Contábil	B1	-	-	-	-	-	-	1	-	1
REAd. Revista Eletrônica de Administração	B1	-	-	-	-	-	-	1	-	1
Revista de Ciências da Administração	B1	-	1	-	-	-	-	-	-	1
Revista de Administração FACES Journal	B2	3	-	-	-	-	1	-	-	4
Revista Pensamento Contemporâneo em Administração	B2	1	-	-	-	1	-	-	1	3
Gestão & Regionalidade	B2	1	-	-	-	-	-	-	-	1
Revista Alcance	B2	1	-	-	-	-	-	-	-	1
Revista Ciências Administrativas	B2	1	-	-	-	-	-	-	-	1
Revista de Administração da Unimep	B2	1	-	-	-	-	-	-	-	1
Revista da Micro e Pequena Empresa	B2	1	-	-	-	-	-	-	-	1
Revista Eletrônica de Estratégia & Negócios	B2	-	-	-	-	1	-	-	-	1
Revista Gestão & Planejamento	B2	1	-	-	-	-	-	-	-	1
Revista Gestão & Tecnologia	B2	-	-	-	-	1	-	-	-	1
Revista Organizações em Contexto	B2	1	-	-	-	-	-	-	-	1
Revista Capital Científico - Eletrônica	B3	-	-	-	-	-	-	1	-	1
Revista de Estudos de Administração	-	1	-	-	-	1	-	-	-	2
Total Geral		20	3	1	0	8	2	7	1	42

Note 1: Family firm or family firms (2) AND management control mechanisms or management control systems or management control or management accounting, (3) AND stewardship, (4) AND socioemotional wealth, (5) AND procedural justice or procedural fairness, (6) AND performance or familiness. In the general management literature (7) Stewardship, (8) Procedural justice or procedural fairness, and (9) Performance or familiness.

Note 2. Qualis indicate the level of impact of these Journals, which is measured each three year-period by CAPES that is a Foundation within the Ministry of Education in Brazil.

2.4.1. Management control mechanisms in family firms

We selected five papers that discussed the role of formal mechanisms in family firms, especially in the succession process. Müller and Beuren (2010) developed a survey with 12 (twelve) large Brazilian businesses and propose that the controllership practices exist in those family firms, which are related to the beliefs and values of the controlling family. Mizumoto

and Machado Filho (2007) indicates that the adoption of corporate governance practices allowed the studied firm to improve monitoring and management, which support the pursuance of the organization's strategies. Additionally, these authors show that those management control mechanisms avoided adverse effects related to the controlling family's influence in the firm, such as entrenchment.

Leal and Botinha (2013) suggest the importance of the controller to the succession process regarding information flows and strategy formulation. These authors developed a case study with a large Brazilian firm and interviewed family and nonfamily managers. In addition, Oliveira, Albuquerque, and Pereira (2012) investigated a long-running family firm that is public-listed on the Brazilian Stock Exchange (Bovespa). Oliveira et al. (2012) discuss the implications of adopting a formal governance structure while entering in Level 1 corporate governance index of BM&F Bovespa² had for the firm, for better defining the agent's and principal's roles as well as defining clear succession rules. Finally, Oliveira, Álvares, Pinheiro, and Pimentel (2011), based on a case study in a large Brazilian family firm, suggest that the complexity of the family dimension and the controlling family's influence on the business can be diminished by the implementation of formal governance mechanisms and succession policies. In sum, these studies agree that formal governance practices support a family firm to be sustainable in the long-term.

From the studies that investigated governance and management mechanisms in family firms (topic 2), 15 applied a qualitative approach (mainly case studies) while 4 applied a survey design. From the studies that applied a survey, the sample size ranged from 12 to 13 firms focusing on a heterogeneous sample of small, medium and large firms (Beuren, Fachini, & Nascimento, 2010; Theodoro & Beuren, 2010) and on a sample of large firms (Beuren & Muller, 2010; Muller & Beuren, 2010). These studies target managers from accounting area as the study informants and developed descriptive analyses. By the other hand, the qualitative studies about governance and management mechanisms in family firms focused mainly on large businesses, conducted interviews with top managers and developed discourse or content analysis as the main analytical approach.

² São Paulo Stock, Mercantile & Futures Exchange (BM&F Bovespa). Recently, after a merger between BM&F BOVESPA and Cetip, it is named B3 (http://www.bmfbovespa.com.br/en_us/about/about-bm-fbovespa/who-we-are/).

2.4.2. Stewardship in family firms

With regards to topic 3 (stewardship), we highlight two studies. Pinto and Leal (2013) investigated the association between ownership concentration and manager's compensation, by developing a quantitative approach based on archival data with a sample of 315 large firms. Machado, Grzybowski, Teixeira, and Silva (2013) studied the role of governance structure in avoiding agency problems in a small family firm. Machado et al. (2013) propose that the governance model emphasized by the literature (especially for large firms) is different from those applied to small family firms. In small businesses, there is more informal governance regarding information sharing and less formal mechanisms.

2.4.3. Socioemotional wealth

We identified just one study that discusses socioemotional wealth (topic 4), which reviews the literature and proposes avenues for future research (Kalm & Gomez-Mejia, 2016). Kalm and Gomez-Mejia (2016) present the Socioemotional wealth theoretical background and points to its influence on strategic decisions and organizational governance in family firms, which are in line with Gomez-Mejia et al. (2011).

2.4.4. Familiness

We highlight three studies from the eight studies that were classified in the familiness topic. From the three studies, two of them indicate the resource-based view as their theoretical lens (Filardi, Freitas, Pinto, & Silveira, 2012; Nóbrega & Hoffman, 2014). Filardi et al. (2012), based on a case study developed with a medium family firm that operates as a distributor of veterinary products, argues that by investing in resources and capabilities the firm achieved superior performance among its competitors. Nóbrega and Hoffmann (2014) discuss the relationship between the family firm's internal resources and entrepreneurial orientation based on a case study developed with a small family firm. The other studies that employ a qualitative methodological approach did not discuss the familiness construct.

Finally, Peixoto and Buttini (2013) used a longitudinal archival data from a sample of 246 large and public-listed Brazilian firms (family and nonfamily firms). They concentrated on the association of family involvement in ownership and firm's value and performance, and they show that higher the level of ownership concentration, lower was the firms' performance.

2.4.5. Procedural justice

Finally, we identified studies in the general management literature that investigate procedural justice. All the seven studies identified employed a survey design and focused on managers mainly from large firms, which sample range from 26 to 119 respondents. This larger sample was obtained with an individual organization consisting of a single entity survey.

From these studies, we highlight Beuren et al. (2016) that shows the association between Management Control Systems fairness dimensions, such as controllability and the use of multiple performance indicators, and manager's fairness perceptions regarding distributive and procedural justice. These authors also indicate that procedural justice and interactional justice are positively associated with manager's commitment. Beuren et al. (2016) developed a survey with managers from large firms in Brazil.

2.4.6. Summary of the findings from the review of the literature in Brazil

Based on this review, we suggest that there is a lack of studies that employ a quantitative perspective in Brazil, regarding the discussion of the association between the controlling family's influence and the design of management control mechanisms in family firms. Additionally, we show that stewardship and socioemotional wealth frameworks have not been widely studied in Brazil. Particularly, we argue that stewardship theoretical lens and its constructs have not been studied in the context of Brazilian family firms. In addition, we show that socioemotional wealth has not received an empirical treatment by prior Brazilian family firm literature.

Despite of familiness being the second most researched term from our review, we highlight that the studies have not addressed the association of family's influence on the firms' performance except for Peixoto and Buttini (2013) that focused on family and nonfamily public-listed firms. Based on the procedural justice literature we argue that the studies did not yet discuss about formal and participative management control mechanisms' fairness dimensions and did not focused exclusively in manager's perceptions in the family firm setting. Therefore, by looking at the consequences of procedural justice, prior literature in Brazil has not addressed yet the association between procedural justice and stewardship.

3. METHODOLOGY

3.1. Sample Selection

To achieve the objectives of this study, we administered a survey mailed to Brazilian family firms. This method has been applied previously by family businesses researchers, as suggested for example by Hair and Sarstedt (2014) and Wilson et al. (2014). We employed a survey in this study in order to collect information about the constructs. Additionally, specifically for paper 3, we combine the survey results with archival data on family firm's financial performance.

We use an *ex-ante* criterion based on the firm's legal form and industry, from which we eliminate NGO (Non-governmental organizations) and financial institutions. However, we did not use proxies to target family firms for our survey because our database did not have reliable information about family ownership or family involvement in the top management team, which are usually considered operational definitions commonly applied in the family firms' field. Our focus was on medium and large-sized privately held family businesses observed in the database named EMIS® (Emerging Market)³. In Brazil, depending on the reference used, the firm size classification includes total operating revenue or the number of employees. As we did not have the updated information about the number of employees' before starting the survey, we limited our population based on the total operating revenue information. In the current database, we had 2,953 firms that could be potentially considered as Brazilian family businesses. Those firms also have at least one available email address.

In sum, to get to this population of 2,953 firms, we have kept in the database firms that: (1) were privately held, (2) had a total operating revenue superior than 20 million BRL⁴ (Brazilian Currency) in 2015, (3) had an operational status, (4) and had Limited Liability Company and Public Limited Company Legal Forms. We additionally excluded publicly companies, banks, cooperatives, associations, and partly state-owned companies.

Furthermore, we added email contacts from those firms that participated in the previous surveys that were developed by a research group at the University of Sao Paulo (Brazil), which firms were mostly in the IS EMIS® database, totalizing approximately additional 250 contacts.

³ EMIS database website (<https://www.emis.com/who-we-are>). EMIS operates in and reports on countries where high reward goes hand-in-hand with high risk. We bring you time-sensitive, hard-to-get, relevant news, research and analytical data, peer comparisons and more for over 125 countries emerging markets.

⁴ In 16th September 2017, US\$ 1 was equivalent to BRL 3.125.

However, when we sent the emails, we realized that some of these contacts were not updated and did not get to the potential respondent's mailbox.

In total, we sent 2,279 emails of which we obtained 152 valid questionnaires (response rate of 6.67%). In these questionnaires, the respondents filled out practically all the questions, with exception to one or other assertive. For those cases, we applied the mean replacement procedure in our analyses, which consists of replacing the missing for the mean score of the specific variable (Parwoll & Wagner, 2012).

Due to the specific purposes of each paper and the limitations of data availability, we used different samples and subsamples of the population of responding firms to the survey in the analyses of Papers 1, 2 and 3. We summarize the papers' information, samples, and subsamples in Figure 3.

Paper title	Samples	Subsamples
Paper 1: Family's influence and the design of management control mechanisms in family firms	n=152 (complete sample) n=120 (after excluding listed firms, firms with less than 50 employees and family ownership lower than 50%)	-
Paper 2: Management control mechanisms' fair design and procedural justice as antecedents of stewardship in family firms	n=152 (complete sample) n=120 (after excluding listed firms, firms with less than 50 employees and family ownership lower than 50%)	n= 99 (nonfamily managers) n= 53 (family managers and founders) n= 36 (family managers)
Paper 3: Family involvement in management and family firm's performance: the moderating role of stewardship-oriented culture	n=59 (after keeping firms with financial information in 2016 and excluding firms with negative equity in 2016 and extreme values of Return on Sales and total assets)	-

Figure 3. Papers, samples and subsamples information

In paper 1, we discuss the relationship between the controlling family's ability and willingness and the design of management control mechanisms. We conducted the analyses with the full sample of 152 respondents and with a sample of 120 respondents, after excluding firms that were listed firms (5 firms), that had less than 50 employees (18 firms), and had family ownership lower than 50% (11 firms). It is important to mention that two public listed firms had family ownership lower than 50%.

In paper 2, we investigate the association between management control mechanisms' fair design, procedural justice and stewardship (both organizational and individual levels). First, we developed the analyses for a sample of 152 and for a sample of 120 respondents (as commented in paper 1). Thereafter, we focused on the analyses about the respondents' family affiliation based on the subsamples of (i) nonfamily managers (n=99), (ii) family managers and founders

(n=53) (iii) and family managers (n=36). These subsamples were selected out of the 152 respondents' sample.

In paper 3, we explore familiness and stewardship in family firms and their association with family firm performance. Due to confidentiality issues, some of the respondents did not characterize the firm's name. In addition, other firms did not have available financial information in 2016. We could identify in EMIS® database 66 firms with financial information in 2016. From those, we excluded firms that have negative equity (4 firms) and had an extreme value of Return on Sales (2 firms) and total assets (1 firm). Therefore, we conducted the analyses in paper 3, based on a sample of 59 family firms.

3.2. Data Collection Method

The data collection procedure follows the recommendations of the research method design established in Dillman (2007). First, we applied a pre-test with two nonfamily managers, one founder, and one heir from medium and large family businesses and one pre-test with a Ph.D. student that investigate management control systems in family firms. As a result of the pre-test, we made minor changes by adding labels to firm characterization questions such as firm's size. However, we did not change any of the constructs' items after the pre-test. As a validity procedure for the constructs, the questionnaire was translated into Portuguese and adapted to a five-point Likert scale. Then we translated the questionnaire back into English and compared it to the English original version to check for face validity of the items and constructs.

After the validation of the questionnaire, we sent the first email to invite the respondents to participate, followed up by four reminders between September/2016 and February/2017. The time between reminders varied from one week to two weeks or/and to one month. The emails were not submitted for all contacts at the same time but divided in parcels during all this period. To optimize the response rate, we used two websites for data collection that were SurveyMonkey® and Qualtrics®. After the data collection, we tabulated the responses obtained in Qualtrics® to the SurveyMonkey® website and downloaded the full database from SurveyMonkey®.

3.3. Descriptive analyses about respondents

We present the comparison of our respondents and the population (EMIS database) in Table 7, Table 8 and Table 9. By comparing the firm size, we can see that our sample comprises a higher proportion of larger firms in terms of total operating revenue. If we look at the industry, we will see that our sample includes a higher proportion of manufacturing firms and a lower proportion of Professional, Scientific, and Technical Services while the other industries are quite similar. Comparing the nationwide, we will see that, similar to the EMIS® database, the concentration of firms are in the Southeast and South regions in Brazil especially in São Paulo, Minas Gerais, Rio Grande do Sul, Santa Catarina and Paraná. We did not have a response from firms situated in thirteen of the 27 Brazilian Federation Units. We also report below the statistical significance of the representativeness of our sample in relation to the population based on the z-statistic (between two proportions), which results lower than 1.96 indicate that there is no statistical differences in the proportion of the sample and the population (EMIS® database).

According to the z-statistics, our sample of respondents has, in relation to the characteristics of the total population, a higher representation of large-sized companies, a higher representation of family firms from Sao Paulo and Minas Gerais States, and also of Manufacturing firms.

Table 7

Comparison of respondents versus EMIS database – Total Operating Revenue (BRL in 2015)

Total Operating Revenue (Brazilian currency - BRL, 2015)	Respondents (n=152)			Respondents (n=120)		Respondents (n=59)		EMIS database	
	n	%	z-statistic	n	%	n	%	n	%
Up to 20 million	23	15.13%	-	5	4.17%	-	-	-	-
Between 21 and 50 million	16	10.53%	-5.51	15	12.50%	1	1.69%	934	31.63%
Between 51 and 100 million	11	7.24%	-5.03	8	6.67%	4	6.78%	743	25.16%
Between 101 and 300 million	32	21.05%	-2.51	28	23.33%	11	18.64%	905	30.65%
Between 301 and 500 million	25	16.45%	6.07	23	19.17%	14	23.73%	146	4.94%
Between 501 million and 1 billion	26	17.11%	7.24	24	20.00%	18	30.51%	124	4.20%
More than 1 billion	19	12.50%	5.66	17	14.17%	11	18.64%	101	3.42%
Total	152			120		59		2,953	

Note 1: Z-statistic (values lower than 1.96 indicate that there is no statistical difference in the proportion of the sample and the population - EMIS database).

Table 8

Comparison of respondents versus EMIS database – States Federation

State Federation	Respondents (n=152)			Respondents (n=120)		Respondents (n=59)		EMIS database	
	n	%	z-statistic	n	%	n	%	n	%
Sao Paulo	40	26.32%	-2.38	34	28.33%	18	30.51%	1057	35.79%
Minas Gerais	27	17.76%	3.25	19	15.83%	6	10.17%	284	9.62%
Rio Grande do Sul	19	12.50%	1.98	15	12.50%	11	18.64%	235	7.96%
Santa Catarina	15	9.87%	1.84	13	10.83%	7	11.86%	181	6.13%
Parana	13	8.55%	0.29	9	7.50%	4	6.78%	233	7.89%
Rio de Janeiro	8	5.26%	-1.97	7	5.83%	4	6.78%	301	10.19%
Distrito Federal	8	5.26%	3.79	5	4.17%	3	5.08%	40	1.35%
Espirito Santo	4	2.63%	-0.64	4	3.33%	3	5.08%	107	3.62%
Pernambuco	3	1.97%	-0.61	3	2.50%	0	0.00%	83	2.81%
Mato Grosso do Sul	3	1.97%	2.2	3	2.50%	0	0.00%	16	0.54%
Ceara	2	1.32%	-0.79	2	1.67%	2	3.39%	68	2.30%
Goiias	2	1.32%	-0.52	2	1.67%	0	0.00%	56	1.90%
Paraiba	1	0.66%	-0.32	1	0.83%	0	0.00%	27	0.91%
Amazonas	1	0.66%	-	0	0.00%	0	0.00%	35	1.19%
Bahia	0	0.00%	-	0	0.00%	0	0.00%	80	2.71%
Mato Grosso	0	0.00%	-	0	0.00%	0	0.00%	31	1.05%
Para	0	0.00%	-	0	0.00%	0	0.00%	28	0.95%
Alagoas	0	0.00%	-	0	0.00%	0	0.00%	23	0.78%
Maranhao	0	0.00%	-	0	0.00%	0	0.00%	17	0.58%
Rio Grande do Norte	0	0.00%	-	0	0.00%	0	0.00%	16	0.54%
Piaui	0	0.00%	-	0	0.00%	0	0.00%	11	0.37%
Sergipe	0	0.00%	-	0	0.00%	0	0.00%	10	0.34%
Tocantins	0	0.00%	-	0	0.00%	0	0.00%	7	0.24%
Rondônia	0	0.00%	-	0	0.00%	0	0.00%	6	0.20%
Amapa	0	0.00%	-	0	0.00%	0	0.00%	1	0.03%
Roraima	0	0.00%	-	0	0.00%	0	0.00%	0	0.00%
Acre	0	0.00%	-	0	0.00%	0	0.00%	0	0.00%
Missing	6	3.95%	-	3	2.50%	1	1.69%	0	0.00%
Total	152			120		59		2,953	

Note 1: Z-statistic (values lower than 1.96 indicate that there is no statistical difference in the proportion of the sample and the population - EMIS database).

Table 9

Comparison of respondents versus EMIS database – Industry

Industry	Respondents (n=152)			Respondents (n=120)		Respondents (n=59)		EMIS database	
	n	%	z-statistic	n	%	n	%	n	%
Manufacturing	89	58.60%	4.01	78	65.00%	37	62.70%	1241	42.00%
Retail Trade	17	11.20%	1.13	10	8.30%	6	10.20%	252	8.50%
Wholesale Trade	10	6.60%	-1.99	10	8.30%	4	6.80%	351	11.90%
Transportation and Warehousing	7	4.60%	-2.08	6	5.00%	2	3.40%	292	9.90%
Information	6	3.90%	-2.15	5	4.20%	4	6.80%	141	4.80%
Professional, Scientific, and Technical Services	9	5.90%	-0.47	3	2.50%	0	0.00%	335	11.30%
Agriculture, Forestry, Fishing and Hunting	3	2.00%	-1.66	2	1.70%	2	3.40%	145	4.90%
Others	11	7.20%	0.75	6	5.00%	4	6.80%	196	5.70%
Total		152		120		59		2,953	

Note 1: Some respondents did not identify the name of the firm, so we could not classify directly based on EMIS database. Therefore, we took in account their answer in the questionnaire about the firms' industry, and we classified these firms based on the authors' interpretation on that information.

Note 2: Z-statistic (values lower than 1.96 indicate that there is no statistical difference in the proportion of the sample and the population - EMIS database).

3.4. Measurement of Constructs and Instruments

The questionnaire contains validated scales that were used in studies published in high-quality journals in the family firm and management accounting literature. The instruments are mainly based on a five-point Likert scale, which were partially adapted to fit this study's purposes and the Brazilian context.

We present the operationalization of the constructs in Figure 4. First, we apply objective instruments for the controlling family ability to influence the family firm, which were used by many previous researchers (Astrachan, Klein, & Smyrnios, 2002; Chrisman et al., 2012; Hauck, Suess-Reyes, Beck, Prüggl, & Frank, 2016; Vandekerckhof, Steijvers, Hendriks, & Voordeckers, 2015). We used two indicators for family involvement in management, one as the percentage of family managers in the Top Management Team (pfamilyTMT) and the other being a dummy variable measuring if a family member is the CEO of the family firm (familyCEO). We also used a measure of family involvement in ownership (FIO) which was transformed as a dummy variable indicating if the controlling family holds 100% of the family business shares or quotas. We transformed the FIO items in a dummy variable due to the high ownership concentration in our sample.

To capture the controlling family's SEW intentions (Berrone et al., 2012), we use Frank et al. (2016) instruments for Family Control and Influence (FCI) and Renewal of family bonds

through dynastic succession (FRFB). These instruments are measured on a five-point Likert scale and were tested in the German and Austrian context (Frank et al., 2016). The content of the items is similar to Berrone et al. (2012) items, and it was empirically validated by Frank et al. (2016). Frank et al. (2016) named these dimensions as (i) ownership, management, and control, (ii) and transgenerational orientation. Despite focusing on the familiness construct, these two instruments from Frank et al. (2016) reflect the meaning of willingness, intentions or reference points which are related to the family control and influence and renewal of family bonds SEW dimensions presented by Berrone et al. (2012). Additionally, another advantage is that Frank et al. (2016) scale was tested empirically what we did not identify for Berrone et al.'s (2012) scale before we started the data collection process.

We discuss participation and formality as dimensions of management control mechanisms' fair characteristics. Participation in goal setting (GSpart) is measured on a five-point Likert scale adapted from the validated instruments from Shields & Young (1993). Formality in goal setting (GSform) is measured following Covin, Slevin, and Heeley (2001) instruments and one additional item adapted from Bedford and Malmi (2015) that indicates, "to what extent goal setting processes are formalized in the organization". This item is a general index that we add in the questionnaire to complement the scale developed by Covin et al. (2001). We point to both financial and nonfinancial goals in a 12-month time horizon.

Furthermore, we adapted a scale proposed by Dulebohn and Ferris (1999) and recently validated by Bellavance et al. (2013) to measure participation in performance evaluation (PEpart) in a two-item Likert scale. Formality in performance evaluation (PEform) is based on Hartmann and Slapnicar (2009) two-item scale related to the use of objective and quantitative measures for performance evaluation. We adapted those items to capture also the organizational level performance since those items were mainly developed to address the superior-subordinate relationship.

We measure procedural justice in goal setting in a four-item scale validated by Hartmann and Slapnicar (2009) and adapted such as did Voußem et al. (2016) in our study specifically for goal setting processes (GSpj). Procedural justice in performance evaluation (PEpj) is based on a two-item scale proposed and validated by Hartmann and Slapnicar (2012).

<p>Family involvement in ownership (Chrisman, Chua, Pearson, & Barnett, 2012; Hauck, Suess-Reyes, Beck, Prügl, & Frank, 2016) FIO. Dummy variable 1 if the controlling family holds 100% of the business shares/quotas.</p>
<p>Family involvement in management (Chrisman et al., 2012; Hauck et al., 2016) pfamilyTMT. Family involvement in management is measured as the percentage of family managers in the Top Management Team. FamilyCEO. Is the CEO from the controlling family? (dummy variable Yes=1 and No=0)</p>
<p>Family control and influence SEW intentions – Based on the scale of ownership, management and control developed and validated by Frank et al. (2016) Indicate the degree to which you personally agree or disagree with the following statements. Level of agreement with the statements (1 = I completely disagree and 5 = I completely agree): FCI_1. In the family business, great care is taken that only family members own the firm. FCI_2. In the family business, great care is taken that the firm's management consists exclusively of family members. FCI_3. In the family business, great care is taken that several family members are involved in the firm's management. FCI_4. In the family business, great care is taken that family control and independence are maintained.</p>
<p>Renewal of family bonds through dynastic succession SEW intentions – Based on the scale of transgenerational orientation developed and validated by Frank et al. (2016) Indicate the degree to which you personally agree or disagree with the following statements. Level of agreement with the statements (1 = I completely disagree and 5 = I completely agree): FRFB_1. In the family business, great care is taken to think in generations. FRFB_2. In the family business, great care is taken to avoid selling the company to nonfamily members. FRFB_3. In the family business, great care is taken that the company can be passed on to the next generation.</p>
<p>Management control mechanisms fairness characteristics Indicate the degree to which you personally agree or disagree with the following statements. Level of agreement with the statements (1 = I completely disagree and 5 = I completely agree): <u>Participation (goal setting) - Adapted from Shields & Young (1993)</u> GSpert_1. Manager's contribution is important to goal setting of the company. GSpert_2. In the company, it is important that goal setting includes changes that were suggested by managers. GSpert_3. In the company, managers are influential in goal setting. GSpert_4. Top management often initiates discussions about goals with managers. <u>Formality (goal setting) - Adapted from Covin et al. (2001)</u> GSform_1. Our goal setting nearly always result from extensive quantitative analysis of data. GSform_2. Our goal setting is nearly always detailed in formal written reports. GSform_3. We rely principally on experienced-based intuition (rather than quantitative analysis) when setting major goals. * GSform_4. To what extent are goal setting processes formalized in the organization? ** <u>Participation (performance evaluation) - Dulebohn and Ferris (1999) applied by Bellavance et al. (2013)</u> PEpart_1. The superior gives you the opportunity to ask questions about performance evaluation. PEpart_2. The superior considers your views when discussing performance evaluation. <u>Formality (performance evaluation) - Adapted from Hartmann & Slapnicar (2009)</u> PEform_1. When judging performance, my superior bases on objective information previously established. PEform_2. When judging performance, my superior expresses it in quantitative terms (evaluates performance based on quantitative criteria).</p>

Figure 4. Constructs measures – after language changes in the questionnaire – Part I

* Reverse coded item.

** This item was added to the model based on Bedford & Malmi (2015).

<p><u>Procedural justice</u> Indicate the degree to which you personally agree or disagree with the following statements. Level of agreement with the statements (1 = I completely disagree and 5 = I completely agree): <u>Goal Setting - Developed and validated by Hartmann & Slapnicar (2009). Adapted from Voußem el al. (2016)</u> GSpj_1. I think that the way in which goals were set is fair. GSpj_2. I have full confidence in the system with which goals were set. GSpj_3. I think that the criteria that were used to set goals are fair. GSpj_4. I am very satisfied with the way in which goals were set. <u>Performance Evaluation - Adapted from Hartmann & Slapnicar (2012)</u> PEpj_1. I think the way performance is evaluated is fair. PEpj_2. I have full confidence in the performance evaluation system.</p>
<p><u>Stewardship-oriented culture</u> (Developed and validated by Zahra et al. (2008) Indicate the degree to which you personally agree or disagree with the following statements. Level of agreement with the statements (1 = I completely disagree and 5 = I completely agree): STEW_1. Your company allows managers to reach their full potential contributing to the company. STEW_2. Your company promotes a professionally orientated workplace. STEW_3. Your company inspires managers' care and loyalty to the company STEW_4. Your company encourages a collectivist culture focused on business group rather than an individualistic culture.</p>
<p><u>Stewardship Identification</u> (Craig, Dibrell, & Neubaum, 2011) Indicate the extent to which this happens in your organization (1= Not at all; 5= Very high extent): STEWid_1. To what extent do you see yourself believing in the company's goals? STEWid_2. To what extent do you see yourself as an integral part of the company? STEWid_3. To what extent do you see yourself accepting company's goals?</p>

Figure 4. Constructs measures – after language changes in the questionnaire – Part II

* Reverse coded item.

Moreover, we capture stewardship-oriented culture (STEW) based on a 4-item multidimensional scale from Zahra et al. (2008). This scale indicates “*the degree to which a stewardship culture exists within the family firm*” (Zahra et al., 2008, p. 1042). These items reflect the “*extent to which the family firm developed a collective, supportive, and caring environment for their employees, and provided opportunities for them to reach their potential*” (Zahra et al., 2008, p. 1043). We also capture the managers’ stewardship identification (STEWid) that is an individual level measure based on a three-item scale developed and tested by Craig et al. (2011) that refers to what extent managers identify with the firm by “*accepting the organization’s mission, vision, and objectives*” (Davis, Schoorman, & Donaldson, 1997, p. 29).

Finally, for firm financial performance we used three indicators that were widely used in the family firm literature for the familiness-performance relationship that are (Garcia-Castro & Aguilera, 2014; Minichilli, Corbetta, & MacMillan, 2010; Rutherford et al., 2008): (i) Return on Assets (ROA); (ii) Return on Equity (ROE); (iii) Return on Sales (ROS). All these indicators were obtained from the EMIS® database, which were measured as a percentage for 2016. Return on Assets is measured as the ratio between the net operating income and total assets. Return on Equity is measured as the ratio between the net operating income and equity. Return on Sales is measured as the ratio between the net operating income and total sales. We

considered the industry-adjusted measures that were measured by subtracting the firm performance measure to the median industry level (De Massis et al., 2015), taking into account the firms' activity described in the EMIS® database for 2016. This adjustment is important due to differences between industries regarding for example market opportunities and constraints.

Following some empirical studies such as Davis et al. (2010), we used, in this study, the following control variables for individual and organizational levels (Figure 5). First, for respondents' family affiliation we controlled for a dummy variable if the respondent is a member of the family (family manager or founder) and if the respondent is a nonfamily manager. We additionally controlled for the respondent hierarchical level based on Tier 1 (report to shareholders or board of directors), Tier 2 (report to Top Managers, Chief officers or CEO) and Tier 3 (report to middle managers or supervisors), and also if the superior is a nonfamily or family manager. Moreover, we control for firm size based on the number of employees in the firm or in terms of the logarithm of total assets. In addition, we control for family firm characteristics such as if the founder manages the business, if the firm has experienced at least a succession process in ownership and if the controlling family holds 100% of the family business shares. It is important to mention that we used different controls in papers 1, 2 and 3. Therefore, we discuss each of these controls with more emphasis on the analyses subsection of each paper.

<p>Respondents' family affiliation (Family): Family manager, Founder Nonfamily manager.</p> <p>Hierarchical level (Tier): Tier 1 – respondents report to shareholders or board of directors or don't have superior in the firm.</p> <p>Size (Size): Small firms (less than 50 employees), medium firms (between 50 and 300 hundred employees), and large firms (more than 300 employees).</p> <p>Generation in ownership (Generation): highest ownership generation (1 for the first generation and 0 for the other generations).</p> <p>Founder (Founder): Does the founder manage the business? (1) Yes, (0) No.</p> <p>Ownership (Ownership): Does the controlling family hold 100% of business shares/quotas? (1) Yes, (0) No.</p> <p>Superior family status (Superior): Family manager, Founder Nonfamily manager.</p> <p>Measured Latent Marker Variable Approach for common method bias (MLMV): composed by four items based on 5-point Likert scale (Chin et al., 2013)</p> <p>Ln(assets): It is the logarithm of the total assets of the firm in 2016.</p>
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Figure 5. Control Variables

We addressed validity concerns by basing our survey design and analysis on recommendations from Podsakoff, MacKenzie, and Podsakoff (2012). First, we used validated measures for the constructs, both independent and dependent variables of our models in paper 1 and 2. Additionally, we used mainly theory-defined constructs that are consistent with theory. Finally, another threat to construct validity is common method bias what we have checked with

Harman test. We also address this concern by applying a procedure called “the measured latent marker variable approach” (Chin et al., 2013) where we add a control variable that doesn’t relate to the items in the proposed model (Chin et al., 2013; Mahama & Cheng, 2013; Nitzl, 2016).

We first conducted Harman’s single factor test to address for common method bias (Podsakoff, MacKenzie, et al., 2012) for the 152 respondents’ sample. In paper 1, we obtained five factors with an eigenvalue higher than one, which the first factor accounts for 25.87% of the variance. The results for the sample of 120 respondents are quite similar, in which six factors are extracted and the first factor accounts for 26.02% of the total variance. Based on these results, it seems that common method bias might not be a concern in paper 1.

In paper 2, we obtained five factors with an eigenvalue higher than one, accounting for 77.99% of the variance. The first factor accounts for 50.95% of the items variance. The results for the sample of 120 respondents indicate to the extraction of five factors with eigenvalues higher than one, which the first represents 52.17% of the items variance. The results for paper 2 indicate that our results might suffer from common method bias, since the first factor accounts for more than 50% of the items’ variance. We attribute this result to the subjective measures that were used in paper 2, such as for procedural justice and stewardship identification. To address potential common method bias problem, we adopted the latent marker variable approach (Chin et al., 2013), which we explain in the sequence.

Therefore, we controlled the dependent variables for the latent marker variable approach (Chin et al., 2013). This latent variable is expected to be not correlated to our constructs. We used four items based on Likert scale that is: (i) The businesses controlled by families represent a significant part of the Brazilian economy; (ii) The businesses controlled by families cannot afford the most advanced technologies; (iii) The activities of the businesses controlled by families can be as globalized as the other types of firms; (iv) The hiring process of businesses controlled by families involves greater risk than businesses that are not controlled by families. To validate the MLMV measure, we run correlation analyses that demonstrate that the MLMV items are not significantly correlated to the indicators that we use to measure our dependent variables (Chin et al., 2013; Mahama & Cheng, 2013; Nitzl, 2016), which results are presented in the measurement model subsection of papers 1 and 2.

We did not apply the Harman test or the latent marker variable approach (Chin et al., 2013) for the third paper, since we use the cross-sectional survey information as independent variables, and the financial performance data as dependent variable, which was obtained from

an archival source. Therefore, as we combine the survey and archival data we expect that common method bias may not be a concern for paper 3. In addition, we rely on return indexes available in EMIS® database, which are based on the financial information published by those firms, to mitigate possible measurement errors that might be present on other sources.

3.5. Data Analyses Methods

In each of the individual studies further in this dissertation, we provide descriptive statistics and apply the multivariate technique of Structural Equation Modeling (SEM-SmartPLS) to test the theoretical model. This technique is appropriate regarding the complexity of the constructs, relationships and the number of questionnaires we have obtained (Sarstedt, Ringle, Smith, Reams, & Hair, 2014). The SEM technique has been used extensively in social sciences, and in management accounting research (e.g., Hartmann & Slapničar, 2009; Nitzl, 2016).

We used the variance-based Structural Equation Modeling technique in SmartPLS software because it has a number of advantages (Hair Jr., Hult, Ringle, & Sarstedt, 2013; Hair Jr., Sarstedt, Ringle, & Gudergan, 2017; Nitzl, 2016): (i) it allows researchers to analyze constructs that are both independent and dependent at the same time as FCI and FRFB in the first paper and procedural justice in the second paper; (ii) it is possible to estimate reliably complex models with fewer observations in comparison to regression analysis for example; (iii) and does not impose the data distribution assumptions as in regression analysis and in our model some items have a nonnormal distribution such as procedural justice and stewardship-oriented culture (in paper 2).

We checked the post-hoc results in GPower 3.1.9.2 software⁵ to evaluate the application of SmartPLS with our sample size as suggested by Nitzl (2016). We obtained a statistical power higher than 0.8 (less than 20% type II error) for a minimum sample of 109 respondents, based on the following parameters (Nitzl, 2016): (i) 5% significance level (type I error); (ii) detection of medium relative effect (f^2 higher than 0.15); (iii) and having 8 predictors in our model.

Specifically for paper 3, as we developed the analyses with a smaller sample size, we obtained a statistical power higher than 0.8 (less than 20% type II error) for a minimum sample of 52 respondents, based on the following parameters (Nitzl, 2016): (i) 5% significance level

⁵ <http://www.gpower.hhu.de>

(type I error); (ii) detection of strong relative effect (f^2 higher than 0.35); (iii) and having 8 predictors in our model.

A more detailed information about the sample size and the parameters that we mentioned before are presented in Table 10, based on Nitzi (2016, p. 26).

Table 10

Sample Size for a Statistical Power of 0.80

Number of predictors	Effect size					
	0.15 (medium)			0.35 (strong)		
	Significance level			Significance level		
	0.01	0.05	0.10	0.01	0.05	0.10
1	82	55	43	37	25	20
2	98	65	54	45	31	25
3	109	77	62	51	36	29
4	114	85	69	55	40	32
5	127	92	75	59	43	35
6	135	98	80	63	46	38
7	142	103	85	67	49	41
8	148	109	90	70	52	43
9	154	114	94	73	54	45
10	160	118	98	76	57	47

Source: Adapted from Nitzi (2016, p. 26).

3.6. Family firms' and respondents' descriptive statistics

Table 11, Table 12 and Table 13 report the firms' characteristics and Table 14 reports the respondents' descriptive information. We highlight in the sequence the statistics for the sample of 152 respondents, but we also present the results of the 120 and 59 respondents' samples. First, the sample is composed mainly of large firms (about 63% have more than 300 employees)⁶ and of firms with higher family ownership. In about 71.7% of the firms, the controlling family owns 100% of business shares or quotas. Additionally, we see a large presence of family members as Chief Executive Officers or occupying a similar position (in

⁶ If we look at the European Commission criteria firms that have more than 250 employees are considered large firms (http://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition_pt)

The Brazilian firm size criteria is usually based on the revenue metrics from the Brazilian Investment Bank named as BNDES ("Banco Nacional de Desenvolvimento Econômico e Social"). This bank considers medium-sized firms those that have a revenue between 3.6 to 300 million reais per year and large firms those with a turnover of more than 300 million reais per year. Reais is the Brazilian currency.

78.3% of the firms) in the family business. Moreover, 53.9% of the firms from our sample still have the founder managing the day-to-day business.

We provide evidence of a diversified composition of the Top Management Team ranging from 100% composed of family managers to 0% of family managers present. Finally, a higher proportion of family firms is owned by the first and second generation of the family. We can see that about 50% of the firms do not have the first generation as owners of the family business anymore, so these businesses have experienced at least one ownership succession process since their foundation. In addition, looking at the firms' age, we can see that just 13.8% are young family businesses, which were founded less than 20 years ago.

Furthermore, we present some comparisons in relation to the family's ability to control the firm, regarding the percentage of family managers in the TMT, regarding family involvement in ownership and family CEO. Additionally, in relation to family's willingness we discuss family control and influence and renewal of family bonds SEW sub-dimensions. We ran Confirmatory Factor Analyses for the constructs of willingness in SmartPLS software, and we present the results of the mean of standardized scores (for each of the samples) in Table 11, Table 12 and Table 13. The interpretation of the associations in the samples is similar. Larger firms seem to present lower levels of family involvement in the TMT, and proportionally more dispersed ownership and less presence of a family manager as the CEO. If we look at willingness, larger firms present less FCI and FRFB intentions, except for firms that have between 500 and 1000 employees.

Additionally, family firms with 100% ownership in the controlling family's hands, with the founder managing the business and with a family manager as the CEO present higher levels of family involvement in the TMT and family's willingness. Finally, the results indicate that when family managers are present in the TMT, the family involvement in ownership seems to be higher, as well as the presence of family CEO and the family's willingness to control the firm. These results indicate that the dimensions of family ability and willingness seem to be associated.

Table 11

Family businesses' descriptive information – Sample 152 – Part I

	n	%	Mean % FIM	Ownership		FamilyCEO		Mean FCI	Mean FRFB
				<100%	100%	N	Y		
<i>Panel A: Size (number of employees)</i>									
Less than 50 employees	18	11.8%	69.0%	3	15	2	16	0.331	0.100
Between 51 and 100 employees	9	5.9%	64.9%	1	8	0	9	0.243	0.022
Between 101 and 300 employees	29	19.1%	56.3%	5	24	3	26	0.070	0.003
Between 301 and 500 employees	18	11.8%	42.9%	4	14	3	15	-0.167	-0.062
Between 501 and 1000 employees	21	13.8%	37.8%	8	13	4	17	0.085	-0.211
More than 1000 employees	57	37.5%	32.3%	21	35	21	36	-0.150	0.065
<i>Panel B: Controlling family ownership</i>									
Family owns up to 25% of the shares	6	3.9%	19.9%	-	-	3	3	-1.348	-1.571
Family owns more than 25% but up to 50% of the shares	4	2.6%	22.5%	-	-	2	2	-0.490	-0.511
Family owns more than 50% but less than 100% of the shares	32	21.1%	30.4%	-	-	9	23	-0.224	-0.070
Family owns 100% of the shares	109	71.7%	51.9%	-	-	18	91	0.164	0.117
Missing	1	0.7%							
<i>Panel C: Percentage of family members in the TMT</i>									
No family members	29	19.1%	-	14	14	20	9	-0.502	-0.277
More than 0% and up to 25%	30	19.7%	-	7	23	7	23	-0.390	-0.299
More than 25% and up to 50%	36	23.7%	-	14	22	2	34	-0.022	-0.006
More than 50% but less than 100%	22	14.5%	-	6	16	3	19	0.248	0.332
100,00%	29	19.1%	-	1	28	0	29	0.636	0.264
Missing	6	3.9%							
<i>Panel D: Is the CEO from the controlling family?</i>									
Yes	119	78.3%	54.0%	28	91	-	-	0.164	0.117
No	33	21.7%	11.8%	14	18	-	-	-0.410	-0.327
<i>Panel E: Does(Do) the founder(s) manage(s) the business?</i>									
Yes	82	53.9%	53.1%	20	62	8	74	0.332	0.134
No	68	44.7%	36.0%	22	45	24	44	-0.362	-0.107
Missing	2	1.3%							

Note 1: FCI and FRFB are respectively family control and influence SEW intention and renewal of family bonds SEW intention. These values are the means that were obtained by applying the Confirmatory Factor Analyses for each construct. These scores are standardized having the mean 0 and standard deviation of 1.

Table 11

Family businesses' descriptive information – Sample 152 – Part II

	n	%	Mean % FIM	Ownership		FamilyCEO		Mean FCI	Mean FRFB
				<100%	100%	N	Y		
<i>Panel F: Family Generations - Ownership</i>									
First generation	43	28.3%	47.3%	15	28	7	36	-0.050	-0.314
First and Second generations	34	22.4%	45.5%	7	27	4	30	0.346	0.374
First, Second and Third generations	2	1.3%	40.0%	1	1	0	2	0.295	0.365
Second generation	31	20.4%	46.3%	8	23	8	23	-0.230	-0.186
Second and third generations	19	12.5%	36.8%	5	14	7	12	-0.235	-0.074
Third generation	15	9.9%	35.5%	3	11	6	9	0.102	0.390
Third and fourth generations	4	2.6%	56.3%	1	3	0	4	-0.442	-0.211
Fourth generation	3	2.0%	56.1%	2	1	1	2	0.370	0.510
Later than fourth generation	1	0.7%	66.7%		1		1	0.878	0.932
<i>Panel G: Firm age</i>									
Between 0 and 20 years	21	13.8%	10.0%	5	15	4	17	0.387	-0.044
Between 21 and 40 years	37	24.3%	25.7%	9	28	9	28	0.035	0.019
Between 41 and 60 years	32	21.1%	34.4%	9	23	5	27	-0.130	-0.044
More than 61 years	49	32.2%	25.0%	16	33	14	35	-0.104	0.076
Missing	13	8.6%							

Note 1: FCI and FRFB are respectively family control and influence SEW intention and renewal of family bonds SEW intention. These values are the means that were obtained by applying the Confirmatory Factor Analyses for each construct. These scores are standardized having the mean 0 and standard deviation of 1.

Table 12

Family businesses' descriptive information – Sample 120 – Part I

	n	%	Mean % FIM	Ownership		FamilyCEO		Mean FCI	Mean FRFB
				<100%	100%	N	Y		
<i>Panel A: Size (number of employees)</i>									
Between 51 and 100 employees	8	6.7%	100.0%	0	8	0	8	0.234	0.037
Between 101 and 300 employees	25	20.8%	90.0%	1	24	1	24	0.284	0.240
Between 301 and 500 employees	16	13.3%	28.6%	2	14	3	13	-0.044	-0.085
Between 501 and 1000 employees	20	16.7%	25.0%	7	13	3	17	0.178	-0.155
More than 1000 employees	51	42.5%	37.5%	16	35	17	34	-0.232	-0.036
<i>Panel B: Controlling family ownership</i>									
Family owns more than 50% but less than 100% of the shares	26	21.7%	11.1%	-	-	6	20	-0.211	-0.112
Family owns 100% of the shares	94	78.3%	58.8%	-	-	18	76	0.058	0.031
<i>Panel C: Percentage of family members in the TMT</i>									
No family members	22	18.3%	-	8	14	13	9	-0.371	-0.169
More than 0% and up to 25%	28	23.3%	-	6	22	7	21	-0.444	-0.331
More than 25% and up to 50%	26	21.7%	-	6	20	1	25	0.029	0.060
More than 50% but less than 100%	19	15.8%	-	5	14	2	17	0.293	0.340
100,00%	21	17.5%	-	1	20	0	21	0.592	0.096
<i>Panel D: Is the CEO from the controlling family?</i>									
Yes	96	80.0%	70.0%	20	76	-	-	0.172	0.085
No	24	20.0%	0.0%	6	18	-	-	-0.689	-0.339
<i>Panel E: Does(Do) the founder(s) manage(s) the business?</i>									
Yes	58	48.3%	69.2%	10	48	4	54	0.391	0.190
No	60	50.0%	41.4%	16	44	19	41	-0.336	-0.121
<i>Panel F: Family Generations - Ownership</i>									
First generation	28	23.3%	43.5%	8	20	4	24	0.069	-0.253
First and Second generations	28	23.3%	44.6%	4	24	3	25	0.354	0.353
First, Second and Third generations	2	1.7%	40.0%	1	1	0	2	0.391	0.352
Second generation	27	22.5%	44.0%	7	20	8	19	-0.416	-0.276
Second and third generations	16	13.3%	41.9%	2	14	4	12	0.025	-0.014
Third generation	14	11.7%	38.2%	3	11	5	9	0.129	0.298
Third and fourth generations	4	3.3%	56.3%	1	3	0	4	-0.524	-0.259
Fourth generation	1	0.8%	75.0%	0	1	0	1	-1.503	1.032

Note 1: FCI and FRFB are respectively family control and influence SEW intention and renewal of family bonds SEW intention. These values are the means that were obtained by applying the Confirmatory Factor Analyses for each construct. These scores are standardized having the mean 0 and standard deviation of 1.

Table 12

Family businesses' descriptive information – Sample 120 – Part II

	n	%	Mean % FIM	Ownership		FamilyCEO		Mean FCI	Mean FRFB
				<100%	100%	N	Y		
<i>Panel G: Firm age</i>									
Between 0 and 20 years	11	9.2%	36.7%	3	8	2	9	0.402	-0.170
Between 21 and 40 years	27	22.5%	43.5%	4	23	6	21	0.042	-0.037
Between 41 and 60 years	29	24.2%	47.6%	6	23	4	25	-0.086	0.021
More than 61 years	44	36.7%	37.1%	11	33	11	33	-0.133	0.005

Note 1: FCI and FRFB are respectively family control and influence SEW intention and renewal of family bonds SEW intention. These values are the means that were obtained by applying the Confirmatory Factor Analyses for each construct. These scores are standardized having the mean 0 and standard deviation of 1.

Table 13

Family businesses' descriptive information – Sample 59 – Part I

	n	%	Mean % FIM	Ownership		FamilyCEO		Mean FCI	Mean FRFB
				<100%	100%	N	Y		
<i>Panel A: Size (number of employees)</i>									
Between 101 and 300 employees	7	11.9%	71.4%	2	5	0	7	0.35	-0.68
Between 301 and 500 employees	9	15.3%	27.8%	2	7	2	7	-0.49	-0.12
Between 501 and 1000 employees	8	13.6%	40.0%	2	6	2	6	0.24	0.03
More than 1000 employees	35	59.3%	35.9%	13	21	9	26	0.00	0.16
<i>Panel B: Controlling family ownership</i>									
Family owns up to 25% of the shares	2	3.4%	47.2%	-	-	0	2	-0.15	-0.52
Family owns more than 25% but less than 50% of the shares	0	0.0%	-	-	-	-	-	-	-
Family owns more than 50% but less than 100% of the shares	17	28.8%	31.1%	-	-	4	13	-0.08	0.08
Family owns 100% of the shares	39	66.1%	43.8%	-	-	8	31	0.05	-0.04
Missing	1	1.7%	0.0%	-	-	1	0	-0.30	1.18
<i>Panel C: Percentage of family members in the TMT</i>									
No family members	11	18.6%	-	3	7	8	3	-0.52	0.04
More than 0% and up to 25%	12	20.3%	-	5	7	2	10	-0.50	-0.25
More than 25% and up to 50%	19	32.2%	-	7	12		19	0.02	-0.06
More than 50% but less than 100%	9	15.2%	-	4	5	2	7	0.70	0.29
100,00%	7	11.9%	-	0	7		7	0.64	0.03
Missing	1	1.7%	-	0	1	1	0	0.48	0.83
<i>Panel D: Is the CEO from the controlling family?</i>									
Yes	46	78.0%	46.6%	15	31	-	-	0.13	-0.03
No	13	22.0%	12.1%	4	8	-	-	-0.47	0.11
<i>Panel E: Does(Do) the founder(s) manage(s) the business?</i>									
Yes	21	35.6%	48.7%	7	14	2	19	0.50	0.10
No	37	62.7%	34.6%	12	24	11	26	-0.24	0.01
Missing	1	1.7%	33.3%	0	1	0	1	-1.69	-2.52
<i>Panel F: Family Generations - Ownership</i>									
First generation	7	11.9%	41.6%	3	4	0	7	0.34	0.02
First and Second generations	10	17.0%	38.0%	4	6	1	9	-0.42	0.00
First, Second and Third generations	2	3.4%	40.0%	1	1	0	2	0.67	0.26
Second generation	15	25.4%	38.2%	7	8	3	12	-0.23	-0.45
Second and third generations	13	22.0%	38.2%	3	10	4	9	0.08	-0.04
Third generation	9	15.4%	35.7%	0	8	4	5	0.28	0.60
Third and fourth generations	2	3.4%	62.5%	0	2	0	2	-0.41	0.03
Fourth generation	1	1.7%	60.0%	1	0	1	0	1.24	1.18

Note 1: FCI and FRFB are respectively family control and influence SEW intention and renewal of family bonds SEW intention. These values are the means that were obtained by applying the Confirmatory Factor Analyses for each construct. These scores are standardized having the mean 0 and standard deviation of 1.

Table 13

Family businesses' descriptive information – Sample 59 – Part II

	n	%	Mean % FIM	Ownership		FamilyCEO		Mean FCI	Mean FRFB
				<100%	100%	N	Y		
<i>Panel G: Firm age</i>									
Between 0 and 20 years	2	3.4%	33.3%	0	1	0	1	0.74	-0.11
Between 21 and 40 years	5	8.5%	27.5%	3	2	1	4	-0.30	-0.69
Between 41 and 60 years	15	25.4%	36.6%	5	10	3	12	-0.23	-0.19
More than 61 years	34	57.6%	38.9%	12	22	8	26	0.12	0.21
Missing	3	5.1%	77.8%	0	3	0	3	-0.19	-0.26

Note 1: FCI and FRFB are respectively family control and influence SEW intention and renewal of family bonds SEW intention. These values are the means that were obtained by applying the Confirmatory Factor Analyses for each construct. These scores are standardized having the mean 0 and standard deviation of 1.

We present the results of the respondent's descriptive statistics in Table 14. We develop the analyses based on the 152 respondents' sample, but we report the results for the sample of 120 and 59 respondents in Table 14. Among the respondents, 65.1% are nonfamily managers, 23.7% family managers, and 11.2% founders. Moreover, the respondents are mainly from the business, finance and accounting areas (46.1%), operations and engineering areas (16.5%), and commercial and marketing areas (17.8%). It is relevant to mention that 15.1% of the respondents are considered Chief Executive Officers.

From our respondents 49.3% report directly to shareholders and board of directors (Tier 1) and 47.4% report directly to the CEO or top managers (Tier 2). In sum, the respondents are mostly nonfamily managers that occupy important positions in the firm hierarchy. Additionally, 54.0% of the respondents have been working for the family business for more than ten years. Finally, 65.1% of the respondents report directly to a family manager while 34.9% report to a nonfamily manager. Therefore, we argue that our respondents are experienced to answer the questions in an organizational level perspective and about the controlling family ability and willingness to influence the firm, independently of their family affiliation.

We additionally develop some analyses about the respondents' descriptive statistics. The respondents of our sample usually report directly to the founder or another family manager. About 50% of nonfamily managers in our sample report to a family manager or the founder and the other 50% to another nonfamily manager. Table 14 also shows that about 64 from 75 managers that are in Tier 1 report to a family manager while 35 from 72 managers that are in Tier 2 report to a family manager, which demonstrates the large presence of family managers in the hierarchical structure of these family firms.

Table 14

Respondents' descriptive information

	Sample 152				Sample 120				Sample 59			
	n	%	Report to		n	%	Report to		n	%	Report to	
			1	2			1	2			1	2
<i>Panel A: Respondent's family status</i>												
Nonfamily manager	99	65.10%	51	48	83	69.20%	44	39	48	81.4%	23	25
Family manager	36	23.70%	2	34	27	22.50%	2	35	10	16.9%	0	10
Founder	17	11.20%	0	17	10	8.30%	0	10	1	1.7%	0	1
<i>Panel B: Respondent's business area</i>												
Business, Finance, and Accounting	70	46.10%	30	40	53	44.20%	24	29	33	55.9%	15	18
Operations and engineering	25	16.50%	10	15	23	19.20%	10	13	6	10.2%	3	3
Commercial and Marketing	27	17.80%	8	19	22	18.30%	8	14	10	16.9%	4	6
Chief Executive Officer	23	15.10%	4	19	16	13.30%	3	13	7	11.9%	1	6
Others	5	3.30%	1	4	5	4.20%	1	4	3	5.1%		3
Missing	2	1.30%	0	2	1	0.80%	0	1				
<i>Panel C: Respondent's hierarchical level</i>												
Tier 1	75	49.30%	11	64	56	46.70%	10	46	28	47.5%	6	22
Tier 2	72	47.40%	37	35	59	49.20%	31	28	29	49.2%	16	13
Tier 3	5	3.30%	5	0	5	4.20%	5	0	2	3.4%	1	1
<i>Panel D: Respondent's Tenure</i>												
Between 1 and 2 years	5	3.30%	3	2	3	2.50%	2	1	1	1.7%	1	0
Between 3 and 5 years	25	16.50%	12	13	21	17.50%	9	12	9	15.3%	5	4
Between 6 and 10 years	39	25.70%	17	22	26	19.20%	16	10	12	20.3%	5	7
More than 10 years	82	54.00%	21	61	70	57.50%	19	51	37	62.7%	12	25
Missing	1	0.70%	0	1	0							
<i>Panel E: Respondent's superior family status</i>												
Nonfamily manager	53	34.90%	-	-	46	38.30%	-	-	23	39.0%	-	-
Family manager or founder	99	65.10%	-	-	74	61.70%	-	-	36	61.0%	-	-

Note 1: Tier 1 (report to shareholders or board of directors), Tier 2 (report to Top Managers, Chief Officers or CEO) and Tier 3 (report to middle managers or supervisors).

Note 2: Report to nonfamily manager (1), and report to a family manager (2)

4. STUDY 1: CONTROLLING FAMILY'S ABILITY AND WILLINGNESS AND THE DESIGN OF MANAGEMENT CONTROL MECHANISMS IN FAMILY FIRMS

4.1. Introduction

It has frequently been observed by many researchers who investigate management accounting topics in family businesses, that despite the importance of this issue for family firms (Songini, Gnan, & Malmi, 2013) and the recent efforts made by management accounting scholars, it is still an under developed field of research (Helsen, Lybaert, Steijvers, Orens, & Dekker, 2017; Prencipe, Bar-Yosef, & Dekker, 2014; Songini et al., 2013).

Among the traditional studies about Management Control Systems (MCS), there is a stream of research that investigates the determinants of the design and use of MCS. The prevalent theories that have been widely used by management accounting researchers are the agency theory (Jensen & Meckling, 1976), contingency theory (Burns & Stalker, 1961; Chenhall, 2003), upper echelons theory (Hambrick & Mason, 1984), and organizational life-cycle theory (Miller & Friesen, 1984). Those theories have also been applied in the family business context, combined to family firms' specific constructs (Moore & Mula, 2000; Songini & Gnan, 2015; Songini et al., 2013).

Previous family firm literature has been investigating the implications of the distinctive characteristics of family firms (Dawson & Mussolino, 2014), which arise typically by the involvement of the controlling family in the firm, on management mechanisms design and use (Songini et al., 2013), and on organizational behavior (Gagné, Sharma, & De Massis, 2014). Family firm's characteristics have been conceptually and empirically treated as contingency factors that explain the design and use of management control mechanisms in family firms (Chenhall, 2003; Helsen et al., 2017), which Songini, Vola, and Gnan (2017) named as family contingencies.

There are different theoretical lenses to study a family's influence on the firm that can be combined with the theories used to discuss the determinants of MCS (Salvato & Moore, 2010; Senftlechner & Hiebl, 2015; Songini et al., 2017). Dawson and Mussolino (2014) present three main theoretical frameworks for treating the family firm distinctiveness that are the essence-approach (Astrachan, Klein, & Smyrnios, 2002; Chua, Chrisman, & Sharma, 1999), the socioemotional wealth construct (Berrone et al., 2012; Debicki, Kellermanns, Chrisman, Pearson, & Spencer, 2016; Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-

Fuentes, 2007) and familiness construct (Frank et al., 2016; Habbershon, Williams, & MacMillan, 2003; Tagiuri & Davis, 1996).

Each of these approaches looks through a different lens at the family firm, regarding its definitions, its dimensions, and level of analyses (Chrisman, Kellermanns, Chan, & Liano, 2010; Dawson & Mussolino, 2014). For example, the socioemotional wealth (SEW) literature points that decisions in family firms are usually based on family's noneconomic reference points and affective endowments (Berrone et al., 2012; Gomez-Mejia, Cruz, Berrone, & De Castro, 2011) while familiness looks at the family firm's resources and capabilities, which are expected to create competitive advantage (Chrisman, Chua, & Litz, 2003; Habbershon et al., 2003).

Helsen et al. (2017) list a set of determinants used as proxies for family distinctive characteristics that are expected to influence the choice of MCS in those firms such as: family involvement in management and governance (Songini & Gnan, 2015; Speckbacher & Wentges, 2012), generational stage (Michiels, Voordeckers, Lybaert, & Steijvers, 2013), CEO family status (Michiels et al., 2013), family manager status (Chua, Chrisman, & Bergiel, 2009), and ownership dispersion (Michiels et al., 2013). These proxies all focus on a family's ability to influence the firm (De Massis, Kotlar, Chua, & Chrisman, 2014). Despite the family ability being considered a necessary condition to capture the family influence on the business, it might not be sufficient to capture family firm's distinctiveness (Chua, Chrisman, & De Massis, 2015; De Massis et al., 2014). In this sense, we argue that the relationship between the controlling family influence and management accounting mechanisms might be more complex than addressed in these previous studies.

Based on this reasoning, we propose in line with De Massis et al. (2014) and Chrisman et al. (2015) that the controlling family willingness is a complementary element that should be addressed by researchers. It refers to the controlling family's intentions and goals towards the family firm, which also influences how management control mechanisms are designed and used (Berrone et al., 2012; De Massis et al., 2014; Gomez-Mejia et al., 2011). Previous literature suggests that the socioemotional wealth framework (Berrone et al., 2012; Gomez-Mejia et al., 2011) might constitute an important lens to capture the controlling family's willingness in family businesses (Chrisman et al., 2015; De Massis et al., 2014; Veider & Matzler, 2016).

Therefore, based on the ability and willingness literature (Chrisman et al., 2015; De Massis et al., 2014), we combine (1) traditional agency theory insights that have been linked to the controlling family's ability, with (2) the controlling family's willingness, which can be linked to SEW, to discuss the influence of the controlling family's ability and willingness on

the design of management control mechanisms. We propose the following research question:

How the controlling family's ability and willingness are associated with the design of management control mechanisms in family firms?

We investigated corporate management control mechanisms such as goal setting and performance evaluation, which are focused on top managers. This study wants to make the following contributions to the family firm and management accounting literature. First, prior studies that have examined the family influence on management control mechanisms have been grounded on the agency theory regarding the role of these mechanisms in organizations (Helsen et al., 2017; Songini & Gnan, 2015; Speckbacher & Wentges, 2012). The underlying agency assumption is that a family owned and family managed firm does not need agency mechanisms related to monitoring and incentive systems since they do not face typical agency problems (Jensen & Meckling, 1976; Madison, Holt, Kellermanns, & Ranft, 2016). However, Management Control Systems (MCS) might not serve exclusively to monitoring and incentive purposes. For instance, MCS can be adopted to balance the firm's effectiveness and innovation (Ahrens & Chapman, 2004; Kruis, Speklé, & Widener, 2016; Simons, 1995), discussed as the duality of controls, which we highlight, for example, the enabling-coercive framework (Adler & Borys, 1996; Ahrens & Chapman, 2004; Jordan & Messner, 2012). Those mechanisms are used *"for assisting the strategic process and ongoing management through analysis, planning, measurement, control, rewarding, and broadly managing performance"* (Ferreira & Otley, 2009, p. 264).

Hence, family firms can also use management control mechanisms to create a professional environment (Dekker, Lybaert, Steijvers, Depaire, & Mercken, 2013; Dyer, 1989; Stewart & Hitt, 2012). In addition, based on the family agency problems that family firms incur, management control mechanisms might mitigate typical family firm agency problems (e.g., nepotism, entrenchment) and potential conflicts among family and nonfamily managers. Formal management control mechanisms are also related to an increase of transparency and knowledge sharing toward the organizational structure (Giovannoni, Maraghini, & Riccaboni, 2011; Zahra, Neubaum, & Larrañeta, 2007). The current literature in family firms that focused on the family's ability to influence management control mechanisms and on the agency perspective might not provide explanations when we consider these additional roles of management control mechanisms.

Therefore, we argue that the controlling family's willingness might play a relevant role in determining how management control mechanisms are designed in the firm (Berrone, Cruz, & Gomez-Mejia, 2012; Songini, Gnan, & Malmi, 2013). The family willingness is a subjective

concept related to the controlling family's intentions to influence the family business. These intentions are seen by Gomez-Mejia et al. (2011) as reference points and decision premises for decision-making, which impact the design of management practices (Berrone et al., 2012; Helsen, Lybaert, Steijvers, Orens, & Dekker, 2017; Songini et al., 2013). We include a family's intentions in order to shed more light on the underlying drivers that shape the design of management control mechanisms.

Second, we expand the discussion about the socioemotional wealth construct by treating two independent controlling family's intentions that are (1) family control and influence and (2) renewal of family bonds through dynastic succession (Berrone et al., 2012). The SEW framework is a recent development in the family firm literature and has been attracting more interest of researchers since it has implications over many organizational topics (Berrone et al., 2012; Songini et al., 2013). Additionally, considering the multidimensional nature of SEW construct (Berrone et al., 2012; Chua, Chrisman, & De Massis, 2015; Debicki, Kellermanns, Chrisman, Pearson, & Spencer, 2016; Gómez Mejía, Cruz, & Imperatore, 2014; Schulze & Kellermanns, 2015), we discuss that the different SEW sub-dimensions have different implications for management control mechanisms design.

Third, we discuss formality and participation design characteristics in the firm's goal setting and performance evaluation processes. Therefore, this study provides insights about the adoption of participative and formal management control mechanisms, such as goal setting and performance evaluation, in a family firm's context (Dekker et al., 2013; Giovannoni et al., 2011; Helsen et al., 2017; Songini & Gnan, 2015; Speckbacher & Wentges, 2012). Particularly, we argue that family involvement in ownership influences management control mechanisms design through (1) family control and influence and (2) dynastic succession intentions (Chrisman, Chua, Pearson, & Barnett, 2012). It is relevant to investigate the design of management control mechanisms in family firms since previous research indicates that differences in design and use of management control mechanisms have a direct impact on managers' attitudes and behaviors as well as on a family firm's performance (González-Cruz & Cruz-Ros, 2016; Sciascia & Mazzola, 2008).

Our results suggest that the level of family involvement in ownership is positively related to the degree of a family's intentions to control and influence the firm and to the renewal of family bonds through dynastic succession. Additionally, we show that the controlling family's ability to influence the firm, captured by the family involvement in management and the occupation of the CEO position was not validated empirically as a determinant of formal and participative goal setting and performance evaluation, contradicting previous evidence in

the literature (e.g., Songini & Gnan, 2015; Speckbacher & Wentges, 2012). In contrast, we do find that the elements related to a controlling family's willingness to influence the family firm are significantly associated with the design of these management control mechanisms.

Particularly, our results demonstrate that different dimensions of a family's intentions must be considered separately in research design as they each has a different influence on management control mechanisms design in the family business (Chua et al., 2015; Gómez Mejía et al., 2014). On one side, we find that higher family control and influence intention is negatively associated with the level of formality and the level of participation in the goal setting process, which implies a higher level of centralization of decisions made in the firm and less transparency concerning the family firm's goals. On the other side, our results provide evidence that a family's dynastic succession intentions are positively associated with more formal and more participative goal setting and performance evaluation processes (Giovannoni et al., 2011; Songini et al., 2013; Suess-Reyes, 2016; Zahra et al., 2007). These findings are also consistent with the discussion of a restrictive and an extended SEW perspective (see Miller & Le Breton-Miller, 2014), which has implications for priorities and outcomes in the family firm, such as time horizons, strategic behaviours, management control and management arrangements, among others (Kellermanns, Eddleston, & Zellweger, 2012; Miller & Le Breton-Miller, 2014).

The remainder of the paper is organized as follows. In Section 2 we present the conceptual model and the hypotheses. In Section 3 we present the results and data analyses regarding descriptive statistics and Structural Equation Modeling. In Section 4 we develop the conclusions and highlight the limitations of this study.

4.2. Theoretical model and hypotheses

Our theoretical model addresses the claims of prior research (De Massis, Kotlar, Chua, & Chrisman, 2014; Helsen et al., 2017; Songini et al., 2013) to consider both elements of ability and willingness to explain family firm behavior and management processes. As is presented in Figure 6 this paper examines the following relationships, based on six constructs.

The starting point of our model is that a family's involvement in ownership is considered a key measure that determines the controlling family's ability to influence the family business (Chrisman et al., 2012; De Massis et al., 2014). We examine ability regarding family involvement in ownership and management while willingness is studied based on the SEW intentions framework (Berrone et al., 2012; De Massis et al., 2014). We base our discussions on two SEW reference points for decision-making (Chua et al., 2015) being family control and

influence over business decisions and renewal of family bonds through dynastic succession that are present in the main theoretical frameworks (Berrone et al., 2012; Dawson & Mussolino, 2014; Frank, Kessler, Rusch, Suess-Reyes, & Weismeier-Sammer, 2016). We study both the ability and willingness constructs since previous research has indicated that they both shape family firm behavior and family firm processes (Chrisman et al., 2012; De Massis et al., 2014).

Figure 6. Theoretical research model – paper 1

Note 1: FIO (Family Involvement in Ownership), FCI (Family Control and Influence), FRFB (Renewal of Family Bonds), FIM (Family Involvement in Management). FIM is measured as (i) the percentage of family managers in the Top Management Team (pfamilyTMT) (ii) and if a family manager is the CEO of the firm (familyCEO).

Note 2: The controlling family's ability and willingness refer respectively to the family involvement constructs and the socioemotional wealth intentions.

Chua et al. (2015) suggest that the dimensions of socioemotional wealth can also be treated independently (Berrone et al., 2012; Chua et al., 2015; Gomez-Mejia et al., 2011) since each of these intentions should constitute a part of the socioemotional wealth construct. We follow these arguments in our model.

Moreover, we discuss management control mechanisms design considering formality and participation in both goal setting and performance evaluation. Previous management accounting literature has highlighted the relevance of those mechanisms for the organization's Performance Measurement Systems (PMS) regarding planning and evaluating mechanisms (Ferreira & Otley, 2009; Malmi & Brown, 2008; Merchant & Van der Stede, 2007; Otley, 1999). We define goal setting as the process by which managers define financial and

nonfinancial goals to be pursued by the firm in a 12-month time-horizon and performance evaluation as both the individual and organizational performance evaluations.

Formality is defined as “*the amount of objectivity (rather than subjectivity)*” in the firm's management control mechanisms (Hartmann & Slapničar, 2012, p. 20). Participation indicates the manager's ability to exert some influence in the decision-making process (Brownell, 1982; De Baerdemaeker & Bruggeman, 2015).

These mechanisms have been partially explored in the family firm research however only from the controlling family's ability perspective (Helsen et al., 2017; Speckbacher & Wentges, 2012). In sum, we provide additional insights to the management accounting literature in the family business field by studying how the level of participation and formality in management control mechanisms will be influenced by the controlling family's ability as well as the controlling family's willingness.

4.2.1. The relationship between family involvement in ownership and a family's willingness to influence the firm

Previous literature has looked to family involvement in ownership as an operational definition of family firm distinctive behaviors (Chua, Chrisman, & Sharma, 1999; Dawson & Mussolino, 2014) since it indicates the institutional power held by the controlling family in the family firm (Chrisman et al., 2012). Family involvement in ownership provides the controlling family with the legitimacy for determining the firm's goals and behaviors. Chrisman et al. (2012) argue that the more involved the family, the greater the family legitimacy, power and control (Mitchell, Agle, & Wood, 1997) to influence the business to pursue family-centric noneconomic (FCNE) goals (Gomez-Mejia et al., 2011).

Additionally, a high level of family ownership may indicate that the controlling family has invested a significant amount of the family's wealth in the business. In this scenario, the family sees the firm as an extension of the family regarding financial interdependence (Debicki et al., 2016). So, if the controlling family has a significant ownership stake in the business they are more likely to be willing to preserve the socioemotional wealth goals in the family firm, driving business decisions based on family control, influence and dynastic succession intentions (Berrone et al., 2012; Chrisman et al., 2012).

In contrast, family firms with minority shareholders may prioritize more financial goals in detriment to SEW goals (Chrisman et al., 2012; Holt, Pearson, Carr, & Barnett, 2017;

Zellweger & Astrachan, 2008). Chrisman et al. (2012, p. 271) argue that “*although minority owners cannot necessarily block the goals desired by the dominant coalition, negotiation and compromise will become more necessary, preventing the family with dominant ownership from having absolute power to pursue FCNE goals*”.

Therefore, we argue that family involvement in ownership provide family managers with authority, power, and legitimacy that support their willingness to keep the family’s autonomy and independence to establish the firm’s vision, strategies, and goals (Berrone et al., 2012; Chrisman et al., 2012; De Massis et al., 2014). Hence, we hypothesize that:

H1: Family involvement in ownership is positively associated with family control and influence SEW intention.

Additionally, a high level of family ownership might also be positively related to the controlling family's intention to transfer the firm to the next generations. A high family ownership has been related to family members’ psychological attachment to the firm (Chrisman et al., 2012; Zellweger & Astrachan, 2008) and to the perception that the family firm is seen as an extension of the family (Miller & Le Breton-Miller, 2014; Sundaramurthy & Kreiner, 2008). The family’s and the firm’s financial and psychological interdependence (Chrisman et al., 2012; Debicki et al., 2016; Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007) might enhance the controlling family’s intention to pass the organization to future family generations as a way to preserve the family’s heritage and to safeguard the family’s wealth (Berrone et al., 2012; Jorissen, Laveren, Maneemai, & Voordeckers, 2016; Suess-Reyes, 2016). Therefore, we propose that:

H2: Family involvement in ownership is positively associated with renewal of family bonds through dynastic succession SEW intention.

4.2.2. The relationship between family control and influence intention SEW and family involvement in management

We expect that when the family’s willingness to control and influence (FCI) the firm’s decisions is high, the controlling family will be more likely to nominate family members to occupy strategic management positions in the firm. We argue that in this scenario, family managers will be appointed to occupy positions in the Top Management Team as well as the CEO (Chief Executive Officer) position (Chrisman et al., 2012; Vandekerckhof, Steijvers, Hendriks, & Voordeckers, 2015).

By keeping these positions in the family hands, they assure the controlling family's autonomy and power to control the family business goals and strategies (Berrone et al., 2012; Mitchell et al., 1997). Specifically, the nomination of a family CEO is a central decision made by the controlling family that prioritizes their control and autonomy in business decisions. Therefore, by having multiple family managers in the TMT and also a family member as the most powerful actor in the organization's management structure, the family can mitigate the risks associated with the loss of SEW (Hall & Nordqvist, 2008; Hambrick & Mason, 1984; Kammerlander & Ganter, 2015; Vandekerckhof et al., 2015; Zellweger, Nason, Nordqvist, & Brush, 2013).

In contrast, the presence of nonfamily managers in the Top Management Team as well as a nonfamily CEO could be a threat to family members intentions to keep their authority and dominance over business decisions (Gómez-Mejía et al., 2007; Songini et al., 2013; Speckbacher & Wentges, 2012). Although in this scenario the controlling family could still exert control by the board of directors and by indicating a nonfamily CEO aligned with their interests, however, their autonomy and power over business decisions would become weaker (Lardon, Deloof, & Jorissen, 2017). In fact, the controlling family would appoint outside CEO's when "*they have reached a stage in which the family owners have become more tolerant towards risk-taking*" (Lardon et al., 2017, p. 30) that can be also seen in terms of socioemotional wealth. Hence, we hypothesize that:

H3: Family control and influence SEW intention is positively associated with family involvement in management.

4.2.3. The relationship between family involvement in management and management control mechanisms design

The upper echelon literature studies the role that the powerful actors (e.g., managers in the Top Management Teams) play in the organization about management practices and firm behavior (Hambrick & Mason, 1984). In family firms, the TMT composition is an important issue (Vandekerckhof et al., 2015) since managers behavioral assumptions have been grounded on manager's family affiliation (James, Jennings, & Jennings, 2017), which have implications for the adoption of management control mechanisms in these firms (James et al., 2017; Madison, Holt, Kellermanns, & Ranft, 2016; Madison, Kellermanns, & Munyon, 2017).

Prior literature indicates that there is no need to adopt agency mechanisms in family-owned and family-managed firms (Cruz, Gomez-Mejia, & Becerra, 2010; Fama & Jensen,

1983; Jensen & Meckling, 1976; Madison et al., 2016). Principals' concerns about agent opportunism would be minimal, and the controlling family would be reluctant to incur in unnecessary agency costs such as formal management control mechanisms, which are costly mechanisms for organizations. The presence of family members in the TMT makes stronger the family ties and control over the business which they exercise by informal communication and social controls (Dekker et al., 2013; Hiebl, Duller, Feldbauer-Durstmüller, & Ulrich, 2015; Moores & Mula, 2000; Speckbacher & Wentges, 2012). Speckbacher and Wentges (2012) provide empirical evidence that family managed firms are more likely to seek informal performance evaluation processes.

In contrast, we propose that the lesser the family involvement in management, the higher will be the use of formalized mechanisms, such as goal setting and performance evaluation (Hiebl et al., 2015; Speckbacher & Wentges, 2012). The presence of nonfamily managers in the TMT can be seen as an incentive to adopt formal practices since nonfamily managers have been expected to behave as agents (James et al., 2017; Madison et al., 2016, 2017; Verbeke & Kano, 2012). This argument is aligned with the traditional agency perspective indicating that the presence of nonfamily managers leads to type I agency problems where management control mechanisms play a role in curbing opportunistic behaviors and limiting the agent's discretion (James et al., 2017; Madison et al., 2016). Therefore, in a scenario of low involvement of family managers in the TMT, the controlling family will employ formal management control mechanisms (e.g., goal setting and performance evaluation) as agency mechanisms to exert monitoring of nonfamily managers behavior in the organization. Based on these arguments, we hypothesize that:

H4a: Family involvement in management is negatively associated with formality in management control mechanisms.

For the classical agency perspective, centralization may decrease information asymmetry, and conflicts in the organization since the controlling family (such as both principal and agent) usually determine the priorities (economic or noneconomic goals) to be pursued in the family firm (Barnett & Kellermanns, 2006; Gomez-Mejia et al., 2011).

A high family involvement in management leads to a high concentration of power in the hands of the family owners and family managers that occupy the TMT or/and the CEO position in the firm. Family firms with high family involvement in management are expected to lead to an autocratic family firm perspective where the controlling family exert full control on the organization's management processes (Barnett & Kellermanns, 2006; Dekker et al., 2013; Dyer,

1989; Sorenson, 2000), leaving no space for nonfamily managers' participation. This scenario is illustrated in parts by the autocracy family firm cluster discussed by Dekker et al. (2013).

Therefore, family managers in TMT (Berrone et al., 2012) and the family CEO (Kammerlander & Ganter, 2015; Lardon et al., 2017) are usually invested with a high level of autonomy over management control mechanisms to guarantee the pursuance of both financial and family-centric noneconomic goals of the controlling family (Berrone et al., 2012; Holt et al., 2017). In this sense, family managers are expected to avoid delegating responsibilities related to planning and evaluating performance to nonfamily managers. Actually, family managers might participate in decision-making probably through family relational mechanisms in detriment of corporate management control mechanisms (Madison et al., 2016; Mustakallio, Autio, & Zahra, 2002). In fact, in a scenario of high family involvement in management, the controlling family would not have incentives to offer the opportunity to nonfamily managers to participate in corporate management control mechanisms.

On contrary, if the TMT is mainly composed by nonfamily managers, these executives would not have legitimacy and power, as family managers have, to centralize goal setting and performance evaluation in their hands. This scenario of nonfamily managers predominance in the TMT is characterized by a homogeneous distribution of power than when there is a presence of family managers, which might lead to a higher level of participation in management control mechanisms. Therefore, we hypothesize that:

H4b: Family involvement in management is negatively associated with manager's participation in management control mechanisms.

4.2.4. The relationship between family control and influence SEW intention and management control mechanisms design

Family control and influence SEW intention is considered a decision premise in the family firm, which consists in the family's willingness to maintain the controlling family's autonomy and independence in the firm's decision-making processes (Berrone et al., 2012; Frank et al., 2016). We argue that when the family coalition is willing to retain family control and influence in the business, they will be reluctant to adopt formal management control mechanisms (Barnett & Kellermanns, 2006; Dekker et al., 2013; Gomez-Mejia et al., 2011; Jorissen et al., 2016), since formal mechanisms create transparency. Family firms are considered to be more secretive and less open.

Owner-managers are averse to mechanisms that have the potential to reduce their control (Chen, Huang, & Chen, 2009; Senftlechner & Hiebl, 2015). More formalized management practices increase transparency and visibility allowing others to have more information about the firm. More formalized management control mechanisms could be a threat to family members intentions of authority and dominance because they would need to share information with nonfamily managers (Gómez-Mejía et al., 2007; Miller & Le Breton-Miller, 2014; Songini et al., 2013; Speckbacher & Wentges, 2012).

Therefore, the controlling family would prefer to transfer insights and to share the family's vision, personally and not explicitly in written plans or reports. Family managers may prioritize informal family and corporate management control mechanisms as a strategy to avoid transparency and visibility about family affairs and about family-centric noneconomic goals in the family firm (Chen et al., 2009; Senftlechner & Hiebl, 2015). Informal practices "*can be more arbitrary and thus more flexible, but also more controllable when desired by leaders*" (Morgan & Gomez-Mejia, 2014, p. 282) that are usually the controlling family.

Finally, formal management control mechanisms may be risky to family members because they put them in the same position as nonfamily managers, which may open opportunity for nonfamily managers to perceived unfair treatment and to challenge the family autonomy over business decisions (Barnett & Kellermanns, 2006; Gomez-Mejia et al., 2011). This literature provides support for the following hypothesis:

H5a: Family control and influence SEW intention is negatively associated with formality in management control mechanisms.

Additionally, we argue that if the controlling family is willing to maintain a family's control and influence in the firm they will avoid delegating strategic responsibilities and giving voice to nonfamily managers, which will be related to a low level of participation in management control mechanisms (Barnett & Kellermanns, 2006; Eddleston & Kellermanns, 2007; Gomez-Mejia et al., 2011; Miller & Le Breton-Miller, 2014; Songini et al., 2013).

In this sense, if the controlling family delegates responsibilities related to goal setting and performance evaluation to nonfamily managers, they could increase information asymmetries and also make conflicts, related to goal alignment between owners and nonfamily managers (based on the economic versus nonfinancial priorities), more evident. A central argument is that by giving managers opportunity to participate in management control mechanisms the family firm would naturally be decreasing the controlling family's power and autonomy (Barnett & Kellermanns, 2006; Gomez-Mejia et al., 2011), which is in conflict with

their willingness to preserve their control and influence over the family firm's decisions (Berrone et al., 2012; Debicki et al., 2016). Thus, we propose that:

H5b: Family control and influence SEW intention is negatively associated with manager's participation in management control mechanisms.

4.2.5. The relationship between the renewal of family bonds through dynastic succession SEW intention and management control mechanism design

The controlling family's dynastic succession intention is expected to lead to a long-term orientation of strategy and decision making in family firms (Berrone et al., 2012). Different from the control and influence SEW intention, we argue that this long-term orientation and sustainability drive the use of formal and participative management control mechanisms (Berrone et al., 2012).

Hoffmann et al. (2016) suggest that family involvement is insufficient to foster a bright side of family influence in the firm. The bright side of family influence can be stimulated by the controlling family's long-term orientation of decisions (Kellermanns et al., 2012; Naldi, Cennamo, Corbetta, & Gomez-Mejia, 2013). One first evidence is that transgenerational orientation is related to the "*willingness to safeguard the survival of the business across generations*" (Suess-Reyes, 2016, p. 2). It is expected that the controlling family will adopt formal management control mechanisms (Gomez-Mejia et al., 2011; Songini et al., 2013) to sustain the long-term success of the firm. Formal management control mechanisms may improve the firms' chances of success in the long-term (Dekker et al., 2013; Giovannoni et al., 2011) since they stimulate a structured management process to deal with uncertainties and identify opportunities (Anthony, Govindarajan, Hartmann, Kraus, & Nilsson, 2014).

Formal management control mechanisms help to maintain cohesiveness between the controlling family and family business, which is positive in a long-term orientation perspective toward the firm (Suess-Reyes, 2016). Additionally, formal management accounting practices can support the knowledge transfer across generations and between the controlling family by reinforcing the founder's vision and values (El Masri, Tekathen, Magnan, & Boulianne, 2017; Giovannoni et al., 2011). The renewal of family bonds intention fosters the controlling family to design formal management control mechanisms to avoid risks and surprises (Jorissen et al., 2016), and to promote the sharing of knowledge in the firm (Zahra et al., 2007).

Therefore, if the controlling family is willing to renew family bonds through dynastic succession, they will adopt formal structures and mechanisms to support transparency and trust

among family and nonfamily managers (Sundaramurthy & Kreiner, 2008). These formal mechanisms would avoid conflicts in the organization which could challenge the firm's long-term survival (Giovannoni et al., 2011; Songini et al., 2013; Suess-Reyes, 2016). This discussion supports the following hypothesis:

H6a: Renewal of family bonds through dynastic succession SEW intention is positively associated with formality in management control mechanisms.

Furthermore, managers' participation in management control mechanisms is expected to broaden the scope and bring more diverse discussions to the TMT in family businesses. Manager's participation might improve business decisions by fostering information sharing between top managers and middle managers (Dekker et al., 2013; Locke & Latham, 1990; Magner, Welker, & Campbell, 1996). In addition, a high level of manager's participation in goal setting and performance evaluation lead to a higher transparency of goals and strategies, what makes management control mechanisms more effective in the firm (De Baerdemaeker & Bruggeman, 2015).

Im sum, following Giovannoni et al. (2011, p. 131) "*management accounting practices are capable of as carriers of knowledge (through time and space), by providing the managers participating in these practices with shared language of socially constructed meanings with which to make sense of organizational reality and cope with uncertainty associated with periods of transition*". We refer to dynastic succession as the one of most important transitions that family firms experience (Berrone et al., 2012; Giovannoni et al., 2011; Suess-Reyes, 2016).

Therefore, participation makes the firm more adaptable and flexible to face the environmental uncertainties and to pursue oportunities that might emerge (De Baerdemaeker & Bruggeman, 2015). We expect that, by allowing manager's participate in management control mechanisms, the family firm would enhance knowledge transfer and flexibility by stimulating interaction among managers. We also argue that manager's participation might foster the effectiveness of decision-making by combining different experiences and expertises, what could support a dynastic succession process (Berrone et al., 2012; Giovannoni et al., 2011; Suess-Reyes, 2016) and assure the family business' continuity in the long-term (Gómez-Mejía et al., 2007; Songini et al., 2013). Hence, we propose that:

H6b: Renewal of family bonds through dynastic succession SEW intention is positively associated with manager's participation in management control mechanisms.

The theoretical model and hypotheses are presented in Figure 7.

Figure 7. Theoretical research model and hypotheses – paper 1

Note 1: FIO (Family Involvement in Ownership), FCI (Family Control and Influence), FRFB (Renewal of Family Bonds), FIM (Family Involvement in Management). FIM is measured as (i) the percentage of family managers in the Top Management Team (pfamilyTMT) (ii) and if a family manager is the CEO of the firm (familyCEO).

Note 2: The controlling family ability and willingness refer respectively to the family involvement constructs and the socioemotional wealth intentions.

Note 3: We used the following control variables in the model. Family indicates that if the respondent is a founder, family manager or nonfamily manager (family affiliation). Tier relates to the hierarchical level (Tier 1 are those managers that report directly to shareholders, CEO or does not have superior in the firm). Founder indicates if the founder manages the firm. Generation indicates if the organization has experienced at least a transfer of shares from the first generation to the next. Size indicates if the organization is a large (more than 300 employees) or medium firm (between 50 and 300 employees). MLMV is the variable used to control for common method bias.

4.3. Data analyses

4.3.1. Descriptive Statistics

We report in Table 15 and Table 16 the descriptive statistics of the items of family involvement, family control and influence intention, renewal of family bonds through dynastic succession intention, participation and formality in both goal setting and performance evaluation. We comment the results based on the 120 respondents' sample, but we also report the results of the 152 sample. The sample of 152 is composed of all respondents, and the sample of 120 respondents is composed of private medium and large family firms with family ownership higher than 50% (more information about sample composition is presented in the

methodology section). We argue that both samples present similar results for the descriptive statistics.

If we look at the family control and influence intention, the respondents presented a level of agreement of 3.69 and 3.73 respectively related to keeping the firm ownership exclusively in the family hands and maintaining the control and autonomy to make decisions related to the firm. About the intentions related to the management team composition, the respondents demonstrated an average score of 2.45. Moreover, the dynastic succession intention items present a similar average score emphasizing the controlling family intention to pass the firm to the next generation (3.80), to think in generations (3.40), and to avoid selling the company to nonfamily members (3.67).

Additionally, respondents seem to agree more with participation dimension than with formality in goal setting process. If we analyze the means of the items of these constructs, respondents present an average score of 4.33 about the importance of manager's contribution to goal setting of the company and 4.23 that the firms accept changes suggested by managers. About formality in the goal setting process, respondents seem to slightly disagree that they rely principally on experienced-based intuition (rather than quantitative analysis) when setting major goals (2.78). As this item was reversed coded (should indicate informal goal setting) it was consistent, but it was further excluded in the measurement model evaluation because of the lack of convergent and discriminant validity.

About participation in performance evaluation, respondents indicate that the superiors give opportunity to ask questions (3.74) and consider their opinion when discussing the performance evaluation (3.75). About formality, respondents present an average score of 3.62 and 3.51 respectively related to judging performance based on objective information and expressing it in quantitative terms.

Table 15

Items descriptive statistics (n=120) - Paper 1

Item	n	Mean	Std. Dev.	Min	Max
FIO. Family involvement in ownership as a dummy if the controlling family holds 100% of the shares	120	0.78	0.41	0	1
pfamilyTMT. Family involvement in management. Percentage of family managers on the top management team.	116	0.44	0.35	0	1
FamilyCEO. The CEO or the highest position in the firm is a family manager.	120	0.80	0.40	0	1
FCI_1. In the family business, great care is taken that only family members own the firm.	120	3.69	1.34	1	5
FCI_2. In the family business, great care is taken that the firm's management consists exclusively of family members.	120	2.45	1.39	1	5
FCI_3. In the family business, great care is taken that several family members are involved in the firm's management.	119	2.64	1.37	1	5
FCI_4. In the family business, great care is taken that family control and independence are maintained.	120	3.73	1.21	1	5
FRFB_1. In the family business, great care is taken to think in generations.	119	3.40	1.25	1	5
FRFB_2. In the family business, great care is taken to avoid selling the company to nonfamily members.	120	3.67	1.39	1	5
FRFB_3. In the family business, great care is taken that the company can be passed on to the next generation.	120	3.80	1.16	1	5
GSform_1. Our goal setting nearly always result from extensive quantitative analysis of data.	120	3.58	1.14	1	5
GSform_2. Our goal setting is nearly always detailed in formal written reports.	120	3.38	1.23	1	5
GSform_3. We rely principally on experienced-based intuition (rather than quantitative analysis) when setting major goals. *	119	2.78	1.14	1	5
GSform_4. To what extent is goal setting processes formalized in the organization? **	120	3.69	1.26	1	5
GSpert_1. Manager's contribution is important to goal setting of the company.	120	4.33	0.91	1	5
GSpert_2. In the company, it is important that goal setting includes changes that were suggested by managers.	120	4.23	0.91	1	5
GSpert_3. In the company, managers are influential in goal setting.	120	4.13	0.98	1	5
GSpert_4. Top management often initiates discussions about goals with managers.	120	3.94	1.10	1	5
PEform_1. When judging performance, my superior bases on objective information previously established.	117	3.62	1.13	1	5
PEform_2. When judging performance, my superior expresses it in quantitative terms (evaluates performance based on quantitative criteria).	117	3.51	1.15	1	5
PEpart_1. The superior gives you the opportunity to ask questions about performance evaluation.	116	3.74	1.19	1	5
PEpart_2. The superior considers your views when discussing performance evaluation.	117	3.75	1.11	1	5

* Reverse coded item.

** This item was added to the original measures of formality, and is based on Bedford & Malmi (2015).

Table 16

Items descriptive statistics (n=152) - Paper 1

Item	n	Mean	Std. Dev.	Min	Max
FIO. Family involvement in ownership as a dummy if the controlling family holds 100% of the shares	151	0.72	0.45	0	1
pfamilyTMT. Family involvement in management. Percentage of family managers on the top management team.	146	0.45	0.35	0	1
FamilyCEO. The CEO or the highest position in the firm is a family manager.	152	0.78	0.41	0	1
FCI_1. In the family business, great care is taken that only family members own the firm.	152	3.64	1.39	1	5
FCI_2. In the family business, great care is taken that the firm's management consists exclusively of family members.	152	2.47	1.42	1	5
FCI_3. In the family business, great care is taken that several family members are involved in the firm's management.	151	2.68	1.43	1	5
FCI_4. In the family business, great care is taken that family control and independence are maintained.	152	3.69	1.28	1	5
FRFB_1. In the family business, great care is taken to think in generations.	151	3.34	1.29	1	5
FRFB_2. In the family business, great care is taken to avoid selling the company to nonfamily members.	152	3.65	1.42	1	5
FRFB_3. In the family business, great care is taken that the company can be passed on to the next generation.	151	3.76	1.23	1	5
GSform_1. Our goal setting nearly always result from extensive quantitative analysis of data.	152	3.61	1.11	1	5
GSform_2. Our goal setting is nearly always detailed in formal written reports.	152	3.36	1.20	1	5
GSform_3. We rely principally on experienced-based intuition (rather than quantitative analysis) when setting major goals. *	152	2.80	1.13	0	5
GSform_4. To what extent is goal setting processes formalized in the organization? **	152	3.71	1.21	1	5
GSpert_1. Manager's contribution is important to goal setting of the company.	152	4.37	0.90	1	5
GSpert_2. In the company, it is important that goal setting include changes that were suggested by managers.	151	4.22	0.89	1	5
GSpert_3. In the company, managers are influential in goal setting.	151	4.15	0.95	1	5
GSpert_4. Top management often initiates discussions about goals with managers.	151	3.99	1.07	1	5
PEform_1. When judging performance, my superior bases on objective information previously established.	147	3.63	1.13	1	5
PEform_2. When judging performance, my superior expresses it in quantitative terms (evaluates performance based on quantitative criteria).	147	3.48	1.12	1	5
PEpart_1. The superior gives you the opportunity to ask questions about performance evaluation.	146	3.75	1.14	1	5
PEpart_2. The superior considers your views when discussing performance evaluation.	147	3.76	1.07	1	5

* Reverse coded item.

** This item was added to the original measures of formality, and is based on Bedford & Malmi (2015).

We present in Table 17 and in Table 18 comparisons related to the family ability (family involvement in ownership and family involvement in management) and management control mechanisms design (participation and formality of goal setting and performance evaluation). For the results of participation and formality in goal setting and performance evaluation processes, we ran Confirmatory Factor Analyses and report the mean of the standardized scores (for both samples of 152 and 120 respondents). The interpretation of the means in the two samples is similar.

First, larger firms seem to have higher levels of formality and participation concerning goal setting and performance evaluation processes. Additionally, family firms with 100% controlling family ownership, with the founder in the business and with a family manager as the CEO present lower level of formality and participation in goal setting and performance evaluation processes. The results also indicate that when family managers are less involved in the TMT, the higher the level of formality and participation in goal setting and performance evaluation, except for those firms which the TMT is composed exclusively of family managers. Finally, looking at the ownership generation of the family firm, we can see that the results about the levels of participation and formality in management control mechanisms do not present a descriptive pattern.

Table 17

Family firms' characteristics and management control mechanisms design (n=120)

	n	%	Formality		Participation	
			GS	PE	GS	PE
<i>Panel A: Size (number of employees)</i>						
Between 51 and 100 employees	8	6.7%	-0.175	-0.066	-0.631	-0.179
Between 101 and 300 employees	25	20.8%	-0.258	-0.174	0.120	-0.065
Between 301 and 500 employees	16	13.3%	-0.293	0.174	0.007	0.157
Between 501 and 1000 employees	20	16.7%	-0.193	-0.113	-0.227	-0.284
More than 1000 employees	51	42.5%	0.321	0.085	0.127	0.123
<i>Panel B: Controlling family ownership</i>						
Family owns more than 50% but less than 100% of the shares	26	21.7%	0.015	0.067	0.093	0.068
Family owns 100% of the shares	94	78.3%	-0.053	-0.244	-0.336	-0.246
<i>Panel C: Percentage of family members in the TMT</i>						
No family members	22	18.3%	0.169	0.369	0.204	0.275
More than 0% and up to 25%	28	23.3%	0.237	0.022	-0.046	0.146
More than 25% and up to 50%	26	21.7%	-0.099	-0.139	-0.174	-0.260
More than 50% but less than 100%	19	15.8%	-0.063	-0.687	-0.204	-0.309
100,00%	21	17.5%	-0.306	0.232	0.156	-0.062
<i>Panel D: Is the CEO from the controlling family?</i>						
Yes	96	80.0%	-0.085	-0.014	-0.061	-0.053
No	24	20.0%	0.339	0.057	0.242	0.213
<i>Panel E: Does(Do) the founder(s) manage(s) the business?</i>						
Yes	58	48.3%	-0.211	-0.162	-0.178	-0.186
No	60	50.0%	0.232	0.158	0.174	0.156
<i>Panel F: Family Generations (ownership)</i>						
First generation	28	23.3%	-0.135	-0.334	-0.315	-0.398
First and Second generations	28	23.3%	-0.059	0.225	0.193	0.317
First, Second and Third generations	2	1.7%	-0.381	-1.016	-0.632	-1.193
Second generation	27	22.5%	-0.031	-0.081	-0.116	-0.072
Second and third generations	16	13.3%	-0.214	-0.154	-0.033	-0.181
Third generation	14	11.7%	0.527	0.683	0.426	0.688
Third and fourth generations	4	3.3%	0.662	0.051	0.474	0.025
Fourth generation	1	0.8%	0.428	-0.059	0.466	-0.214
<i>Panel G: Firm age</i>						
Between 0 and 20 years	11	9.2%	0.027	0.236	-0.149	0.147
Between 21 and 40 years	27	22.5%	0.015	-0.342	-0.175	-0.118
Between 41 and 60 years	29	24.2%	-0.078	0.099	0.049	0.110
More than 61 years	44	36.7%	0.088	0.120	0.189	0.061

Note 1: GS and PE are respectively goal setting and performance evaluation processes. These values are the means that were obtained by applying the Confirmatory Factor Analyses for each construct. The results of the CFA are standardized scores (mean is zero and standard deviation one).

Table 18

Family firms' characteristics and management control mechanisms design (n=152) – Part I

	n	%	Formality		Participation	
			GS	PE	GS	PE
<i>Panel A: Size (number of employees)</i>						
Less than 50 employees	18	11.8%	-0.197	-0.157	0.071	0.119
Between 51 and 100 employees	9	5.9%	-0.122	-0.004	-0.672	-0.144
Between 101 and 300 employees	29	19.1%	-0.328	-0.193	-0.152	-0.251
Between 301 and 500 employees	18	11.8%	-0.230	0.162	-0.061	0.164
Between 501 and 1000 employees	21	13.8%	-0.200	-0.103	-0.287	-0.275
More than 1000 employees	57	37.5%	0.395	0.149	0.039	0.162
<i>Panel B: Controlling family ownership</i>						
Family owns up to 25% of the shares	6	3.9%	-0.344	-0.313	-0.657	-0.824
Family owns more than 25% but up to 50% of the shares	4	2.6%	0.693	0.313	0.266	0.489
Family owns more than 50% but less than 100% of the shares	32	21.1%	0.047	-0.158	-0.304	-0.243
Family owns 100% of the shares	109	71.7%	-0.028	0.046	-0.019	0.087
Missing	1	0.7%				
<i>Panel C: Percentage of family members in the TMT</i>						
No family members	29	19.1%	0.178	0.289	0.036	0.132
More than 0% and up to 25%	30	19.7%	0.227	-0.022	-0.175	0.117
More than 25% and up to 50%	36	23.7%	0.043	-0.017	-0.167	-0.179
More than 50% but less than 100%	22	14.5%	-0.113	-0.750	-0.258	-0.350
100,00%	29	19.1%	-0.291	0.312	0.066	0.083
Missing	6	3.9%				
<i>Panel D: Is the CEO from the controlling family?</i>						
Yes	119	78.3%	-0.028	0.046	-0.019	0.087
No	33	21.7%	0.053	-0.135	-0.300	-0.256
<i>Panel E: Does(Do) the founder(s) manage(s) the business?</i>						
Yes	82	53.9%	-0.166	-0.109	-0.208	-0.121
No	68	44.7%	0.226	0.145	0.047	0.125
Missing	2	1.3%				

Note 1: GS and PE are respectively goal setting and performance evaluation processes. These values are the means that were obtained by applying the Confirmatory Factor Analyses for each construct. The results of the CFA are standardized scores (mean is zero and standard deviation one).

Table 18

Family firms' characteristics and management control mechanisms design (n=152) – Part II

	n	%	Formality		Participation	
			GS	PE	GS	PE
<i>Panel F: Family Generations (ownership)</i>						
First generation	43	28.3%	-0.168	-0.260	-0.282	-0.348
First and Second generations	34	22.4%	-0.068	0.186	0.040	0.306
First, Second and Third generations	2	1.3%	-0.400	-1.021	-0.680	-1.239
Second generation	31	20.4%	-0.036	-0.055	-0.229	-0.055
Second and third generations	19	12.5%	-0.087	-0.103	-0.136	-0.138
Third generation	15	9.9%	0.547	0.748	0.343	0.738
Third and fourth generations	4	2.6%	0.677	0.060	0.362	0.019
Fourth generation	3	2.0%	0.786	0.447	0.363	0.334
Later than fourth generation	1	0.7%	-0.174	-1.502	0.090	-0.745
<i>Panel G: Firm age</i>						
Between 0 and 20 years	21	13.8%	0.067	0.265	-0.062	0.146
Between 21 and 40 years	37	24.3%	-0.018	-0.240	-0.236	-0.057
Between 41 and 60 years	32	21.1%	-0.078	0.125	-0.133	0.104
More than 61 years	49	32.2%	0.114	0.016	0.084	-0.056
Missing	13	8.6%				

Note 1: GS and PE are respectively goal setting and performance evaluation processes. These values are the means that were obtained by applying the Confirmatory Factor Analyses for each construct. The results of the CFA are standardized scores (mean is zero and standard deviation one).

4.3.2. Structural Equation Modeling

4.3.2.1. Measurement model assessment

We validated the measurement model for the analysis of reflective measurement models following Hair et al. (2016). The assessment of reflective models includes convergent validity, internal consistency, and discriminant validity. For the convergent validity we analyze the results of outer loadings and Average Variance Extracted (AVE) and for internal consistency, the Composite Reliability (CR). Our results meet the criteria (cut-off parameters) proposed by Hair Jr. et al. (2013, p. 122) in terms of (i) Composite Reliability should be higher than 0.7; (ii) outer loadings should be greater than 0.7 while between 0.4 and 0.7 is considered a decision zone to keep or remove the item; (iii) Average Variance Extracted (AVE) should be higher than 0.5.

Additionally, we conducted the discriminant validity analysis using cross loadings (level indicators) and Fornell-Larcker criterion (Fornell & Larcker, 1981). Our results show that the

cross loadings are considered low compared to the outer loadings. Additionally, the square root of AVE of each latent variable is found to be greater than the highest correlations between the latent variables (Hair Jr. et al., 2013). We also analyzed the HTMT criterion to assess discriminant validity, which we found values lower than 0.85 (Henseler, Ringle, & Sarstedt, 2014) that are consistent with Fornell-Larcker criterion. In sum, our measurement model was validated after excluding GSform_3 item that lack of convergent and discriminant validity by presenting a lower outer loading and higher cross loadings. The results are shown in Table 19, Table 20, Table 21 and Table 22.

The correlation coefficients presented in Table 21 and Table 22 indicate preliminary associations between the family involvement in management and the family control and influence intentions. Additionally, we can see that the intentions of family control and influence (FCI) and renewal of family bonds (FRFB) are positively and statistically significant correlated. The family involvement in ownership (FIO), family involvement in management (percentage of family managers in the TMT and family CEO) seems to be positively and statistically significant correlated.

We can also observe a medium correlation between management control mechanisms design characteristics in goal setting and performance evaluation. We have found negative correlations between FCI and goal setting formality and participation which are not statistically significant. Conversely, we have found positive correlations between FRFB and management control mechanisms design characteristics, which was statistically significant for goal setting and performance evaluation formality as well as participation in performance evaluation.

Table 19

Cross loadings between the items and the construct (n=152)

	FIO	FCI	FRFB	pfamily TMT	family CEO	GS_ form	GS_ part	PE_ form	PE_ part
d_ownership100%	1.000	0.254	0.197	0.304	0.182	-0.038	0.141	0.089	0.154
FCI_1	0.285	0.763	0.399	0.311	0.314	0.010	-0.039	0.160	0.061
FCI_2	0.180	0.850	0.288	0.550	0.401	-0.194	-0.168	0.029	-0.074
FCI_3	0.142	0.799	0.464	0.322	0.165	-0.018	-0.067	0.146	0.026
FCI_4	0.204	0.740	0.626	0.234	0.311	-0.024	0.013	0.028	0.130
FRFB_1	0.149	0.526	0.876	0.218	0.204	0.245	0.118	0.131	0.161
FRFB_2	0.167	0.497	0.824	0.184	0.119	0.144	0.094	0.186	0.184
FRFB_3	0.201	0.410	0.937	0.189	0.133	0.315	0.140	0.249	0.249
pfamilyTMT	0.304	0.476	0.223	1.000	0.489	-0.184	0.034	-0.035	-0.042
d_familyCEO	0.182	0.393	0.172	0.489	1.000	-0.167	-0.088	-0.019	-0.046
GSform_1	0.004	-0.021	0.299	-0.120	-0.116	0.841	0.395	0.307	0.371
GSform_2	-0.098	-0.109	0.183	-0.170	-0.160	0.890	0.442	0.300	0.317
GSform_4	-0.006	-0.109	0.223	-0.183	-0.153	0.829	0.478	0.438	0.387
GSpartic_1	0.120	-0.073	0.109	0.030	-0.051	0.393	0.868	0.369	0.448
GSpartic_2	0.095	-0.109	0.127	0.004	-0.108	0.464	0.872	0.328	0.378
GSpartic_3	0.156	-0.140	0.084	-0.004	-0.137	0.452	0.911	0.348	0.458
GSpartic_4	0.113	-0.015	0.153	0.088	-0.006	0.465	0.813	0.331	0.423
PEform_1	0.057	0.122	0.199	0.013	0.000	0.395	0.394	0.946	0.594
PEform_2	0.113	0.074	0.212	-0.081	-0.037	0.373	0.352	0.938	0.628
PEpart_1	0.142	0.090	0.206	-0.060	-0.037	0.367	0.436	0.612	0.919
PEpart_2	0.146	-0.022	0.221	-0.023	-0.048	0.416	0.484	0.605	0.953
Controls									
Tier 1	0.025	0.114	0.014	0.145	0.169	0.014	0.234	0.037	0.028
rfamily_status	0.104	0.162	0.072	0.179	0.218	-0.099	0.055	-0.023	-0.031
rfounder_status	0.174	0.116	0.097	0.226	0.136	0.087	0.188	0.133	0.162
d_founder	0.093	0.368	0.124	0.236	0.306	-0.196	-0.131	-0.130	-0.117
o_generation1	-0.076	-0.023	-0.198	0.045	0.076	-0.084	-0.093	-0.140	-0.198
largefirms	-0.201	-0.163	-0.031	-0.347	-0.237	0.196	0.058	0.126	0.089
mediumfirms	0.156	0.078	0.002	0.214	0.194	-0.164	-0.111	-0.098	-0.132
MLMV_1	-0.030	0.079	0.077	0.109	0.072	0.149	0.098	-0.067	0.014
MLMV_2	0.028	0.047	0.074	0.088	-0.046	0.281	0.258	0.367	0.303
MLMV_3	-0.138	-0.008	-0.054	0.002	0.118	-0.157	-0.193	-0.141	-0.182
MLMV_4	-0.042	0.086	0.032	-0.060	0.004	0.135	0.088	0.090	0.020

Note 1: We excluded the GSform_3 indicator because it lacks discriminant validity. The construct of GSform was more correlated with other items than this specific indicator, so we excluded from the model.

Note 2: Size, Tier, Family affiliation, Founder, Generation and MLMV are control variables in our model. Size, Tier and Family are dummy variables and MLMV is a 4-item formative latent variable that is connected to all endogenous variables in our model (Chin et al., 2013; Nitzl, 2016).

Table 20

Cross loadings between the items and the construct (n=120)

	FIO	FCI	FRFB	pfamily TMT	family CEO	GS_ form	GS_ part	PE_ form	PE_ part
d_ownership100%	1.000	0.111	0.061	0.219	0.041	0.026	0.177	0.126	0.130
FCI_1	0.212	0.662	0.320	0.225	0.228	-0.019	-0.107	0.120	-0.007
FCI_2	0.069	0.875	0.227	0.543	0.373	-0.228	-0.207	-0.030	-0.182
FCI_3	0.044	0.742	0.404	0.256	0.133	-0.063	-0.140	0.047	-0.098
FCI_4	0.051	0.701	0.518	0.149	0.303	-0.080	-0.048	-0.054	0.022
FRFB_1	0.008	0.450	0.874	0.164	0.213	0.246	0.073	0.074	0.074
FRFB_2	0.063	0.426	0.761	0.137	0.105	0.102	0.048	0.145	0.110
FRFB_3	0.084	0.308	0.931	0.125	0.112	0.310	0.102	0.220	0.189
pfamilyTMT	0.219	0.447	0.162	1.000	0.442	-0.178	-0.006	-0.087	-0.120
d_familyCEO	0.041	0.370	0.167	0.442	1.000	-0.168	-0.124	-0.029	-0.108
GSform_1	0.039	-0.107	0.302	-0.142	-0.128	0.848	0.322	0.254	0.355
GSform_2	-0.034	-0.111	0.230	-0.122	-0.150	0.906	0.443	0.281	0.362
GSform_4	0.064	-0.214	0.169	-0.198	-0.157	0.823	0.476	0.388	0.356
GSpartic_1	0.149	-0.129	0.096	-0.014	-0.069	0.361	0.878	0.360	0.448
GSpartic_2	0.130	-0.182	0.062	-0.003	-0.129	0.409	0.880	0.287	0.366
GSpartic_3	0.191	-0.204	0.073	-0.026	-0.191	0.445	0.920	0.326	0.449
GSpartic_4	0.138	-0.113	0.088	0.025	-0.027	0.431	0.787	0.244	0.380
PEform_1	0.084	0.038	0.155	-0.060	-0.031	0.343	0.332	0.948	0.552
PEform_2	0.158	-0.026	0.175	-0.107	-0.022	0.322	0.328	0.933	0.639
PEpart_1	0.114	-0.024	0.118	-0.136	-0.089	0.353	0.416	0.595	0.901
PEpart_2	0.127	-0.168	0.155	-0.095	-0.109	0.413	0.462	0.583	0.955
Controls									
Tier 1	0.005	0.088	-0.046	0.060	0.092	0.011	0.262	0.046	0.022
rfamily_status	0.041	0.091	-0.061	0.187	0.220	-0.077	0.081	0.033	-0.057
rfounder_status	0.159	0.077	0.089	0.095	0.075	0.104	0.141	0.096	0.123
d_founder	0.113	0.380	0.153	0.185	0.307	-0.226	-0.175	-0.161	-0.161
o_generation1	-0.056	0.033	-0.129	-0.007	0.070	-0.048	-0.132	-0.138	-0.193
largefirms	-0.279	-0.181	-0.111	-0.330	-0.261	0.153	0.040	0.092	0.061
MLMV_1	-0.062	0.029	0.033	0.035	0.027	0.134	0.053	-0.162	-0.071
MLMV_2	0.012	-0.041	0.070	0.017	-0.113	0.285	0.260	0.372	0.353
MLMV_3	-0.166	0.033	0.011	-0.070	0.079	-0.151	-0.230	-0.128	-0.164
MLMV_4	-0.124	0.044	0.024	-0.104	-0.068	0.149	0.073	0.097	0.018

Note 1: We excluded the GSform_3 indicator because it lacks discriminant validity. The construct of GSform was more correlated with other items than this specific indicator, so we excluded from the model.

Note 2. Size, Tier, Family affiliation, Founder, Generation and MLMV are control variables in our model. Size, Tier and Family are dummy variables and MLMV is a 4-item formative latent variable that is connected to all endogenous variables in our model (Chin et al., 2013; Nitzl, 2016).

Table 21

First-Order Latent Variable Correlations (n=152)

	FIO	FCI	FRFB	pfamilyTMT	familyCEO	GS_form	GS_part	PE_form	PE_part
FIO	-								
FCI	0.254	0.789							
FRFB	0.197	0.532	0.880						
pfamilyTMT	0.304	0.476	0.223	-					
familyCEO	0.182	0.393	0.172	0.489	-				
GS_form	-0.038	-0.092	0.277	-0.184	-0.167	0.854			
GS_part	0.141	-0.098	0.136	0.034	-0.088	0.513	0.867		
PE_form	0.089	0.105	0.218	-0.035	-0.019	0.408	0.396	0.942	
PE_part	0.154	0.028	0.228	-0.042	-0.046	0.420	0.494	0.648	0.936
CR	-	0.868	0.911	-	-	0.890	0.923	0.941	0.934
AVE	-	0.623	0.775	-	-	0.729	0.751	0.888	0.877

Note 1. Correlations greater than or equal to | 0.159 | are significant at 5% and correlations higher than or equal to | 0.208 | are significant at 1%.

Note 2. The values on the diagonal are the square roots of the average variances extracted; because these values are higher than the correlations between the latent variables (values outside the diagonal), there is discriminant validity (Hair Jr., Hult, Ringle, & Sarstedt, 2013).

Note 3. Grey cells indicate correlations between dimensions of the same theoretical constructs.

Note 4: Composite Reliability (CR) and Average Variance Extracted (AVE)

Table 22

First-Order Latent Variable Correlations (n=120)

	FIO	FCI	FRFB	pfamilyTMT	familyCEO	GS_form	GS_part	PE_form	PE_part
FIO	-								
FCI	0.111	0.749							
FRFB	0.061	0.440	0.858						
pfamilyTMT	0.219	0.447	0.162	-					
familyCEO	0.041	0.370	0.167	0.442	-				
GS_form	0.026	-0.165	0.276	-0.178	-0.168	0.860			
GS_part	0.177	-0.183	0.091	-0.006	-0.124	0.477	0.868		
PE_form	0.126	0.008	0.175	-0.087	-0.029	0.354	0.351	0.940	
PE_part	0.130	-0.117	0.150	-0.120	-0.108	0.416	0.475	0.630	0.929
CR	-	0.835	0.893	-	-	0.895	0.924	0.939	0.926
AVE	-	0.562	0.736	-	-	0.739	0.753	0.884	0.862

Note 1. Correlations greater than or equal to | 0.179 | are significant at 5% and correlations higher than or equal to | 0.234 | are significant at 1%

Note 2. The values on the diagonal are the square roots of the average variances extracted; because these values are higher than the correlations between the latent variables (values outside the diagonal), there is discriminant validity (Hair Jr. et al., 2013).

Note 3. Grey cells indicate correlations between dimensions of the same theoretical constructs.

Note 4: Composite Reliability (CR) and Average Variance Extracted (AVE)

4.3.2.2. Structural model analyses

Once the validation of the measurement model has been completed, we conducted the analyses of the structural model (Hair Jr. et al., 2013). In the first step, we analyzed the incidence of multicollinearity based on Variance Inflation Factor (VIF), which is expected to be lower than 5 (and tolerance values below 0.2). Second, we analyzed the structural path coefficients regarding size and statistical significance of effects. We run the bootstrapping analyses based on 1,000 subsamples, bias corrected confidence level and two-tailed tests. We show results of the direct effects in Table 23, Table 24, Figure 8 and Figure 9.

Additionally, we assess the determination of R^2 , which indicates the percentage of a dependent variable variance that is explained by the independent variables. To avoid bias in a complex model, we present the results for the adjusted coefficient of determination (R_{adj}^2) as suggested by Hair Jr. et al. (2013), which is used to compare models with a different number of variables or sample size. The fourth step is the effect size coefficient (f^2), which indicates the extent to which the independent variable has a substantial impact on the dependent variable. We used the classification suggested for the social sciences by Cohen (1988) to interpret our results such as: small effect ($f^2 = 0.02$); medium effect ($f^2 = 0.15$); and large effect ($f^2 = 0.35$). Hair Jr. et al. (2013) mention that f^2 lower than 0.02 indicates no relationship between variables.

We present in Table 23 the path coefficients (β) of structural equation model (Model 1). We additionally propose a second model (Model 2) to analyze the consistency of the results based on an independent variable that combines the percentage of family managers in the TMT and if the CEO is from the controlling family, which results are reported in Table 24. As the results are consistent in both structural models, we will comment the coefficients and statistics presented in Table 23 (Model 1).

First, we suggest that VIF indicators determine that multicollinearity is not a concern because all values are below two while Hair Jr. et al. (2013) points to values lower than five. Additionally looking at the interpretation of the models and the control variables we can see that besides some controls are statistically significant (and have large size effects), they do not alter the conclusions of effect sizes and statistical significance of our hypotheses, which indicates that our results are robust.

Although model's fit indexes are not highly recommended in variance based SEM such as is usually discussed for covariance-based SEM (Hair Jr., Sarstedt, Ringle, & Gudergan,

2017)⁷, we present these results. We used the parameter for model fit based on SRMR criteria, which scores should be lower than 0.08 (Hair Jr. et al., 2013, 2017). Our results for SRMR (Saturated Model) ranged from 0.69 to 0.74 which parameters meet the criteria suggested by Hair Jr. et al. (2013), indicating a good fit for our models.

In the sequence, we discuss the results about the hypotheses. We particularly describe the statistical results for the 152 respondents' sample.

4.3.2.3. The relationship between family involvement in ownership and a family's willingness to influence the firm

Our result shows that family involvement in ownership (FIO) is positively and statistically significant associated with family control and influence (FCI) SEW intentions ($\beta = 0.197$, $p < 0.05$). The effect size (f^2) of family involvement in ownership is considered small ($f^2 = 0.046$). We did not find statistically significant results for the sample of just private medium and large firms ($n = 120$) maybe due to the characteristics of our sample in which about 80% of the firms are totally owned by the controlling family. These results confirm our hypothesis H1 that indicates that by holding totally of the firm's shares, the controlling family is expected to have financial and emotional dependence toward the firm, which therefore might foster their willingness to maintain their autonomy and independence to make decisions in the firm (Berrone, Cruz, & Gomez-Mejia, 2012; Chrisman, Chua, Pearson, & Barnett, 2012; Gomez-Mejia, Cruz, Berrone, & De Castro, 2011).

Additionally, the association between family involvement in ownership (FIO) and renewal of family bonds through dynastic succession (FRFB) was statistically significant at 10% ($\beta = 0.158$, $p < 0.10$), having a small effect size (0.026). This result support hypothesis H2 at 10% significance level which proposes that a high ownership might create financial and psychological interdependence between the family and the firm, that enhances the controlling family willingness to pass the firm to future generations (Berrone et al., 2012; Jorissen, Laveren, Maneemai, & Voordeckers, 2016; Suess-Reyes, 2016; Zellweger & Astrachan, 2008).

By analyzing the control variables, we can see that variables such as the presence of the founder or the family generation of the family business might be significantly associated to a family's willingness.

⁷ <https://www.smartpls.com/documentation/functionalities/model-fit>.

4.3.2.4. The relationship between family control and influence SEW intention and family involvement in management

Table 23 also shows that the controlling family willingness to control and influence the firm's decision (FCI) is positively and statistically significant associated with the percentage of family managers in the Top Management Team (pfamilyTMT) presenting a high path coefficient ($\beta = 0.431$, $p < 0.001$, $f^2 = 0.22$). With respect to the association between FCI and the presence of a family manager as the CEO (familyCEO) in the firm, we have found a positive and statistically significant result ($\beta = 0.317$, $p < 0.001$, $f^2 = 0.11$) which has a smaller effect size than for the percentage of family managers in the TMT.

Therefore, these results support hypotheses H3 that as higher the family's willingness to control and influence the decisions of the family firm, the controlling family will be more likely to nominate more family managers to occupy positions in the Top Management Team (Chrisman et al., 2012; Vandekerckhof, Steijvers, Hendriks, & Voordeckers, 2015) as well as will keep a family member as the CEO of the family firm (Chrisman et al., 2012; Gomez-Mejia et al., 2011; Lardon, Deloof, & Jorissen, 2017).

4.3.2.5. The relationship between family involvement in management and management control mechanisms design

With respect to the hypotheses H4a and H4b, our results are contradictory to prior literature (e.g., Helsen, Lybaert, Steijvers, Orens, & Dekker, 2017; Speckbacher & Wentges, 2012), in the sense that Family Involvement in Management (FIM) seems not to be associated with the level of formality and participation in management control mechanisms. Particularly, we did not find statistically significant associations between FIM and formality in both goal setting and performance evaluation process (H4a) as well as for managers' participation in those management control mechanisms (H4b).

In model 2 (presented in Table 24), when we analyse the interaction between the percentage of family managers in the TMT and the Family CEO (FIM_familyCEO), we find a statistically significant negative association between family involvement in management and the level of formality in goal setting process ($\beta = -0.138$, $p < 0.10$), although based on an effect size ($f^2 = 0.018$) considered irrelevant by Hair Jr. et al. (2013). Therefore, this result contradicts the agency perspective and the empirical results of previous research (Songini & Gnan, 2015;

Speckbacher & Wentges, 2012). However, our results are in alignment with the arguments of De Massis et al. (2014) who claim that a family's ability may be not a sufficient condition to capture the family's influence over management control mechanisms and organizational behaviour (Chrisman, Chua, De Massis, Frattini, & Wright, 2015; Veider & Matzler, 2016). Therefore, we explore the role of a family's willingness (family control and influence and dynastic succession intentions) on the design of management control mechanisms in family firms.

4.3.2.6. The relationship between family control and influence SEW intention and management control mechanisms design

Although family involvement in management is not associated with management control mechanisms design, which contradicts previous literature (e.g., Hiebl, Duller, Feldbauer-Durstmüller, & Ulrich, 2015; Speckbacher & Wentges, 2012), we provide evidence that both elements of willingness (family control and influence and dynastic succession intentions) present a significant association with the design of management control mechanisms.

First, family control and influence SEW intention (FCI) is significantly negatively associated with the design characteristics of goal setting processes. We have found small significant effect ($\beta = -0.243$, $p < 0.05$, $f^2 = 0.047$) of FCI on goal setting for formality. FCI is also negatively associated to goal setting participation, which we also found a small size negative significant effect ($\beta = -0.295$, $p < 0.01$, $f^2 = 0.063$). However, we did not find a statistically significant association between FCI with participation and formality in performance evaluation. Our results allow us to partially confirm the hypotheses H5a and H5b (Barnett & Kellermanns, 2006; Dekker, Lybaert, Steijvers, Depaire, & Mercken, 2013; Gomez-Mejia, Cruz, Berrone, & De Castro, 2011; Senftlechner & Hiebl, 2015; Speckbacher & Wentges, 2012). So higher family control intentions lead to less participation in goal setting as well as less formality applied in that goal setting process.

Therefore, when a controlling family's willingness to retain family autonomy and independence in the firm's decision-making process is high, they will resist adopting formal and participative goal setting processes in the family firm. This result is in line with prior literature (Gomez-Mejia et al., 2011; Jorissen, Laveren, Maneemai, & Voordeckers, 2016; Miller & Le Breton-Miller, 2014). These results are robust if we compare to the sample of

medium and large private family firms with controlling family ownership higher than 50% (n=120).

4.3.2.7. The relationship between the renewal of family bonds through dynastic succession SEW intention and management control mechanism design

The renewal of family bonds through dynastic succession intention (FRFB) presents a stronger and significantly positive association with both the formality as well as managers' participation in management control mechanisms if we compare to FCI intention.

First, FRFB has a medium effect on goal setting formality ($\beta = 0.414$, $p < 0.01$, $f^2 = 0.172$), and a small effect on performance evaluation formality ($\beta = 0.188$, $p < 0.05$, $f^2 = 0.031$), whereby both results are statistically significant. These results suggest that a higher level of formality might (i) reinforce the family's vision and values in the firm, (ii) support the knowledge transfer between different family generations, as well as between family managers and nonfamily managers, (iii) and support the transparency of firm's goals and performance, which enhance the family firm chances to be sustainable in the long-term, from generation to generation (Berrone, Cruz, & Gomez-Mejia, 2012; Giovannoni, Maraghini, & Riccaboni, 2011; Gomez-Mejia et al., 2011; Suess-Reyes, 2016).

Second, the results indicate a statistically significant small effect of FRFB on manager's participation in goal setting ($\beta = 0.248$, $p < 0.01$, $f^2 = 0.056$) and performance evaluation ($\beta = 0.262$, $p < 0.01$, $f^2 = 0.059$). We argue that by providing managers the opportunity to participate in goal setting and performance evaluation, the controlling family creates a sense of shared knowledge and language in the firm and enhances the decisions made by the firm (Giovannoni et al., 2011; Suess-Reyes, 2016), what is supported by the fact that the controlling family is willing to transfer the firm to the next generations.

These conclusions are also supported with the 120 respondents' sample and in model 2, which confirm statistically the hypotheses H6a and H6b.

4.3.2.8. Control variables

Looking at the control variables in the theoretical model, we argue that family managers might have a different perception of FCI and FRFB, and a higher perception of participation in

goal setting and performance evaluation processes, if compared to nonfamily managers. Family managers might be involved in goal setting through family management control mechanisms such as in relational mechanisms (Mustakallio, Autio, & Zahra, 2002). Additionally, we expect that top managers (Tier 1) perceive a higher level of participation in goal setting and performance evaluation because of their hierarchical level. Moreover, larger firms may have higher levels of formality in goal setting and performance evaluation processes if compared to medium sized family firms (Chenhall, 2003; Speckbacher & Wentges, 2012). Finally, we add two controls for a family ability that are the presence of the founder in the business and the family ownership generation (Chrisman, Chua, Pearson, & Barnett, 2012), in order to include additional drivers of family heterogeneity in the model.

First, it seems coherent that hierarchical level control variable (Tier) has a positive sign and is statistically significant associated with goal setting participation. Additionally, both size and respondent's family status control variables were not statistically significant and brought low changes in the structural coefficients, and no changes in the statistical significance conclusions. We would expect size specially to be significantly correlated to formality which in our model did not occur. Maybe because we focus just on medium and large firms that have a high family ownership concentration, and where family distinctive characteristics may play a more important role in determining the design of goal setting and performance evaluation in the firm. The presence of the founder is positively related to the family intentions, and the first generation ownership is negatively related to FCI and FRFB.

We introduce the MLMV variable to control for common method bias, which results suggest that besides having a large effect size they do not alter as we have mentioned, the interpretation of the results. In this sense, common method bias may not be a serious concern in our models (Chin et al., 2013; Mahama & Cheng, 2013; Nitzl, 2016).

Table 23

Structural model (Model 1) – Part I

		<u>Just controls (n=152)</u>				<u>(n=120)</u>				<u>(n=152)</u>				VIF
		β	P Values	f ²	R ² adj	β	P Values	f ²	R ² adj	β	P Values	f ²	R ² adj	
FIO -> FCI	H1(+)					0.044	0.596	0.002	0.123	0.197	0.011	0.046	0.175	1.07
founder -> FCI		0.392	0.000	0.157	0.146	0.367	0.000	0.143		0.374	0.000	0.149		1.18
generation -> FCI		-0.158	0.060	0.027		-0.049	0.608	0.003		-0.126	0.117	0.018		1.13
size -> FCI		-0.085	0.364	0.008		-0.088	0.325	0.008		-0.046	0.606	0.002		1.16
MLMV -> FCI		0.067	0.489	0.005		-0.042	0.670	0.002		0.055	0.545	0.004		1.01
FIO -> FRFB	H2(+)					0.010	0.920	0.000	0.018	0.158	0.064	0.026	0.077	1.07
founder -> FRFB		0.204	0.009	0.039	0.066	0.176	0.043	0.029		0.180	0.020	0.031		1.18
generation -> FRFB		-0.265	0.003	0.069		-0.166	0.101	0.028		-0.236	0.006	0.055		1.13
size -> FRFB		-0.032	0.716	0.001		-0.067	0.466	0.004		0.003	0.977	0.000		1.16
MLMV -> FRFB		0.091	0.335	0.009		0.050	0.614	0.003		0.078	0.385	0.007		1.01
FCI -> pfamilyTMT	H3(+)					0.410	0.000	0.192	0.239	0.431	0.000	0.224	0.284	1.19
founder -> pfamilyTMT		0.162	0.054	0.026	0.130	-0.025	0.774	0.001		-0.007	0.936	0.000		1.36
generation -> pfamilyTMT		-0.063	0.447	0.004		-0.010	0.904	0.000		0.004	0.951	0.000		1.14
size -> pfamilyTMT		-0.317	0.006	0.106		-0.261	0.001	0.087		-0.281	0.012	0.101		1.12
FCI -> familyCEO	H3(+)					0.277	0.001	0.081	0.171	0.317	0.000	0.106	0.180	1.19
founder -> familyCEO		0.270	0.002	0.070	0.099	0.157	0.067	0.024		0.146	0.096	0.020		1.36
generation -> familyCEO		-0.035	0.646	0.001		0.028	0.716	0.001		0.015	0.833	0.000		1.14
size -> familyCEO		-0.160	0.049	0.026		-0.178	0.002	0.037		-0.134	0.112	0.020		1.12
pfamilyTMT -> GS_form	H4a(-)					-0.078	0.379	0.006	0.243	-0.134	0.134	0.016	0.264	1.64
familyCEO -> GS_form	H4a(-)					-0.035	0.655	0.001		-0.031	0.669	0.001		1.41
FCI -> GS_form	H5a(-)					-0.265	0.014	0.062		-0.243	0.017	0.047		1.79
FRFB -> GS_form	H6a(+)					0.408	0.000	0.184		0.414	0.000	0.172		1.41
size -> GS_form		0.177	0.053	0.037	0.135	0.113	0.233	0.015		0.095	0.283	0.011		1.16
MLMV -> GS_form		0.331	0.008	0.128		0.279	0.051	0.104		0.319	0.004	0.139		1.04

Table 23

Structural model (Model 1) – Part II

		Just controls (n=152)				(n=120)				(n=152)				VIF
		β	P Values	f²	R²adj	β	P Values	f²	R²adj	β	P Values	f²	R²adj	
pfamilyTMT -> PE_form	H4a(-)					-0.124	0.233	0.013	0.149	-0.098	0.325	0.007	0.147	1.64
familyCEO -> PE_form	H4a(-)					0.076	0.410	0.005		0.033	0.692	0.001		1.41
FCI -> PE_form	H5a(-)					-0.012	0.910	0.000		0.030	0.760	0.001		1.79
FRFB -> PE_form	H6a(+)					0.176	0.058	0.030		0.188	0.034	0.031		1.41
size -> PE_form		0.108	0.211	0.014	0.130	0.085	0.386	0.008		0.093	0.343	0.009		1.16
MLMV -> PE_form		0.355	0.013	0.146		0.382	0.059	0.174		0.343	0.009	0.138		1.04
pfamilyTMT -> GS_part	H4b(-)					0.108	0.266	0.011	0.209	0.088	0.332	0.006	0.196	1.57
familyCEO -> GS_part	H4b(-)					-0.088	0.320	0.008		-0.092	0.251	0.008		1.42
FCI -> GS_part	H5b(-)					-0.317	0.002	0.085		-0.295	0.003	0.063		1.80
FRFB -> GS_part	H6b(+)					0.223	0.031	0.053		0.248	0.007	0.056		1.42
family -> GS_part		0.090	0.190	0.008	0.143	0.054	0.506	0.003		0.089	0.192	0.008		1.29
tier -> GS_part		0.190	0.007	0.036		0.278	0.000	0.088		0.221	0.002	0.053		1.20
MLMV -> GS_part		0.299	0.028	0.104		0.268	0.097	0.092		0.279	0.020	0.096		1.06
pfamilyTMT -> PE_part	H4b(-)					-0.099	0.328	0.009	0.141	-0.106	0.245	0.009	0.134	1.57
familyCEO -> PE_part	H4b(-)					-0.008	0.927	0.000		-0.002	0.981	0.000		1.42
FCI -> PE_part	H5b(-)					-0.162	0.146	0.021		-0.101	0.319	0.007		1.80
FRFB -> PE_part	H6b(+)					0.217	0.031	0.046		0.262	0.004	0.059		1.42
family -> PE_part		0.119	0.164	0.013	0.098	0.077	0.494	0.006		0.128	0.132	0.015		1.29
tier -> PE_part		-0.032	0.698	0.001		0.020	0.827	0.000		-0.009	0.910	0.000		1.20
MLMV -> PE_part		0.305	0.023	0.103		0.332	0.072	0.130		0.290	0.017	0.097		1.06

Note 1: Classification of Cohen (1988): small effect ($f^2 = 0.02$), medium effect ($f^2 = 0.15$) and large effect ($f^2 = 0.35$).

Note 2: FIO (Family Involvement in Ownership), FCI (Family Control and Influence), FRFB (Renewal of family bonds), Family Involvement in Management (FIM), which is treated as pfamilyTMT (the percentage of family managers in the Top Management Team) and as familyCEO (that indicates if a family manager is the CEO of the firm). Management control mechanisms design variables are participation in goal setting (GS_part), participation in performance evaluation (PE_part), formality in goal setting (GS_form) and formality in performance evaluation (PE_form).

Note 3: We used the following control variables in the model. Family indicates that if the respondent is a founder, family manager or nonfamily manager (family affiliation). Tier relates to the hierarchical level (Tier 1 are those managers that report directly to shareholders, CEO or does not have superior in the firm). Founder indicates if the founder manages the firm. Generation indicates if the organization has experienced at least a transfer of shares from the first generation to the next. Size indicates if the organization is a large (more than 300 employees) or medium firm (between 50 and 300 employees). MLMV is the variable used to control for common method bias.

Table 24

Structural model (Model 2) – Interaction FIM and FamilyCEO – Part I

		(n= 120)				(n= 152)				VIF
		β	P Values	f ²	R ² adj	β	P Values	f ²	R ² adj	
FIO -> FCI	H1(+)	0.045	0.591	0.002	0.12	0.194	0.013	0.044	0.17	1.07
founder -> FCI		0.366	0.000	0.142		0.374	0.000	0.148		1.18
generation -> FCI		-0.046	0.612	0.002		-0.123	0.13	0.017		1.13
size -> FCI		-0.081	0.391	0.007		-0.047	0.59	0.002		1.16
MLMV -> FCI		-0.042	0.67	0.002		0.055	0.52	0.004		1.01
FIO -> FRFB	H2(+)	0.01	0.917	0.000	0.02	0.157	0.063	0.026	0.08	1.07
founder -> FRFB		0.176	0.048	0.029		0.179	0.022	0.031		1.18
generation -> FRFB		-0.166	0.102	0.028		-0.236	0.007	0.055		1.13
size -> FRFB		-0.067	0.441	0.004		-0.001	0.993	0.000		1.16
MLMV -> FRFB		0.05	0.608	0.003		0.078	0.392	0.007		1.01
FCI -> FIM_familyCEO	H3(+)	0.453	0.000	0.248	0.28	0.446	0.000	0.246	0.30	1.19
founder -> FIM_familyCEO		-0.009	0.922	0.000		0.018	0.819	0.000		1.35
generation -> FIM_familyCEO		-0.023	0.756	0.001		0.002	0.983	0.000		1.14
size -> FIM_familyCEO		-0.247	0.002	0.082		-0.27	0.012	0.096		1.12
FIM_familyCEO -> GS_form	H4a(-)	-0.086	0.358	0.007		-0.138	0.098	0.018		1.48
FCI -> GS_form	H5a(-)	-0.266	0.016	0.061	0.25	-0.245	0.014	0.048	0.27	1.78
FRFB -> GS_form	H6a(+)	0.402	0.000	0.180		0.407	0.000	0.166		1.4
size -> GS_form		0.121	0.180	0.018		0.098	0.268	0.012		1.15
MLMV -> GS_form		0.279	0.061	0.107		0.318	0.005	0.141		1.02

Note 1: Classification of Cohen (1988): small effect ($f^2 = 0.02$), medium effect ($f^2 = 0.15$) and large effect ($f^2 = 0.35$).

Note 2: FIO (Family Involvement in Ownership), FCI (Family Control and Influence), FRFB (Renewal of family bonds), FIM_familyCEO (interaction between the percentage of family managers in the Top Management Team and Family CEO variable). Management control mechanisms design variables are participation in goal setting (GS_part), participation in performance evaluation (PE_part), formality in goal setting (GS_form) and formality in performance evaluation (PE_form).

Note 3: We used the following control variables in the model. Family indicates that if the respondent is a founder, family manager or nonfamily manager (family affiliation). Tier relates to the hierarchical level (Tier 1 are those managers that report directly to shareholders, CEO or does not have superior in the firm). Founder indicates if the founder manages the firm. Generation indicates if the organization has experienced at least a transfer of shares from the first generation to the next. Size indicates if the organization is a large (more than 300 employees) or medium firm (between 50 and 300 employees). MLMV is the variable used to control for common method bias.

Table 24

Structural model (Model 2) – Interaction FIM and FamilyCEO – Part II

		(n= 120)				(n= 152)				VIF
		β	P Values	f ²	R ² adj	β	P Values	f ²	R ² adj	
FIM_familyCEO -> PE_form	H4a(-)	-0.041	0.692	0.001	0.15	-0.029	0.747	0.001	0.15	1.48
FCI -> PE_form	H5a(-)	-0.015	0.892	0.000		0.018	0.845	0.000		1.78
FRFB -> PE_form	H6a(+)	0.178	0.058	0.031		0.185	0.036	0.03		1.40
size -> PE_form		0.093	0.339	0.009		0.107	0.272	0.012		1.15
MLMV -> PE_form		0.368	0.074	0.164		0.335	0.015	0.134		1.02
FIM_familyCEO -> GS_part	H4b(-)	0.112	0.173	0.013	0.22	0.082	0.302	0.006	0.20	1.42
FCI -> GS_part	H5b(-)	-0.354	0.001	0.104		-0.332	0.001	0.080		1.79
FRFB -> GS_part	H6b(+)	0.221	0.021	0.052		0.253	0.010	0.059		1.41
family -> GS_part		0.042	0.607	0.002		0.078	0.244	0.006		1.29
tier -> GS_part		0.278	0.000	0.088		0.215	0.001	0.050		1.19
MLMV -> GS_part		0.286	0.091	0.108		0.293	0.026	0.108		1.03
FIM_familyCEO -> PE_part	H4b(-)	-0.069	0.457	0.004	0.15	-0.078	0.358	0.005	0.14	1.42
FCI -> PE_part	H5b(-)	-0.180	0.123	0.025		-0.114	0.281	0.009		1.79
FRFB -> PE_part	H6b(+)	0.217	0.023	0.046		0.262	0.003	0.059		1.41
family -> PE_part		0.074	0.521	0.006		0.123	0.14	0.014		1.29
tier -> PE_part		0.018	0.850	0.000		-0.011	0.890	0.000		1.19
MLMV -> PE_part		0.330	0.080	0.131		0.289	0.022	0.097		1.03

Note: Classification of Cohen (1988): small effect ($f^2 = 0.02$), medium effect ($f^2 = 0.15$) and large effect ($f^2 = 0.35$).

Note 2: FIO (Family Involvement in Ownership), FCI (Family Control and Influence), FRFB (Renewal of family bonds), FIM_familyCEO (indicates the interaction between percentage of family managers in the Top Management Team and Family CEO variable). Management control mechanisms design variables are participation in goal setting (GS_part), participation in performance evaluation (PE_part), formality in goal setting (GS_form) and formality in performance evaluation (PE_form).

Note 3: We used the following control variables in the model. Family indicates that if the respondent is a founder, family manager or nonfamily manager (family affiliation). Tier relates to the hierarchical level (Tier 1 are those managers that report directly to shareholders, CEO or does not have superior in the firm). Founder indicates if the founder manages the firm. Generation indicates if the organization has experienced at least a transfer of shares from the first generation to the next. Size indicates if the organization is a large (more than 300 employees) or medium firm (between 50 and 300 employees). MLMV is the variable used to control for common method bias.

Figure 8. Structural model – Model 1

Note: These results are based on the 152 respondents' sample.

Figure 9. Structural model (Interaction pfamilyTMT and FamilyCEO) – Model 2

Note: These results are based on the 152 respondents' sample.

4.4. Conclusions

This study discusses the association of a controlling family's ability and willingness to influence the firm (Chrisman et al., 2015; De Massis et al., 2014; Veider & Matzler, 2016) with the design of management control mechanisms (Helsen, Lybaert, Steijvers, Orens, & Dekker, 2017; Songini & Gnan, 2015; Speckbacher & Wentges, 2012). Different from previous literature, we have considered both elements of a controlling family's influence in the family firm which are family ability and willingness.

Despite previous literature has been proposing that family ability variables are associated with management control mechanisms design (e.g., Speckbacher & Wentges, 2012), this paper provides insights about how the controlling family's willingness to maintain their autonomy over the firm's decisions and the controlling family intention to transfer the firm to the next generations are significantly associated with management control mechanisms design (Berrone et al., 2012; Gomez-Mejia et al., 2011) and have more explanatory power than the family ability elements. These results suggest that the dimensions of socioemotional wealth that are related to a controlling family firm's willingness, are independent and differently related to management control mechanisms design. These issues were addressed regarding earnings management and voluntary disclosure (Gómez Mejía, Cruz, & Imperatore, 2014) and in our study for management control mechanisms design. In this sense, we propose that the SEW sub dimensions, being the intention to control and the intention to transfer the firm to the next generation, should be treated separated as each has an opposite association with formality and participation in management control mechanisms in the family businesses.

Particularly, our results indicate a significant association between the controlling family's involvement in ownership and a family willingness dimensions. Consistent with our hypotheses we point that the higher the family ownership, the more emphasis the controlling family puts on power and legitimacy to pursue family centric noneconomic (FCNE) goals being to maintain the family autonomy in the firm's decision-making and to transfer the firm to the next generations (Chrisman et al., 2012; Gomez-Mejia et al., 2011; Sundaramurthy & Kreiner, 2008). Additionally, we show that the nomination of family members to occupy Top Management Team positions or the CEO position are driven by a high family willingness intention to maintain their autonomy and independence over the firm's decisions (Berrone et al., 2012; Vandekerckhof, Steijvers, Hendriks, & Voordeckers, 2015).

Furthermore, we have not found a statistically significant association between family involvement in management and management control mechanisms design. This result shows

that family involvement in management may not play a direct role in the design of management control systems which was frequently suggested by previous empirical research, usually based on the agency insights (Helsen et al., 2017; Hiebl et al., 2015; Speckbacher & Wentges, 2012) and only including family ability variables in the research design. These results point to the fact that a controlling family's influence on the level of formality and manager's participation in management control mechanisms might be more complex than captured by the family's ability (De Massis et al., 2014).

Therefore, our results indicate that management control mechanisms might have wider purposes in organizations, beyond the traditional agency theory monitoring and incentive functions. Management control mechanisms, in the umbrella of MCS and PMS, can also be adopted to balance effectiveness and innovation in the firm, by fostering transparency, flexibility, knowledge transfer among other outcomes related to a firm's capabilities (Ahrens & Chapman, 2004; Kruis, Speklé, & Widener, 2016; Simons, 1995).

The traditional agency perspective of controls has been sufficient to explain how a family's ability is associated to the design of controls in family firms. However, we argue that this reasoning isn't sufficient when we look at the willingness construct, where the other roles of management control mechanisms might offer lens to interpret how a controlling family's willingness is associated with management control mechanisms. In fact, we argue that a controlling family's willingness, as their disposition to engage in distinctive behavior (De Massis et al., 2014), might explain better how management control mechanisms are designed in family firms, which we investigate based on the ability and willingness lens.

On one side, our results indicate that the family control and influence intention may be related to a restrictive socioemotional wealth (Kellermanns, Eddleston, & Zellweger, 2012; Miller & Le Breton-Miller, 2014) where a negative valence leads to a less formal and participative goal setting process. FCI intention, consistent with our hypothesis, is related to lower participation of managers in goal setting and also limits the adoption of formalized goal setting because this is seen as threat to family members authority and dominance over business decisions (Barnett & Kellermanns, 2006; Gomez-Mejia et al., 2011; Miller & Le Breton-Miller, 2014).

On the other side, our results suggest that the renewal of family bonds through dynastic succession intention might a relevant determinant of management control mechanisms' design in family firms. A high intention to transfer the firm to the next generation lead to a higher participation and formality in both goal setting and performance evaluation processes. These results are consistent with previous studies that indicate that formal and participative

management control mechanisms reinforce the family's values in the firm, support the knowledge transfer and transparency which is preferred if the controlling family is willing to transfer the firm to the next generations (Giovannoni et al., 2011; Gomez-Mejia et al., 2011; Suess-Reyes, 2016).

Despite these findings, this study has some limitations. This study was developed based on a cross-sectional survey design in which common method variance is an usual concern (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Podsakoff, MacKenzie, & Podsakoff, 2012). We adopted many recommendations from Podsakoff et al. (2012) and Dillman (2007) to minimize this concern, for example, we: (i) assured the confidentiality to respondents, (ii) analysed the wording of our measures and developed a pre-test with a founder, a heir and managers that were our target respondents in the firms, (iii) adopted measures that were previous validated in studies from the family firm and management accounting field, (iv) diagnosed common method bias by applying Harman test (Podsakoff, MacKenzie, et al., 2012), (v) and added a common method variance control variable in the model (Chin et al., 2013; Nitzl, 2016). Moreover, a traditional limitation in cross-sectional design is the difficulty in making causal interpretations of the results (Ittner, 2014; Van der Stede, 2014). With regards to the sample, our sample is considered sufficient for Structural Equation Modeling in SmartPLS (see methodology section – Nitzl, 2016). Our sample comprises many Brazilian regions, family firms sizes, and industries, but especially firms from the most developed Brazilian Federation States regarding Gross Domestic Product (GDP) such as Southeast and South regions. Our sample also has a predominance of manufacturing firms.

Finally, we highlight some suggestions for future studies. First, we suggest that while investigating distinctive behavior and management control mechanisms in family firms, researchers should integrate both ability and willingness dimensions such as argued by De Massis et al. (2014). We also consider that the socioemotional wealth theoretical lens is fruitful and offers many possibilities to researchers (Berrone et al., 2012; Gomez-Mejia et al., 2011) especially in management accounting research (Songini et al., 2013; Helsen et al., 2017). There are specific SEW dimensions that could offer a different perspective to understand how management control mechanisms are designed and used in family firms (Berrone et al., 2012; Chua, Chrisman, & De Massis, 2015; Debicki, Kellermanns, Chrisman, Pearson, & Spencer, 2016; Hauck, Suess-Reyes, Beck, Prügl, & Frank, 2016; Schulze & Kellermanns, 2015). We have adopted two sub dimensions discussed by Berrone's et al. (2012) FIBER model, which are in line with the willingness lens on family firms since each decision premise hold a high level of complexity that should be treated separated (Chua et al., 2015). We suggest that

socioemotional wealth has many facets that should be debated with due caution regarding their association with management control mechanisms design or organizational behavior.

Second, we have looked at goal setting and performance evaluation processes that are considered relevant mechanisms of the firm Performance Measurement Systems (PMS) regarding planning and evaluating mechanisms (Ferreira & Otley, 2009; Malmi & Brown, 2008; Merchant & Van der Stede, 2007). Future studies could look at other mechanisms such as rewarding or budgeting (Bedford & Malmi, 2015; Sponem & Lambert, 2016), or employ a more complex perspective suggested by Malmi and Brown (2008) investigating Management Control Systems as a package (Grabner & Moers, 2013).

Future studies could adopt a qualitative methodology to investigate these associations with greater depth and detail (e.g., Giovannoni et al., 2011). It seems that a controlling family's willingness to preserve the firm toward generations influences organizational behaviour and management control mechanisms in family firms which deserves further in depth investigation.

5. STUDY 2: MANAGEMENT CONTROL MECHANISMS' FAIR DESIGN AND PROCEDURAL JUSTICE AS ANTECEDENTS OF STEWARDSHIP IN FAMILY FIRMS

5.1. Introduction

Agency theory and stewardship theory have opposing views about the role of governance mechanisms in organizations (Davis, Schoorman, & Donaldson, 1997; Donaldson & Davis, 1991). The reason for this distinction arises from the underlying assumptions related to the model of man. While for agency theory, managers are economically rational and self-interested, for stewardship theory, they are pro-social and intrinsically motivated to support the principals' interests (Davis et al., 1997; Donaldson & Davis, 1991). Stewards are motivated by intrinsic rewards such as reciprocity while agents are by extrinsic rewards such as financial incentives.

These basic assumptions for agents and stewards lead to different individual's and firm's characteristics (Davis et al., 1997), which can be explained by psychological mechanisms (motivation, power, identification, and social comparison) and situational mechanisms (management philosophy and cultural differences). Psychological are individual level characteristics, and situational mechanisms are related to the governance mechanisms of the organization (Davis et al., 1997; Neubaum, Thomas, Dibrell, & Craig, 2017).

Agency theory has focused on the role of control and monitoring mechanisms in aligning agents and principals' behaviors in a firm (Eisenhardt, 1989; Holt, Madison, & Kellermanns, 2016; Jensen & Meckling, 1976). However, according to the stewardship theory, traditional agency mechanisms should be replaced by informal and social controls, since there is no need to align principals and agents' interests (Davis, Allen, & Hayes, 2010; Davis et al., 1997; Hernandez, 2012; Neubaum et al., 2017). In this sense, the stewardship theory offers a competing paradigm to the agency theory (Davis et al., 1997; Donaldson & Davis, 1991), by providing an alternative lens to the agency theory's "anti-management view" to explain human behavior (Donaldson, 2008).

Both theories have also been studied in the field of family firms (Corbetta & Salvato, 2004; James, Jennings, & Jennings, 2017; Madison, Holt, Kellermanns, & Ranft, 2016; Madison, Kellermanns, & Munyon, 2017; Neubaum et al., 2017). According to the family business literature, stewardship is considered to be a distinctive feature of family firms that may lead to a competitive advantage to the family firm in comparison to nonfamily firms (Corbetta

& Salvato, 2004; Eddleston & Kellermanns, 2007; Simon, Marquès, Bikfalvi, & Dolors Muñoz, 2012; Zahra, Hayton, Neubaum, Dibrell, & Craig, 2008).

One reason is that family firms are family owned and family managed whereby principal-agent problems are avoided (Jensen & Meckling, 1976). According to Jensen and Meckling (1976), owner-managed firms do not incur in traditional agency costs. Second, family members are bounded by social ties, organizational identification, and emotional attachment (Berrone, Cruz, & Gomez-Mejia, 2012; Davis et al., 2010; Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007; Le Breton-Miller, Miller, & Lester, 2011). In these firms, the values of altruism, collectivism, and trust, may be more present than in nonfamily firms (Corbetta & Salvato, 2004; Simon et al., 2012) which foster manager's efforts to achieve a better performance in the organization.

Particularly, previous studies have also considered that a manager's family affiliation is a relevant attribute to determine manager's behavior, in which family managers are argued to act as stewards and nonfamily managers as agents (Chrisman, Chua, Kellermanns, & Chang, 2007; James et al., 2017; Verbeke & Kano, 2012). Family managers are expected to present more loyalty, devotion (Donaldson, 1990), trust and pro-organizational behavior towards the family firm than nonfamily managers (Corbetta & Salvato, 2004; Davis, et al., 2010; Verbeke & Kano, 2012). Although these assumptions and previous empirical evidence, researchers claim that it is still an open debate in the field (Hiebl, 2015; James et al., 2017; Madison et al., 2016).

Neubaum et al. (2017) point that the antecedents of stewardship in the family firm context are largely conjecture, which indicates that more empirical evidence is needed to address this issue. Therefore, consistent with Davis et al. (1997), we argue that the organizational structure and management control mechanisms applied in the family firms influence managers' attitudes and behaviors. We argue that management control practices and managers' perceptions of these practices might stimulate stewardship attitudes and behaviors if aligned with procedural justice principles (Lubatkin, Ling, & Schulze, 2007). This is consistent with the understanding that stewardship behavior also stems from the social context of the organization (Davis et al., 2010; Davis et al., 1997; Simon et al., 2012), as well as management practices (Henssen, Voordeckers, Lambrechts, & Koironen, 2014; Hernandez, 2012; James et al., 2017; Simon et al., 2012).

The traditional theorists of stewardship claim that social and trust controls may be more suitable to maximize stewardship since there is no need for aligning managers' behaviors (Davis et al., 2010, 1997; Madison et al., 2016). Monitoring systems and financial controls are

effective for aligning behaviors between principals and agents (Davis et al., 2010; Madison et al., 2016; Tosi, Brownlee, Silva, & Katz, 2003), however, are not necessary for aligning stewards and principal's interests. Hence, these authors also emphasize that conventional agency governance mechanisms may be detrimental to the benefits of stewardship (James et al., 2017; Madison et al., 2016).

However, we study whether typical agency mechanisms, such as goal setting and performance evaluation, can also be considered as situational mechanisms to stimulate stewardship identification and a stewardship-oriented culture in the family firm, depending on how these mechanisms are designed. We rely hereby on the concept of fairness, which is investigated in the management accounting literature in relation to management control's design (Hartmann & Slapničar, 2009, 2012; Langevin & Mendoza, 2013). Therefore, in contrast to the traditional scholars from the stewardship literature, we propose that management control mechanisms can foster stewardship identification and culture in the family firm, when managers perceive them as fair (Lubatkin et al., 2007), regardless manager's family affiliation (James et al., 2017).

There are some theoretical arguments that procedural justice and stewardship are positively associated (Neubaum et al., 2017; Pieper, 2010), but the relationship still lacks empirical evidence. We consider, in line with Davis et al. (1997), management control mechanisms design and how a manager perceives these management control mechanisms as situational mechanisms influencing stewardship in the family firm. As management control mechanisms, we interpret those practices previously discussed in the Management Control Systems (Malmi & Brown, 2008) and Performance Measurement Systems (Ferreira & Otley, 2009), such as goal setting and performance evaluation.

With respect to stewardship, we look at both organizational and individual levels of stewardship, which the literature named respectively, stewardship-oriented culture (Zahra et al., 2008) and stewardship identification (Craig, Dibrell, & Neubaum, 2011; Neubaum et al., 2017). Stewardship-oriented culture reflects the organizational and cultural conditions within the organization and stewardship identification indicates the manager's sense of membership on the family firm despite his or her family affiliation (Neubaum et al., 2017; Zahra et al., 2008).

We examine whether management control mechanisms design in the context of family firms are related to stewardship through procedural justice perceptions. Therefore, we propose the following research question: **Are management control mechanisms' fair design and procedural justice perceptions associated with manager's stewardship identification and with a stewardship-oriented culture in family firms?**

First, our study contributes to the literature by providing a discussion about stewardship situational mechanisms, which has received scarce attention in the management literature (Hernandez, 2012) and in the family firm literature so far (Davis et al., 2010; James et al., 2017; Madison et al., 2016; Madison et al., 2017; Neubaum et al., 2017). Particularly, Hernandez (2012, p. 173) argue that researchers should examine the “*antecedents that facilitate and explain the emergence of stewardship behaviors*” in which are included organizational-level mechanisms, such as management control mechanisms. Our study also shows empirical evidence that management control mechanisms’ fairness characteristics and procedural justice can be considered antecedents of stewardship, which has not been discussed previously in the literature, except from a theoretical perspective (Neubaum et al., 2017; Pieper, 2010).

Recently, James et al. (2017) provide empirical evidence that stewardship-type management control mechanisms are positively associated with pro-organizational behaviors and attitudes such as job performance and organizational identification, regardless managers’ family affiliation. James et al. (2017) did not consider a specific steward-type management control mechanism, but rested their discussion in terms of the sense of autonomy, belonging and competence that the controlling family provides to managers in the family firm. These authors also found that agency management control mechanisms (performance-based pay, share ownership, and monitoring by family managers) were not strongly associated with pro-organizational attitudes and behaviors. In the present study we show that traditional agency mechanisms such as goal setting and performance evaluation are positively associated with stewardship-oriented culture and identification when they are perceived as fair. Therefore, we refer to the discussion on the procedural justice literature (Hartmann & Slapničar, 2012; Langevin & Mendoza, 2013; Leventhal, Karuza, & Fry, 1980; Lubatkin et al., 2007).

In this sense, we address a gap in the literature on procedural justice in family firms, by also focusing on family and nonfamily managers’ perceptions and attitudes (Sieger, Bernhard, & Frey, 2011). Procedural justice is considered a topic of interest in management accounting, with much research potential (Hartmann & Slapničar, 2012; Langevin & Mendoza, 2013), particularly in the family firms literature (Barnett & Kellermanns, 2006; Lubatkin et al., 2007; Pieper, 2010; Van der Heyden, Blondel, & Carlock, 2005). Family firms experience complex relationships related to the multiple subsystems that influence decisions in the firm, which have implications over manager’s perceptions about management controls fairness (Sieger et al., 2011; Van der Heyden et al., 2005).

Particularly, our results show that higher levels of participation and and higher levels of formality of goal setting and performance evaluation are positively related to procedural justice,

which is consistent with prior studies in the management accounting literature (Bellavance, Landry, & Schiehl, 2013; Hartmann & Slapničar, 2009, 2012; Langevin & Mendoza, 2013). Additionally, formality and participation in goal setting are positively associated with a stewardship-oriented culture. With respect to the relationship between performance evaluation design characteristics and stewardship-oriented culture, no significant association was found.

In addition, the results show that procedural justice in goal setting is positively associated with both individual and organizational level constructs of stewardship. When we analyze the stewardship attitude of the individual, our findings indicate a positive association between participation in both goal setting and performance evaluation with stewardship identification (De Baerdemaeker & Bruggeman, 2015; Henssen et al., 2014; Hernandez, 2012). Therefore, our findings support that management control mechanisms, particularly the goal setting process, when it is designed based on the fairness design characteristics, is a relevant antecedent for stewardship in family firms (Hernandez, 2012).

These results are distinct when we analyze the subsamples of family and nonfamily managers. While for nonfamily managers, formality influences stewardship-oriented culture, for family managers it is the participation in goal setting, which influences a stewardship-oriented culture. As hypothesized by James et al. (2017) a family affiliation might be an important attribute that differentiates manager's perceptions about management control mechanisms (Corbetta & Salvato, 2004; Davis et al., 2010; Verbeke & Kano, 2012). Since family affiliation seems to be an important factor that differentiates managers' level of agreement with procedural justice and stewardship identification indicators, we focused in this study on differences between the two groups. However, we could not discuss about the differences between the relationship's coefficients in the multigroup analyses, to the analysis parameters and sample size.

Finally, our study shows practitioners that traditional agency mechanisms can foster stewardship in family firms depending on how they are designed, highlighting on which design characteristics they should focus to develop and support a stewardship-oriented culture and stewardship identification in their organization (Davis et al., 2010; James et al., 2017; Madison et al., 2016). Our study strengthens the debate that the procedural justice lens may provide a complementary theoretical background to interpret stewardship management control mechanisms in family firms (Lubatkin et al., 2007; Madison et al., 2016, 2017; Neubaum et al., 2017).

5.2. Theoretical model and hypotheses

Our theoretical model focuses on situational mechanisms that might influence stewardship in family firms and investigates whether traditional agency mechanisms, often installed to align nonfamily manager's behavior with the objectives of the family owners in family firms, also create a stewardship-like attitude and culture. Specifically, we study how design characteristics of management control mechanisms with respect to the level of participation and the level of formality in goal setting and performance evaluation foster stewardship identification and stewardship-oriented culture, and whether this relationship is mediated by procedural justice perceptions. We adopt the following research model to test these relationships (Figure 10).

Figure 10. Theoretical research model – paper 2

Our model considers two design characteristics of management control mechanisms that are said to influence human's perceptions and behavior. Previous literature in management accounting provides insights that participation and formality are antecedents of procedural justice (Cugueró-Escofet & Rosanas, 2013; Hartmann & Slapničar, 2009, 2012; Langevin & Mendoza, 2013; Libby, 1999). There is evidence in the family business literature that those management control mechanisms design characteristics (being participation and formality in goal setting and performance evaluation) might also be associated with stewardship (Davis et al. 1997; Henssen et al., 2014; Hernandez, 2012; Madison et al., 2016; Neubaum et al., 2017; Pearson & Marler, 2010; Simon et al., 2012).

Participation indicates the “*involvement of employees in and their influence over*” the firm's decisions (Anthony & Govindarajan, 2007, p. 10) which in our study relates to manager's

ability to exert some influence in the goal setting and performance evaluation process (Brownell, 1982; De Baerdemaeker & Bruggeman, 2015). In the procedural justice literature, the concept of participation is broader and is interpreted as the expression of voice, indicating if the “*manager believes his/her views have been given consideration*” (Langevin & Mendoza, 2013, p. 213). Hartmann and Slapnicar (2012, p. 20), following Moers (2005) define formality as “*the amount of objectivity (rather than subjectivity)*” in the firm's management processes, such as applied in goal setting and performance evaluation.

In addition, we consider management processes that have been explored previously in the stewardship literature (Hernandez, 2012). We define goal setting as the financial and nonfinancial goals to be pursued by the firm in a 12-month time-horizon and performance evaluation as both the individual or/and organizational performance evaluation. These processes play a vital role in the firm's Performance Measurement Systems (PMS) regarding planning and evaluating mechanisms (Ferreira & Otley, 2009; Malmi & Brown, 2008; Otley, 1999).

Additionally, we discuss procedural justice as a mediating variable, segregating these perceptions specifically to each management process, such as modeled by previous studies (Hartmann & Slapničar, 2009; Vouřem, Kramer, & Schäffer, 2016). This is justified since procedural justice normative criteria might not be straightforward for all management control mechanisms and firm's contexts (Hartmann & Slapničar, 2012). Procedural justice is defined as “*an individual's perception of the fairness of procedural components of the social system*” (Leventhal, Karuza, & Fry, 1980, p. 35).

Finally, our dependent variables cover both the organizational and the individual level constructs of stewardship, respectively named as stewardship-oriented culture and stewardship identification (Craig et al., 2011; James et al., 2017; Neubaum et al., 2017; Zahra et al., 2008). Following Zahra et al. (2008) stewardship-oriented culture is defined as “*the degree to which a stewardship culture exists within the family firm*” (Zahra et al., 2008, p. 1042). The stewardship-oriented culture concept explores the notions of autonomy, belonging and competence of managers (James et al., 2017). Stewardship identification is an individual level construct, which according to Davis et al. (1997, p. 29), is defined as managers seeing themselves members of an organization, “*by accepting the organization's mission, vision, and objectives.*” Stewardship identification was previously conceptualized as one of the key elements of stewardship (Davis et al., 1997; Neubaum et al., 2017). Recently, Madison et al. (2017) operationalized stewardship behavior as manager's identification and commitment.

In the next subsections, we discuss the underlying hypotheses of this model, which are supported by the literature. The overall model includes four main hypotheses and an additional hypothesis for the mediating role of procedural justice.

5.2.1. Management control mechanisms' fair design and procedural justice perceptions

Langevin and Mendoza (2013, p. 213) argue that “*MCS undoubtedly have a major impact on managers' perception of justice (or injustice)*” since it includes procedures such as goal setting and performance evaluation that are expected to influence managers' attitudes and behaviors toward the organization (Anthony & Govindarajan, 2007; Merchant & Van der Stede, 2007). Colquitt and Jackson (2006) proposed that fairness characteristics should embrace all decision-making process since they are related to pro-organizational outcomes.

We discuss participation and formality as process characteristics that are associated positively with procedural justice (Hartmann & Slapničar, 2009, 2012). These features have been seen as consistent with procedural justice norms (Colquitt, Conlon, Wesson, Porter, & Ng, 2001; Hartmann & Slapničar, 2009; Langevin & Mendoza, 2013; Leventhal et al., 1980; Van der Heyden, Blondel, & Carlock, 2005).

Participation is likely to increase procedural justice perceptions since participation relates to the traditional components of procedural justice (normative rules) such as accuracy, correctability, representativeness, and ethicality (Folger & Greenberg, 1985; Leventhal et al., 1980; Thibaut & Walker, 1975). Following Langevin and Mendoza (2013, p. 214) participation: (i) serves as a means of communication, improving the exchange of information between managers and superiors (accuracy); (ii) enables managers to express their complaints and to correct actions and plans (correctability); (iii) allows managers to express their concerns and values (representativeness); (iv) is consistent with moral values as individuals engage in organizational activities (ethicality).

Therefore, participation is in line with the components of procedural justice, such as accuracy, correctability, representativeness and ethicality (Langevin & Mendoza, 2013; Leventhal et al., 1980) which we hypothesize that it leads to a higher procedural justice perception. Specifically, about representativeness, participation might represent that managers are valued members of the group's decision-making process which support manager's procedural justice perceptions (Langevin & Mendoza, 2013; Lind & Tyler, 1988). In the family

businesses literature, Van der Heyden et al. (2005) propose that voice in the management processes, which is an elementary aspect of participation, is consistent with fairness principles.

Previous studies that applied an experimental research design found that letting managers participate in the management control processes has positively influenced their sense of procedural justice (e.g., Libby, 1999). Additionally, studies applying survey research design also found a positive association between participation and procedural justice (Hartmann & Slapničar, 2009; Lau & Tan, 2005). Therefore, we hypothesize that:

H1a: Manager's participation in management control mechanisms is positively associated with procedural justice.

Formality, being another fairness characteristic considered in this paper, has been characterized with conflictual evidence in the literature investigating the relationship between formal performance evaluation systems and procedural justice (Langevin & Mendoza, 2013). While formal performance evaluation systems enable more consistency of judgments and decisions (Lau & Buckland, 2001), they restrict to a certain extent correctability (Lau & Moser, 2008), that is other rule of procedural justice (Leventhal et al., 1980). So, research on formality particularly concerning performance evaluation processes has led to conflicting evidence since researchers consider the firm's context as a crucial element (Hartmann & Slapničar, 2012).

Nevertheless, in this study, we consider formality as a fair characteristic of goal setting and performance evaluation processes, which is associated positively to procedural justice (Hartmann & Slapničar, 2009). Formal goal setting process might provide information clarity about the firm's goals and strategies to managers, which might foster their procedural justice perceptions. Therefore, in formalized performance evaluation, superiors "*will be able to deliver more consistent, more accurate and less biased performance evaluations*" (Hartmann & Slapničar, 2009, p. 725). Consistency indicates that performance evaluation is developed by clear rules and metrics that provide managers information about the criteria used for evaluating the firm's and manager's performance (Cugueró-Escofet & Rosanas, 2013; Van den Bos, Vermunt, & Wilke, 1997). Previous empirical evidence has suggested that a formal performance evaluation system is positively related to procedural justice (Hartmann & Slapničar, 2009; Lau & Sholihin, 2005).

In the family business context, Van der Heyden et al. (2005) list two characteristics related to fairness that are linked to formality. First, the formality of goal setting and performance evaluation can foster clarity of information, processes, and expectations in the organization. Second, formality can guarantee that procedures are implemented with

consistency across people, over time, and by the firms' values and norms (Van der Heyden et al., 2005). According to this literature, we state the following hypothesis:

H1b: Formality in management control mechanisms is positively associated with procedural justice.

5.2.2. Management control mechanisms' fair design and stewardship

Previous literature has suggested that participative management control is positively related to stewardship attitudes and behaviors in the family firm (Eddleston & Kellermanns, 2007; Eddleston, Kellermanns, & Zellweger, 2012; Zahra et al., 2008). When managers have a high level of participation in management control mechanisms they may better internalize the firm's goals and safeguard that these goals are achieved (De Baerdemaeker & Bruggeman, 2015). Participation foster the sense of trust, psychological ownership and commitment toward the organization (De Baerdemaeker & Bruggeman, 2015; Eddleston & Kellermanns, 2007).

Empowering managers to use their skills to act with autonomy in the organization maximizes the individual's motivations in the firm (Donaldson, 2008). Therefore, management control mechanisms that provide managers with autonomy, flexibility and responsibility in decision-making (Donaldson, 2008; Henssen et al., 2014; Hernandez, 2012) are expected to enhance stewardship attitudes through manager's cognitive processes (Hernandez, 2012).

Furthermore, Davis et al. (2010) propose that "*if a nonfamily employee is involved in determining the strategic direction of the firm and works closely with family members, they may perceive stewardship differently from a nonfamily member who has no decision-making authority and simply provides labor for the organization*" (Davis et al., 2010, p. 1112). So managers that are involved in the determination of the business goals and performance evaluation are more likely to develop a sense of membership on the family firm by accepting the firm's vision, and goals, which indicates that participation might be a determinant factor for stewardship identification. Therefore, we hypothesize that:

H2a: Manager's participation in management control mechanisms is positively associated with manager's stewardship identification.

Neubaum et al. (2017) and Zahra et al. (2008) discuss stewardship at the organizational level, which they respectively named as stewardship climate and stewardship-oriented culture. Neubaum et al. (2017) explore the following dimensions of stewardship climate: intrinsic motivation; organizational identification, use of personal forms of power, collectivism, low

power distance, and involvement orientation (Davis, Frankforter, Vollrath, & Hill, 2007; Davis et al., 1997; Hernandez, 2012; Neubaum et al., 2017). Zahra et al. (2008) explore stewardship-oriented culture regarding managers' sense of autonomy, belonging and competence which was recently empirically explored by James et al. (2017).

Therefore, these authors consider that a stewardship-oriented culture might be fostered by management control mechanisms that are designed as follows (1) an involvement-oriented rather than control-oriented practice; (2) grounded on a collectivist rather than an individualist culture; (3) characterized by a low-power distance and more authority and discretion on the decision-making process of the firm (Davis et al., 1997; Donaldson & Davis, 1991; Neubaum et al., 2017; Zahra et al., 2008). Participation might enhance the level of information sharing (horizontal and vertical flows) in the firm and provides integration of the manager's capabilities, creating a sense of shared effort (De Baerdemaeker & Bruggeman, 2015), which relates to a collectivist and low power distance culture (Davis et al., 1997).

Hence, we argue that participative management control mechanisms are related to an involvement-oriented management philosophy and a collectivist culture in the family firm, which characterize a stewardship-oriented culture (Neubaum et al., 2017; Zahra et al., 2008). Therefore, we state that:

H2b: Manager's participation in management control mechanisms is positively associated with stewardship-oriented culture.

In addition, formality indicates that goal setting and performance evaluation processes are explicitly to managers since they are written in reports and quantified. We argue that formality provides transparency and objectivity to the management process.

Pearson and Marler (2010) propose that owners can foster steward-like attitudes and behaviors in the firm by designing procedures that communicate openly and transparently the goals and rules of the organization. For these authors, encouraging and giving managers access to information is crucial to creating reciprocal stewardship in the family firm, supporting their argument on the leader-member exchange (LMX) background (Pearson & Marler, 2010).

Formality may prevent the controlling family members to make biased decisions in relation to opportunism, nepotism⁸ (Jaskiewicz, Uhlenbruck, Balkin, & Reay, 2013),

⁸ "Nepotism is a common hiring mechanism in (family) firms where families use their control to hire family members" (Jaskiewicz, Uhlenbruck, Balkin, & Reay, 2013, p. 121) regardless qualifications (Miller & Le Breton-Miller, 2014).

managerial entrenchment⁹ (Chrisman, Chua, & Sharma, 2005) and by asymmetric altruism (Cherchem, 2017) that could lead to conflicts in the family firm. Lubatkin et al. (2007) point that formality may mitigate inaccurate and biased performance evaluation leading to an equal treatment of family and nonfamily managers. Hence, formality may foster manager's sense of identification with the firm, regardless of their family affiliation.

H3a: Formality in management control mechanisms is positively associated with manager's stewardship identification.

Furthermore, Simon et al. (2012) suggest that formality might enforce stewardship values such as identification, involvement, motivation, and loyalty. Formal management control mechanisms are designed to determine managers' responsibilities toward the firm goals as well as accountability for results, independent of their family affiliation. Formality has been traditionally linked to agency monitoring and incentive mechanisms, however the role of management control mechanisms in organizations is wider than the notion of control (e.g., Ahrens & Chapman, 2004; Kruis, Speklé, & Widener, 2016). Formal management control mechanisms can be used to foster transparency, flexibility, knowledge transfer among other purposes (Giovannoni, Maraghini, & Riccaboni, 2011; Zahra, Neubaum, & Larrañeta, 2007), creating a professional environment (Dekker, Lybaert, Steijvers, Depaire, & Mercken, 2013; Stewart & Hitt, 2012).

Formal management control mechanisms provide transparency about the firm's goals, decisions, structure, and rules stimulating trust and strengthening manager's pro-organizational behavior (Cherchem, 2017; Suess, 2014). Formality can be related to the situational mechanisms of stewardship such as collectivism and lower power distance where managers are able to share information and act in the principals' interests to achieve the firm's goals (Davis et al., 1997). So, we propose that:

H3b: Formality in management control mechanisms is positively associated with stewardship-oriented culture.

⁹ "Increased managerial ownership reduces the efficacy of the corporate management control mechanisms." (Morck & Yeung, 2003, p. 371). Managerial entrenchment indicates that "family executives are protected from performance accountability" (Gomez-Mejia, Cruz, Berrone, & De Castro, 2011, p. 675)

5.2.3. Procedural justice perceptions and stewardship

At the individual level, procedural justice is supposed to satisfy the need for control and the need for esteem and belonging (Greenberg & Colquitt, 2013; Lau & Oger, 2012). Folger and Cropanzano (1998, preface), focusing on HRM systems, argue that “*Fair treatment, by contrast, breeds commitment intentions to remain on the job and helpful citizenship behavior that go beyond the call of formal duties*”. Kim and Mauborgne (2003, p. 1) argue that “*When people feel a decision affecting them was made fairly, they trust and cooperate with managers. They share ideas and willingly go beyond the call of duty.*” Procedural fairness has been shown to enhance trust (Cropanzano, Prehar, & Chen, 2002) and organizational commitment (Cropanzano, Bowen, & Gilliland, 2007). On contrary, unfair perceptions with respect to management control mechanisms are supposed to weaken manager’s sense of identification with the firm and cooperative behaviors (Langevin & Mendoza, 2013; Lubatkin et al., 2007).

Based on a literature review on the use of psychology theories in family firms field, Pieper (2010) argues that organizational justice is one of the factors that can affect the development of intrinsic motivation among employees. Lubatkin et al. (2007) indicate that justice violations lead to opportunistic behaviors while fairness can efficiently restrain it. Therefore, fairness can incentivize managers goal alignment in the organization (Cugueró-Escofet & Rosanas, 2013).

In the family business literature, Van der Heyden et al. (2005, p. 7) point that fair process is “*an essential part of establishing trust, commitment, and harmony in family firms*”. Justice perceptions have also been linked to organizational identification in the context of the family firm (Carmon, Miller, Raile, & Roers, 2010). Therefore, we state that:

H4a: Procedural justice in management control mechanisms is positively associated with manager’s stewardship identification

Additionally, procedural justice principles are aligned with the situational mechanisms of a stewardship-oriented culture such as collectivism, involvement, low power distance, organizational identification and an involvement management orientation (Davis et al., 1997; Neubaum et al., 2017). Empirical evidence is available that the perception of procedural justice has been empirically proved to influence people’s attitudes and behaviors as supporting legitimacy of organizational authorities, discouraging forms of disruptive behavior, promoting the acceptance of organizational change, enhancing the perception of trustworthiness, reducing fears of exploitation, and encouraging cooperation among employees (Colquitt, Conlon,

Wesson, Porter, & Ng, 2001; Langevin & Mendoza, 2013; Pieper, 2010; Sieger, Bernhard, & Frey, 2011). Therefore, procedural justice perceptions can foster a stewardship-oriented culture in the firm regarding a collective, supportive and caring environment (Zahra et al., 2008).

Fairness principles can eliminate or mitigate the adverse trade-offs between the family and the business systems because they stimulate pro-organizational behavior (Van der Heyden et al., 2005). These tradeoffs include choices between emotions and economic performance, for example. These fair processes can improve the satisfaction and commitment of both family and nonfamily managers involved in the family business (Van der Heyden et al., 2005). Therefore, the literature provides support for the following hypothesis:

H4b: Procedural justice in management control mechanisms is positively associated with stewardship-oriented culture.

The theoretical model and hypotheses are presented in Figure 11.

Figure 11. Theoretical research model and hypotheses – paper 2

Note 1. We add the following control variables in the theoretical model. *Ownership* indicates if the controlling family holds 100% of business shares/quotas. *Family* indicates that if the respondent is a founder, family manager or nonfamily manager (family affiliation). *Superior* indicates if the respondents' superior in the firm is a nonfamily or a family manager. *MLMV* is the variable used to control for common method bias. *Tier* relates to the hierarchical level (Tier 1 are those managers that report directly to shareholders, CEO or does not have superior in the firm). *Founder* indicates if the founder manages the firm.

Note 2. The mediating hypothesis (H5) indicates the indirect association between management control mechanisms' fairness design and stewardship (identification and culture).

5.2.4. Mediation hypothesis

The characteristics of collaboration, autonomy, and responsibility of control systems have also an indirect association with stewardship (Hernandez, 2012). In this sense, we propose

a partially mediated relationship between management control mechanisms' fairness design characteristics and stewardship, through procedural justice.

Since management control mechanisms' fair design is expected to be positively related to the stewardship identification (Davis et al., 2010; Henssen et al., 2014; Hernandez, 2012) and stewardship-oriented culture (Hernandez, 2012; Neubaum et al., 2017; Simon et al., 2012), and these dimensions of management control mechanisms are associated positively with procedural justice (Hartmann & Slapničar, 2009; Langevin & Mendoza, 2013), we argue that procedural justice partially mediates the relationship between management control mechanisms' fair design and stewardship. Therefore, we hypothesize that:

H5: Procedural justice mediates the relationship between management control mechanisms' fair design characteristics and stewardship.

5.3. Data analyses

5.3.1. Descriptive Statistics

We present in Table 25 the descriptive statistics of the indicators in our model that are: participation and formality in both goal setting and performance evaluation; procedural justice in goal setting and performance evaluation; stewardship-oriented culture and stewardship identification. We conducted the analyses below based on the 152 sample, but we also present the results of the sample of 120 respondents in Table 26, which is composed exclusively of medium and large family firms with high ownership concentration (for more explanation see the Methodology section). In Table 27, Table 28 and Table 29 we present the descriptive statistics for the subsamples of nonfamily managers (n= 99), family managers and founders (n= 53) and family managers (n= 36)

First, about participation, respondents present a mean score of 4.37 about the importance of manager's contribution to the goal setting process in the company and 4.22 that the firm include changes suggested by managers. Additionally, respondents indicate a mean score of 4.15 and 3.99 respectively about managers being influential in goal setting and in the top management initiatives.

Moreover, respondents seem to agree on a lower level with formality in goal setting indicators if compared to manager's participation. Respondents present a mean score of 2.82 if the firm relies principally on experienced-based intuition (rather than quantitative analysis) when setting major goals. As this item was reversed coded (should indicate informal goal

setting), it was consistent with the construct, but it was further excluded in the measurement model evaluation of SEM analyses because it did not meet the criteria for convergent and discriminant validity. Managers also indicate that the firm's goal setting nearly always result from extensive quantitative analysis of data (3.61) and are detailed in formal written reports (3.36). Respondents also point a mean score of 3.71 about the extent that the goal setting process is formalized in the organization.

The items of procedural justice in goal setting present a similar mean score ranging from 3.70 to 3.89 about the respondent's sense of fairness with the way in which goals were set. The elements captured in the procedural justice construct are manager's perceptions about the way which goals were set (3.89), his or her confidence in the system (3.79) and in the criteria to set goals (3.78), and his or her satisfaction (3.70).

About formality in performance evaluation, respondents indicate that superiors give the opportunity to ask questions (3.75) and consider their views when discussing performance evaluation (3.76). Additionally, respondents present a mean score of 3.63 and 3.48 respectively related to judging performance based on objective information and expressing it in quantitative terms. The items of procedural justice in performance evaluation present a similar mean about the respondents' sense of fairness with the way in which performance is evaluated (3.54) and confidence in the performance evaluation system (3.41), but a higher standard deviation than procedural justice in goal setting.

Finally, stewardship identification presents a higher mean score than stewardship-oriented culture if we compare the means as well as a lower variance. Concerning stewardship identification, the respondents seem to believe (4.13) and accept (4.14) the firms' goals and see themselves as an integral part of the firm (4.28). About stewardship culture, respondents indicate that the firm inspires managers' care and loyalty (4.06), encourages a collectivist culture (3.78), allows managers to reach their full potential (3.70) and promotes a professionally orientated workplace (3.59).

Looking at the descriptive statistics in the subsamples, the mean scores of our research seem to be higher for family managers and founders if compared to nonfamily managers, except for formality.

Table 25

Items' descriptive statistics (n=152) - Paper 2

Item	n	Mean	Std. Dev.	Min	Max
GSpj_1. Manager's contribution is important to goal setting of the company.	152	4.37	0.90	1	5
GSpj_2. In the company, it is important that goal setting includes changes that were suggested by managers.	151	4.22	0.89	1	5
GSpj_3. In the company, managers are influential in goal setting.	151	4.15	0.95	1	5
GSpj_4. Top management often initiates discussions about goals with managers.	151	3.99	1.07	1	5
GSform_1. Our goal setting nearly always result from extensive quantitative analysis of data.	152	3.61	1.11	1	5
GSform_2. Our goal setting is nearly always detailed in formal written reports.	152	3.36	1.20	1	5
GSform_3. We rely principally on experienced-based intuition (rather than quantitative analysis) when setting major goals. *	151	2.82	1.11	1	5
GSform_4. To what extent is goal setting processes formalized in the organization? **	152	3.71	1.21	1	5
GSpj_1. I think that the way in which goals were set is fair.	152	3.89	0.96	1	5
GSpj_2. I have full confidence in the system with which goals were set.	152	3.79	1.01	1	5
GSpj_3. I think that the criteria that were used to set goals are fair.	152	3.78	1.05	1	5
GSpj_4. I am very satisfied with the way in which goals were set.	152	3.70	1.04	1	5
PEpart_1. The superior gives you the opportunity to ask questions about performance evaluation.	146	3.75	1.14	1	5
PEpart_2. The superior considers your views when discussing performance evaluation.	147	3.76	1.07	1	5
PEform_1. When judging performance, my superior bases on objective information previously established.	147	3.63	1.13	1	5
PEform_2. When judging performance, my superior expresses it in quantitative terms (evaluates performance based on quantitative criteria).	147	3.48	1.12	1	5
PEpj_1. I think the way performance is evaluated is fair.	148	3.54	1.15	1	5
PEpj_2. I have full confidence in the performance evaluation system.	148	3.41	1.24	1	5
STEW_1. Your company allows managers to reach their full potential contributing to the company.	152	3.70	1.04	1	5
STEW_2. Your company promotes a professionally orientated workplace.	152	3.59	1.18	1	5
STEW_3. Your company inspires managers' care and loyalty to the company	152	4.06	1.00	1	5
STEW_4. Your company encourages a collectivist culture focused on business group rather than an individualistic culture.	152	3.78	1.16	1	5
STEWid_1. To what extent do you see yourself believing in the company's goals?	151	4.13	0.91	1	5
STEWid_2. To what extent do you see yourself as an integral part of the company?	151	4.28	0.95	1	5
STEWid_3. To what extent do you see yourself accepting company's goals?	150	4.14	0.92	1	5

* Reverse coded item.

** This item was added to the original measures of formality, and is based on Bedford & Malmi (2015).

Table 26

Items' descriptive statistics (n=120) - Paper 2

Item	n	Mean	Std. Dev.	Min	Max
GSpa ₁ . Manager's contribution is important to goal setting of the company.	120	4.33	0.91	1	5
GSpa ₂ . In the company, it is important that goal setting includes changes that were suggested by managers.	120	4.23	0.91	1	5
GSpa ₃ . In the company, managers are influential in goal setting.	120	4.13	0.98	1	5
GSpa ₄ . Top management often initiates discussions about goals with managers.	120	3.94	1.10	1	5
GSfo ₁ . Our goal setting nearly always result from extensive quantitative analysis of data.	120	3.58	1.14	1	5
GSfo ₂ . Our goal setting is nearly always detailed in formal written reports.	120	3.38	1.23	1	5
GSfo ₃ . We rely principally on experienced-based intuition (rather than quantitative analysis) when setting major goals. *	119	2.78	1.14	1	5
GSfo ₄ . To what extent is goal setting processes formalized in the organization? **	120	3.69	1.26	1	5
GSpj ₁ . I think that the way in which goals were set is fair.	120	3.89	1.00	1	5
GSpj ₂ . I have full confidence in the system with which goals were set.	120	3.78	1.03	1	5
GSpj ₃ . I think that the criteria that were used to set goals are fair.	120	3.76	1.08	1	5
GSpj ₄ . I am very satisfied with the way in which goals were set.	120	3.66	1.04	1	5
PEpa ₁ . The superior gives you the opportunity to ask questions about performance evaluation.	116	3.74	1.19	1	5
PEpa ₂ . The superior considers your views when discussing performance evaluation.	117	3.75	1.11	1	5
PEfo ₁ . When judging performance, my superior bases on objective information previously established.	117	3.62	1.13	1	5
PEfo ₂ . When judging performance, my superior expresses it in quantitative terms (evaluates performance based on quantitative criteria).	117	3.51	1.15	1	5
PEpj ₁ . I think the way performance is evaluated is fair.	118	3.54	1.15	1	5
PEpj ₂ . I have full confidence in the performance evaluation system.	118	3.42	1.23	1	5
STEW ₁ . Your company allows managers to reach their full potential contributing to the company.	120	3.73	1.04	1	5
STEW ₂ . Your company promotes a professionally orientated workplace.	120	3.57	1.23	1	5
STEW ₃ . Your company inspires managers' care and loyalty to the company	120	4.08	1.03	1	5
STEW ₄ . Your company encourages a collectivist culture focused on business group rather than an individualistic culture.	120	3.78	1.19	1	5
STEWid ₁ . To what extent do you see yourself believing in the company's goals?	120	4.12	0.90	1	5
STEWid ₂ . To what extent do you see yourself as an integral part of the company?	120	4.28	0.96	1	5
STEWid ₃ . To what extent do you see yourself accepting company's goals?	119	4.13	0.92	1	5

* Reverse coded item.

** This item was added to the original measures of formality, and is based on Bedford & Malmi (2015).

Table 27

Items' descriptive statistics (nonfamily managers, n=99)

Item	n	Mean	Std. Dev.	Min	Max
GSpart_1. Manager's contribution is important to goal setting of the company.	99	4.29	0.96	1	5
GSpart_2. In the company, it is important that goal setting includes changes that were suggested by managers.	98	4.15	0.96	1	5
GSpart_3. In the company, managers are influential in goal setting.	98	4.04	1.00	1	5
GSpart_4. Top management often initiates discussions about goals with managers.	98	3.82	1.12	1	5
GSform_1. Our goal setting nearly always result from extensive quantitative analysis of data.	99	3.62	1.16	1	5
GSform_2. Our goal setting is nearly always detailed in formal written reports.	99	3.45	1.21	1	5
GSform_3. We rely principally on experienced-based intuition (rather than quantitative analysis) when setting major goals. *	98	2.71	1.13	1	5
GSform_4. To what extent is goal setting processes formalized in the organization? **	99	3.68	1.26	1	5
GSpj_1. I think that the way in which goals were set is fair.	99	3.78	1.04	1	5
GSpj_2. I have full confidence in the system with which goals were set.	99	3.67	1.06	1	5
GSpj_3. I think that the criteria that were used to set goals are fair.	99	3.68	1.12	1	5
GSpj_4. I am very satisfied with the way in which goals were set.	99	3.57	1.12	1	5
PEpart_1. The superior gives you the opportunity to ask questions about performance evaluation.	95	3.71	1.14	1	5
PEpart_2. The superior considers your views when discussing performance evaluation.	96	3.69	1.07	1	5
PEform_1. When judging performance, my superior bases on objective information previously established.	96	3.56	1.15	1	5
PEform_2. When judging performance, my superior expresses it in quantitative terms (evaluates performance based on quantitative criteria).	96	3.45	1.11	1	5
PEpj_1. I think the way performance is evaluated is fair.	97	3.51	1.16	1	5
PEpj_2. I have full confidence in the performance evaluation system.	97	3.32	1.24	1	5
STEW_1. Your company allows managers to reach their full potential contributing to the company.	99	3.58	1.13	1	5
STEW_2. Your company promotes a professionally orientated workplace.	99	3.47	1.26	1	5
STEW_3. Your company inspires managers' care and loyalty to the company	99	3.92	1.08	1	5
STEW_4. Your company encourages a collectivist culture focused on business group rather than an individualistic culture.	99	3.62	1.22	1	5
STEWid_1. To what extent do you see yourself believing in the company's goals?	99	3.94	0.97	1	5
STEWid_2. To what extent do you see yourself as an integral part of the company?	99	4.10	1.01	1	5
STEWid_3. To what extent do you see yourself accepting company's goals?	98	3.97	0.98	1	5

* Reverse coded item.

** This item was added to the original measures of formality, and is based on Bedford & Malmi (2015).

Table 28

Items' descriptive statistics (founders and family managers, n=53)

Item	n	Mean	Std. Dev.	Min	Max
GSpa ₁ . Manager's contribution is important to goal setting of the company.	53	4.51	0.75	2	5
GSpa ₂ . In the company, it is important that goal setting includes changes that were suggested by managers.	53	4.34	0.76	3	5
GSpa ₃ . In the company, managers are influential in goal setting.	53	4.36	0.81	2	5
GSpa ₄ . Top management often initiates discussions about goals with managers.	53	4.30	0.91	2	5
GSfo ₁ . Our goal setting nearly always result from extensive quantitative analysis of data.	53	3.58	1.03	1	5
GSfo ₂ . Our goal setting is nearly always detailed in formal written reports.	53	3.19	1.19	1	5
GSfo ₃ . We rely principally on experienced-based intuition (rather than quantitative analysis) when setting major goals. *	53	3.02	1.07	1	5
GSfo ₄ . To what extent is goal setting processes formalized in the organization? **	53	3.77	1.12	1	5
GSpj ₁ . I think that the way in which goals were set is fair.	53	4.11	0.78	2	5
GSpj ₂ . I have full confidence in the system with which goals were set.	53	4.02	0.89	2	5
GSpj ₃ . I think that the criteria that were used to set goals are fair.	53	3.98	0.89	1	5
GSpj ₄ . I am very satisfied with the way in which goals were set.	53	3.94	0.82	2	5
PEpa ₁ . The superior gives you the opportunity to ask questions about performance evaluation.	51	3.82	1.16	1	5
PEpa ₂ . The superior considers your views when discussing performance evaluation.	51	3.90	1.06	1	5
PEfo ₁ . When judging performance, my superior bases on objective information previously established.	51	3.76	1.09	1	5
PEfo ₂ . When judging performance, my superior expresses it in quantitative terms (evaluates performance based on quantitative criteria).	51	3.55	1.14	1	5
PEpj ₁ . I think the way performance is evaluated is fair.	51	3.61	1.13	1	5
PEpj ₂ . I have full confidence in the performance evaluation system.	51	3.57	1.24	1	5
STEW ₁ . Your company allows managers to reach their full potential contributing to the company.	53	3.94	0.79	2	5
STEW ₂ . Your company promotes a professionally orientated workplace.	53	3.79	1.01	1	5
STEW ₃ . Your company inspires managers' care and loyalty to the company	53	4.32	0.80	2	5
STEW ₄ . Your company encourages a collectivist culture focused on business group rather than an individualistic culture.	53	4.09	0.99	1	5
STEWid ₁ . To what extent do you see yourself believing in the company's goals?	52	4.50	0.64	3	5
STEWid ₂ . To what extent do you see yourself as an integral part of the company?	52	4.63	0.74	2	5
STEWid ₃ . To what extent do you see yourself accepting company's goals?	52	4.46	0.70	2	5

* Reverse coded item.

** This item was added to the original measures of formality, and is based on Bedford & Malmi (2015).

Table 29

Items' descriptive statistics (family managers, n=36)

Item	n	Mean	Std. Dev.	Min	Max
GSpj_1. Manager's contribution is important to goal setting of the company.	36	4.36	0.80	2	5
GSpj_2. In the company, it is important that goal setting includes changes that were suggested by managers.	36	4.31	0.75	3	5
GSpj_3. In the company, managers are influential in goal setting.	36	4.22	0.83	2	5
GSpj_4. Top management often initiates discussions about goals with managers.	36	4.17	1.00	2	5
GSform_1. Our goal setting nearly always result from extensive quantitative analysis of data.	36	3.47	1.03	1	5
GSform_2. Our goal setting is nearly always detailed in formal written reports.	36	3.00	1.22	1	5
GSform_3. We rely principally on experienced-based intuition (rather than quantitative analysis) when setting major goals. *	36	3.17	1.03	1	5
GSform_4. To what extent is goal setting processes formalized in the organization? **	36	3.67	1.22	1	5
GSpj_1. I think that the way in which goals were set is fair.	36	4.08	0.84	2	5
GSpj_2. I have full confidence in the system with which goals were set.	36	4.00	0.96	2	5
GSpj_3. I think that the criteria that were used to set goals are fair.	36	3.92	0.97	1	5
GSpj_4. I am very satisfied with the way in which goals were set.	36	3.86	0.87	2	5
PEpart_1. The superior gives you the opportunity to ask questions about performance evaluation.	36	3.67	1.24	1	5
PEpart_2. The superior considers your views when discussing performance evaluation.	36	3.72	1.16	1	5
PEform_1. When judging performance, my superior bases on objective information previously established.	36	3.64	1.10	1	5
PEform_2. When judging performance, my superior expresses it in quantitative terms (evaluates performance based on quantitative criteria).	36	3.39	1.20	1	5
PEpj_1. I think the way performance is evaluated is fair.	36	3.42	1.20	1	5
PEpj_2. I have full confidence in the performance evaluation system.	36	3.36	1.33	1	5
STEW_1. Your company allows managers to reach their full potential contributing to the company.	36	3.75	0.81	2	5
STEW_2. Your company promotes a professionally orientated workplace.	36	3.56	1.03	1	5
STEW_3. Your company inspires managers' care and loyalty to the company	36	4.14	0.83	2	5
STEW_4. Your company encourages a collectivist culture focused on business group rather than an individualistic culture.	36	3.97	1.11	1	5
STEWid_1. To what extent do you see yourself believing in the company's goals?	35	4.40	0.69	3	5
STEWid_2. To what extent do you see yourself as an integral part of the company?	35	4.49	0.85	2	5
STEWid_3. To what extent do you see yourself accepting company's goals?	35	4.40	0.77	2	5

* Reverse coded item.

** This item was added to the original measures of formality, and is based on Bedford & Malmi (2015).

Furthermore, we present comparisons related to the respondents' and family firms' characteristics with stewardship constructs. To estimate the factors of stewardship-oriented culture and stewardship identification constructs, we ran Confirmatory Factor Analyses in SmartPLS and present in Table 30 the mean of the standardized scores (for both samples of 152 and 120 respondents). The interpretation of the associations is consistent between the two samples.

First, family managers report higher mean scores of stewardship-oriented culture and stewardship identification than nonfamily managers, but lower mean scores if we compare to founders (Panel A). Additionally, respondents that are Chief Executive Officers and from the Commercial and Marketing areas present higher average score especially for the stewardship identification and culture (Panel B), which can be related to the respondents hierarchical level or family manager status (Panel C). Moreover, as we expected, respondents from higher hierarchical levels and that report to a family manager (Panel E) have rated in average a higher score of both stewardship constructs. Finally, increasing tenure in the organization seems to be linked to a higher level of stewardship (Panel D). These analyses are consistent with previous literature (Corbetta & Salvato, 2004; Davis et al., 2010, 1997).

Moreover, by analyzing the family firm characteristics in Table 31, we can see that firms with more than 1,000 employees (Panel A) seem to present a higher score for stewardship identification and for a stewardship-oriented culture which results are similar to firms with less than 50 employees. Panel B indicates that firms with a lower concentration of shares seem to present lower scores for stewardship identification and stewardship-oriented culture than those firms with 100% of the shares in the controlling family's hands. The exception is firms with a controlling family stake between 25% and 50% of the shares.

Additionally, if we analyze the family involvement in management (Panel C), family firms with lower than 25% of family managers in the TMT seem to present higher mean scores of stewardship identification and stewardship-oriented culture especially in the sample of medium and large firms ($n = 120$). However, these results are not conclusive which we also found for the CEO family affiliation.

The presence of the founder in the firm seems to be related to a lower score of stewardship identification and stewardship-oriented culture. Table 31 also shows that firms that are owned by later generations present a higher mean score for both stewardship identification and culture. These descriptive results about firm characteristics and stewardship seem to be contradictory to the literature, which argues that small firms with the presence of the founder

are likely to foster stewardship, due to the predominance of values such as altruism, collectivism, and trust.

Table 30

Respondents' characteristics and stewardship (n=120 and n=152)

	Sample 120		Sample 152		STEW Identification		STEW Culture	
	n	%	n	%	120	152	120	152
<i>Panel A: Family status</i>								
Nonfamily manager	83	69.17%	99	65.13%	-0.193	-0.212	-0.124	-0.143
Family manager	27	22.50%	36	23.68%	0.370	0.285	0.126	0.073
Founder	10	8.33%	17	11.18%	0.606	0.650	0.688	0.680
<i>Panel B: Business area</i>								
Business, Finance, and Accounting	53	44.17%	70	46.05%	-0.111	-0.081	0.003	-0.005
Operations and engineering	23	19.17%	25	16.45%	-0.038	0.033	-0.104	-0.055
Commercial and Marketing	22	18.33%	27	17.76%	0.253	0.216	0.070	0.103
Chief Executive Officer	16	13.33%	23	15.13%	0.347	0.186	0.204	0.104
Others	5	4.17%	5	3.29%	-0.904	-0.914	-0.664	-0.671
Missing	1	0.83%	2	1.32%	0.164	-0.399	0.739	-0.036
<i>Panel C: Hierarchical level</i>								
Tier 1	56	46.67%	75	49.34%	0.277	0.277	0.234	0.213
Tier 2	59	49.17%	72	47.37%	-0.192	-0.226	-0.130	-0.146
Tier 3	5	4.17%	5	3.29%	-0.835	-0.845	-1.076	-1.090
<i>Panel D: Tenure</i>								
Between 1 and 2 years	3	2.50%	5	3.29%	-1.247	-1.188	-1.184	-1.109
Between 3 and 5 years	21	17.50%	25	16.45%	-0.449	-0.497	-0.342	-0.397
Between 6 and 10 years	23	19.17%	39	25.66%	0.078	0.122	0.063	0.095
More than 10 years	69	57.50%	82	53.95%	0.159	0.167	0.130	0.180
Missing	0		1	0.66%		-0.956		-0.838
<i>Panel E: Superior family status</i>								
Nonfamily manager	46	38.33%	53	34.9%	-0.140	-0.203	-0.148	-0.181
Family manager or founder	74	61.67%	99	65.1%	0.087	0.110	0.092	0.097

Note 1. Tier 1 (report to shareholders or board of directors), Tier 2 (report to Top Managers, Chief Officers or CEO) and Tier 3 (report to middle managers or supervisors).

Note 2. STEWidentification and STEWculture are the constructs of stewardship, respectively the individual and organizational levels. These values are the means measured based on the latent scores that were obtained in the Confirmatory Factor Analyses in SmartPLS.

Note 3. We refer to both sample sizes of 120 and 152 respondents.

Table 31

Family firms' characteristics and stewardship (n=120 and n=152) – Part I

	Sample 120		Sample 152		STEWIdentification		STEWCulture	
	n	%	n	%	120	152	120	152
<i><u>Panel A: Size (number of employees)</u></i>								
Less than 50 employees	0	0.0%	18	11.8%	-	0.197	-	0.192
Between 51 and 100 employees	8	6.7%	9	5.9%	-0.317	-0.306	-0.267	-0.271
Between 101 and 300 employees	25	20.8%	29	19.1%	-0.077	-0.244	-0.121	-0.298
Between 301 and 500 employees	16	13.3%	18	11.8%	-0.259	-0.211	-0.021	-0.021
Between 501 and 1000 employees	20	16.7%	21	13.8%	-0.060	-0.088	-0.151	-0.159
More than 1000 employees	51	42.5%	57	37.5%	0.171	0.206	0.176	0.199
<i><u>Panel B: Controlling family ownership</u></i>								
Family owns up to 25% of the shares	0	0.0%	6	3.9%	-	-0.669	-	-0.639
Family owns more than 25% but up to 50% of the shares	0	0.0%	4	2.6%	-	-0.128	-	0.152
Family owns more than 50% but less than 100% of the shares	26	21.7%	32	21.1%	-0.111	-0.114	-0.109	-0.195
Family owns 100% of the shares	94	78.3%	109	71.7%	0.019	0.069	0.035	0.075
Missing			1	0.7%		0.553		1.272
<i><u>Panel C: Percentage of family members in the TMT</u></i>								
No family member	22	18.3%	29	19.1%	0.100	-0.098	0.231	0.084
More than 0% and up to 25%	28	23.3%	30	19.7%	0.325	0.289	0.161	0.155
More than 25% and up to 50%	26	21.7%	36	23.7%	-0.201	-0.115	-0.240	-0.219
More than 50% but less than 100%	19	15.8%	22	14.5%	-0.238	-0.128	-0.296	-0.250
100,00%	21	17.5%	29	19.1%	-0.198	0.052	0.099	0.234
Missing	4	3.3%	6	3.9%	0.376	-0.082	0.171	-0.076
<i><u>Panel D: Is the CEO from the controlling family?</u></i>								
Yes	96	80.0%	119	78.3%	-0.038	0.031	-0.001	0.027
No	24	20.0%	33	21.7%	0.105	-0.112	0.022	-0.099
<i><u>Panel E: Does(Do) the founder(s) manage(s) the business?</u></i>								
Yes	58	48.3%	82	53.9%	-0.323	-0.226	-0.244	-0.158
No	60	50.0%	68	44.7%	0.263	0.248	0.230	0.179
Missing	2	1.7%	2	1.3%	0.953	0.953	0.403	0.403

Note 1. STEWidentification and STEWculture are the constructs of stewardship, respectively the individual and organizational levels. These values are the means measured based on the latent scores that were obtained in the Confirmatory Factor Analyses in SmartPLS.

Note 2. We refer to both sample sizes of 120 and 152 respondents.

Table 31

Family firms' characteristics and stewardship (n=120 and n=152) – Part II

	Sample 120		Sample 152		STEWIdentification		STEWCulture	
	n	%	n	%	120	152	120	152
<i>Panel F: Family Generations</i>								
First generation	28	23.3%	43	28.3%	-0.174	-0.180	-0.225	-0.166
First and Second generations	28	23.3%	34	22.4%	0.201	0.244	0.084	0.100
First, Second and Third generations	2	1.7%	2	1.3%	-0.214	-0.214	-0.024	-0.024
Second generation	27	22.5%	31	20.4%	-0.116	-0.104	-0.013	-0.016
Second and third generations	16	13.3%	19	12.5%	-0.198	-0.201	-0.230	-0.203
Third generation	14	11.7%	15	9.9%	0.177	0.202	0.383	0.442
Third and fourth generations	4	3.3%	4	2.6%	0.369	0.369	0.797	0.797
Fourth generation	1	0.8%	3	2.0%	0.953	0.564	-0.032	-0.295
Later than the fourth generation			1	0.7%		0.953		-0.838
<i>Panel G: Firm age</i>								
Between 01 and 20 years	11	9.2%	21	13.8%	0.138	0.099	-0.042	0.049
Between 21 and 40 years	27	22.5%	37	24.3%	-0.019	-0.020	-0.041	0.023
Between 41 and 60 years	29	24.2%	32	21.1%	-0.157	-0.139	0.074	0.047
More than 61 years	44	36.7%	49	32.2%	0.179	0.130	0.077	-0.016
Missing	9	7.5%	13	8.6%	-0.459	-0.242	-0.303	-0.200

Note 1. STEWidentification and STEWculture are the constructs of stewardship, respectively the individual and organizational levels. These values are the means measured based on the latent scores that were obtained in the Confirmatory Factor Analyses in SmartPLS.

Note 2. We refer to both sample sizes of 120 and 152 respondents.

5.3.2. Measurement model assessment

We follow Hair et al.'s (2013) steps to proceed with the validation of the measurement model based on reflective model evaluation for the two samples (n=152 and n=120). We present the tables of the two samples (n=152 and n=120). More details about the difference between those two samples can be found in the Methodology section of this dissertation. The results of the measurement model assessment are consistent between these two samples. We also analyzed the measurement model for the subsamples of (i) nonfamily managers (n=99), (ii) family managers and founders (n=53), (iii) and family managers (n=36), which results are complementary. These results about the measurement model assessment for the subsamples are presented in Appendix 4.

First, for the convergent validity, we analyze the outer loadings and Average Variance Extracted (AVE). We also analyze the Composite Reliability (CR) as an internal consistency parameter. The AVE and CR of the latent variables in the model are respectively higher than 0.5 and higher than 0.7 (Table 32 and Table 33). The outer loadings are also higher than 0.7 (Table 34 and Table 35).

Additionally, we conducted the discriminant validity analysis based on the cross loadings (level indicators) and Fornell-Larcker criterion (Fornell & Larcker, 1981). First, the square roots of AVE were greater than the correlations between the latent variables (Hair Jr., Hult, Ringle, & Sarstedt, 2013), which we present in Table 32 and Table 33. The results also show that the cross loadings are considered high in some cross-correlations which were expected since we used subjective constructs such as procedural justice and stewardship. In a reflective latent variable, items are expected to be correlated, which does not consist in a statistical concern for the model. We address these issues of multicollinearity in the inner model evaluation based on the VIF parameter, where in advance no indicative of multicollinearity was found. In sum, following Hair et al. (2013) recommendations, our measurement model was validated after excluding GSform_3 item, which did not pass in the convergent and discriminant validity criteria, since this item presented a low level of outer loadings and high level of cross loadings. We finally analyze the Heterotrait-Monotrait criterion (HTMT) to assess discriminant validity (values lower than 0.85), where we have found results consistent with Fornell-Larcker criterion.

Furthermore, the correlation coefficients presented in Table 32 and Table 33 indicate preliminary strong positive associations between the constructs. First, management control mechanisms' fair design characteristics are positively and statistically significantly correlated. Additionally, the management control mechanisms' fair characteristics are highly correlated with procedural justice, for example, participation and formality in goal setting are strongly and higher correlated with procedural justice in goal setting than in performance evaluation. Procedural justice in goal setting and goal setting fairness characteristics seem to be higher correlated to stewardship identification and stewardship culture than the performance evaluation constructs. Finally, the individual and organizational level constructs of stewardship are highly and statistically significant correlated, which is also consistent with the cross loadings results.

Table 32

First-Order Latent Variable Correlations (n=152)

	1	2	3	4	5	6	7	8
1. GS_form	0.85							
2. GS_part	0.51	0.87						
3. GS_pj	0.56	0.63	0.95					
4. PE_form	0.41	0.40	0.46	0.94				
5. PE_part	0.42	0.49	0.53	0.65	0.94			
6. PE_pj	0.52	0.49	0.58	0.72	0.72	0.97		
7. STEW_cult	0.59	0.62	0.68	0.51	0.57	0.59	0.87	
8. STEW_iden	0.48	0.63	0.70	0.40	0.55	0.52	0.78	0.93
Composite Reliability (CR)	0.89	0.92	0.97	0.94	0.94	0.97	0.93	0.95
Average Variance Extracted (AVE)	0.73	0.75	0.90	0.89	0.88	0.94	0.76	0.87

Note 1. Correlations greater than or equal to $|0.159|$ are significant at 5% and correlations higher than or equal to $|0.208|$ are significant at 1% for a sample of 152 respondents.

Note 2. The values on the diagonal are the square roots of the average variances extracted; because these values are higher than the correlations between the latent variables (values outside the diagonal), there is discriminant validity (Hair Jr. et al., 2013).

Note 3. Grey cells indicate correlations between dimensions of the same theoretical constructs.

Table 33

First-Order Latent Variable Correlations (n=120)

	1	2	3	4	5	6	7	8
1. GS_form	0.86							
2. GS_part	0.48	0.87						
3. GS_pj	0.58	0.63	0.95					
4. PE_form	0.36	0.35	0.42	0.94				
5. PE_part	0.41	0.47	0.52	0.63	0.93			
6. PE_pj	0.52	0.46	0.56	0.71	0.71	0.97		
7. STEW_cult	0.63	0.63	0.71	0.52	0.54	0.61	0.87	
8. STEW_iden	0.53	0.64	0.71	0.41	0.55	0.52	0.78	0.93
Composite Reliability (CR)	0.89	0.92	0.97	0.94	0.93	0.97	0.93	0.95
Average Variance Extracted (AVE)	0.74	0.75	0.90	0.88	0.87	0.94	0.76	0.87

Note 1. Correlations greater than or equal to $|0.179|$ are significant at 5% and correlations higher than or equal to $|0.234|$ are significant at 1% for a sample of 120 respondents.

Note 2. The values on the diagonal are the square roots of the average variances extracted; because these values are higher than the correlations between the latent variables (values outside the diagonal), there is discriminant validity (Hair Jr. et al., 2013).

Note 3. Grey cells indicate correlations between dimensions of the same theoretical constructs.

Table 34

Cross loadings between the items and the construct (n=152)

	GS_form	GS_part	GS_pj	PE_form	PE_part	PE_pj	STEW_cult	STEW_iden
GSform_1	0.84	0.40	0.48	0.31	0.37	0.44	0.51	0.44
GSform_2	0.88	0.44	0.41	0.30	0.31	0.40	0.44	0.39
GSform_4	0.84	0.48	0.53	0.44	0.39	0.49	0.54	0.40
GSpartic_1	0.39	0.87	0.49	0.37	0.45	0.44	0.50	0.57
GSpartic_2	0.47	0.86	0.45	0.33	0.38	0.38	0.45	0.43
GSpartic_3	0.45	0.91	0.57	0.35	0.46	0.42	0.59	0.58
GSpartic_4	0.47	0.83	0.63	0.33	0.42	0.44	0.60	0.60
GSpj_1	0.48	0.60	0.93	0.40	0.48	0.50	0.63	0.66
GSpj_2	0.57	0.58	0.95	0.45	0.49	0.56	0.64	0.65
GSpj_3	0.51	0.63	0.96	0.42	0.52	0.55	0.64	0.67
GSpj_4	0.55	0.57	0.95	0.48	0.52	0.58	0.66	0.67
PEform_1	0.40	0.40	0.46	0.95	0.59	0.71	0.53	0.42
PEform_2	0.38	0.35	0.40	0.93	0.63	0.64	0.43	0.33
PEpart_1	0.37	0.44	0.48	0.61	0.93	0.67	0.48	0.47
PEpart_2	0.42	0.49	0.51	0.60	0.94	0.67	0.58	0.56
PEpj_1	0.50	0.48	0.55	0.69	0.68	0.97	0.54	0.48
PEpj_2	0.51	0.47	0.57	0.70	0.70	0.97	0.61	0.53
STEWcult_1	0.44	0.52	0.58	0.48	0.51	0.54	0.87	0.66
STEWcult_2	0.57	0.54	0.60	0.49	0.51	0.55	0.88	0.64
STEWcult_3	0.51	0.57	0.58	0.47	0.54	0.54	0.88	0.73
STEWcult_4	0.52	0.54	0.61	0.34	0.41	0.43	0.86	0.68
STEWident_1	0.47	0.57	0.65	0.38	0.51	0.49	0.76	0.94
STEWident_2	0.45	0.64	0.60	0.33	0.53	0.49	0.69	0.92
STEWident_3	0.44	0.56	0.70	0.42	0.50	0.49	0.73	0.93
Controls								
Tier 1	0.01	0.24	0.15	0.04	0.03	0.12	0.21	0.27
d_founder	-0.20	-0.13	-0.26	-0.13	-0.12	-0.13	-0.17	-0.23
d_ownership100%	-0.04	0.14	0.16	0.09	0.15	0.06	0.13	0.12
rfamily_status	-0.09	0.06	0.10	-0.02	-0.03	-0.04	0.04	0.15
rfounder_status	0.09	0.19	0.12	0.13	0.16	0.16	0.24	0.23
rsuperiorfamily_status	-0.06	0.12	0.12	0.04	0.00	0.06	0.13	0.15
MLMV_1	0.15	0.10	0.22	-0.07	0.01	0.06	0.09	0.14
MLMV_2	0.28	0.26	0.36	0.37	0.30	0.39	0.32	0.36
MLMV_3	-0.16	-0.19	-0.29	-0.14	-0.18	-0.12	-0.25	-0.23
MLMV_4	0.13	0.09	0.15	0.09	0.02	0.17	0.10	0.14

Note 1. We excluded the GSform_3 indicator because it lacks on convergent and discriminant validity. This item was more correlated with other latent variables than with formality in goal setting, so we excluded from the model.

Note 2. Hierarchical level, Founder, Ownership, Superior family status, Family status and MLMV are the control variables in our model. Tier, d_founder, d_ownership100% and rsuperiorfamily_status are dummy variables. Tier 1 indicates managers that report to shareholders or board of directors; d_founder indicates if the founder manages the firm; d_ownership100% points to a controlling family ownership of 100% of the shares. Additionally, rfounder_status and rfamily_status compose the family affiliation control variable. Finally, MLMV is a 4-item formative latent variable that is connected to all endogenous variables in our model as an approach to control for common method bias (Chin et al., 2013; Nitzl, 2016).

Table 35

Cross loadings between the items and the construct (n=120)

	GS_form	GS_part	GS_pj	PE_form	PE_part	PE_pj	STEW_cult	STEW_iden
GSform_1	0.83	0.33	0.49	0.25	0.35	0.42	0.54	0.46
GSform_2	0.90	0.44	0.47	0.28	0.36	0.44	0.49	0.45
GSform_4	0.84	0.48	0.53	0.39	0.36	0.47	0.58	0.44
GSpartic_1	0.37	0.87	0.49	0.36	0.45	0.44	0.47	0.55
GSpartic_2	0.41	0.87	0.46	0.29	0.36	0.36	0.46	0.45
GSpartic_3	0.45	0.92	0.60	0.33	0.45	0.41	0.61	0.61
GSpartic_4	0.43	0.80	0.61	0.24	0.38	0.38	0.60	0.59
GSpj_1	0.50	0.62	0.93	0.37	0.47	0.49	0.66	0.68
GSpj_2	0.60	0.57	0.95	0.40	0.48	0.54	0.65	0.64
GSpj_3	0.53	0.64	0.96	0.38	0.50	0.53	0.66	0.68
GSpj_4	0.57	0.57	0.95	0.45	0.52	0.57	0.70	0.70
PEform_1	0.35	0.33	0.43	0.95	0.55	0.69	0.51	0.41
PEform_2	0.33	0.33	0.37	0.93	0.64	0.64	0.46	0.36
PEpart_1	0.36	0.42	0.48	0.60	0.92	0.67	0.45	0.47
PEpart_2	0.41	0.46	0.49	0.58	0.94	0.66	0.55	0.54
PEpj_1	0.49	0.46	0.53	0.67	0.68	0.97	0.55	0.48
PEpj_2	0.51	0.43	0.56	0.70	0.70	0.97	0.62	0.52
STEWcult_1	0.48	0.54	0.60	0.48	0.51	0.57	0.88	0.65
STEWcult_2	0.59	0.52	0.61	0.49	0.49	0.57	0.89	0.64
STEWcult_3	0.55	0.58	0.59	0.48	0.50	0.54	0.86	0.73
STEWcult_4	0.56	0.54	0.66	0.34	0.37	0.44	0.85	0.69
STEWident_1	0.51	0.56	0.65	0.38	0.51	0.49	0.77	0.94
STEWident_2	0.49	0.67	0.64	0.33	0.53	0.48	0.68	0.93
STEWident_3	0.47	0.57	0.70	0.43	0.49	0.48	0.74	0.93
Controls								
Tier 1	0.02	0.26	0.16	0.05	0.03	0.13	0.22	0.26
d_founder	-0.22	-0.18	-0.36	-0.16	-0.17	-0.19	-0.23	-0.29
d_ownership100%	0.03	0.18	0.15	0.13	0.13	0.03	0.06	0.05
rfamily_status	-0.07	0.08	0.13	0.03	-0.06	-0.04	0.07	0.20
rfounder_status	0.11	0.14	0.06	0.10	0.12	0.10	0.21	0.18
rsuperiorfamily_status	-0.09	0.09	0.09	0.04	-0.05	0.02	0.12	0.11
MLMV_1	0.14	0.05	0.17	-0.16	-0.07	0.01	0.04	0.08
MLMV_2	0.29	0.26	0.36	0.37	0.35	0.38	0.40	0.42
MLMV_3	-0.15	-0.23	-0.38	-0.13	-0.16	-0.11	-0.29	-0.28
MLMV_4	0.15	0.08	0.18	0.10	0.02	0.17	0.13	0.16

Note 1. We excluded the GSform_3 indicator because it lacks on convergent and discriminant validity. This item was more correlated with other latent variables than with formality in goal setting, so we excluded from the model.

Note 2. Hierarchical level, Founder, Ownership, Superior family status, Family status and MLMV are the control variables in our model. Tier, d_founder, d_ownership100% and rsuperiorfamily_status are dummy variables. Tier 1 indicates managers that report to shareholders or board of directors; d_founder indicates if the founder manages the firm; d_ownership100% points to a controlling family ownership of 100% of the shares. Additionally, rfounder_status and rfamily_status compose the family affiliation control variable. Finally, MLMV is a 4-item formative latent variable that is connected to all endogenous variables in our model as an approach to control for common method bias (Chin et al., 2013; Nitzl, 2016).

5.3.3. Structural Equation Modeling

After completing the validation of the measurement model, we present the structural model assessment. Hair et al. (2013) suggest some steps to follow which we discuss below. First, we analyzed multicollinearity between the constructs based on Variance Inflation Factor (VIF). Based on the VIF parameters, measures should be lower than five indicating that multicollinearity may not be a concern for the structural model. Then, we analyzed the path coefficients based on the size and statistical significance after applying the bootstrapping procedure with 1,000 repetitions and a two-tailed test (Hair Jr. et al., 2013).

Third the coefficient of determination of R-square, which indicates the percentage of a dependent variable variance that is explained by the independent variables. We used the adjusted coefficient of determination (R^2_{adj}), which is usually used to compare different models with a different number of variables or also different samples or subsamples, as in our study. Moreover, the effect size coefficient (f^2), which indicates the impact of an independent variable on the dependent variable, based on the omitted variable procedure. To evaluate these parameters we used the classification suggested by Cohen (1988) that is usually applied in the social sciences. Cohen (1988) recommends the following parameters: small effect ($f^2=0.02$); medium effect ($f^2=0.15$); large effect ($f^2=0.35$). As suggested by Hair et al. (2013), f^2 lower than 0.02 indicate that an independent and dependent variable are not statistically related.

In this section, we present the results for different samples (Table 36) and subsamples (Table 37). We run the analyses for 152 and 120 respondents, and subsamples of respondents' family affiliation based on the 152 respondents' sample divided into (i) nonfamily managers (99 respondents), (ii) family managers and founders (53 respondents), (iii) and family managers (36 respondents). It is important to state that we run the analyses of the subsample of family managers ($n=36$) as an exploratory analysis, since this subsample size is insufficient for Structural Equation Modeling analysis.

We also conducted robustness analyses based on the family affiliation subsamples, since previous literature point that family and nonfamily managers can have different perceptions about stewardship, but also different perceptions about the determinants of stewardship in the family firms (Corbetta & Salvato, 2004; Davis et al., 2010; James et al., 2017; Madison et al., 2016; Verbeke & Kano, 2012). To address this goal, we developed the multi-group analyses in SmartPLS taking the family affiliation as our moderator variable. Following Hair Jr., Sarstedt, Ringle and Gudergan (2017), we first tested for measurement invariance (MICOM) in SmartPLS that is the first test applied in the multi-group analyses. However, the measurement

model was different between our subsamples of nonfamily and family managers regarding the mean of stewardship and procedural justice, which shows that the model presents variance in the measurement models between the subsamples.

Therefore, we were not able to proceed with multi-group analyses in SmartPLS to test for the statistically significant difference between the coefficients of these subsamples (Hair Jr. et al., 2017). In this case, Hair et al. (2017) suggest researchers to run the structural model for each of the subsamples for exploratory purposes. Although we cannot argue about the statistically significant difference between the coefficients in the subsamples (what would be discussed in multi-group analyses – MGA), our results suggest that these associations might be different. Therefore, not just the perceptions of nonfamily managers and family managers about stewardship might be different, but also the antecedents of stewardship attitude and culture (James et al., 2017).

We consider that a sample of 53 and 36 respondents would be insufficient to analyze a model with too many predictors (as we present in Table 37). Hence, we run the subsamples results without control variables (except for the common method bias control variable - MLMV) to decrease the number of predictors and, consequently, the need for a larger sample (Hair Jr. et al., 2017; Nitzl, 2016). Hence, we present the results for the samples including family manager affiliation as a control variable and the results for the subsamples of family and nonfamily managers. We are aware that the subsample analyses have limitations regarding sample size, but they offer interesting insights about the effect-sizes of the antecedents of stewardship for family and nonfamily managers.

Despite model's fit indexes are not widely recommended in variance based SEM such as is usually applied for covariance-based SEM (Hair Jr. et al., 2017)¹⁰, we present these results for our full sample models. As you can see in Table 36 the results for the samples of 152 and 120 respondents meet the parameter for model fit based on SRMR criteria, which scores should be lower than 0.08 (Hair Jr. et al., 2013; Hair Jr. et al., 2017).

Furthermore, we included individual and firm level control variables in our model. First, we propose that family managers and founders would perceive higher stewardship culture and identification if compared to nonfamily managers (James et al., 2017; Verbeke & Kano, 2012), which is aligned to the discussion that “Is blood thicker than water” highlighted by Davis et al. (2010). We also control for the respondents' superior family affiliation, following Davis et al. (2010), since they may perceive stewardship differently if they work closely with family

¹⁰ <https://www.smartpls.com/documentation/functionalities/model-fit>.

managers. Additionally, we discuss that top managers from Tier 1 would perceive higher procedural justice in goal setting and performance evaluation than lower hierarchical levels. We also expect that those managers that relate directly to family managers and the controlling family, would perceive higher stewardship-oriented culture and identification. Finally, we control for family ownership and the presence of the founder in the day to day business, that are proxies of family ability to influence the firm (Hauck, Suess-Reyes, Beck, Prügler, & Frank, 2016).

5.3.4. Results and discussion - full samples

Table 36 reports the results of the samples and Table 37 the results of the subsamples of family and nonfamily managers. First, we explore the results for the full samples ($n= 152$ and $n= 120$), and then we discuss the results for the subsamples of nonfamily managers ($n= 99$), family managers and founders ($n= 53$) and family managers ($n= 36$).

5.3.4.1. Management control mechanisms' fair design and procedural justice

First, we have found a medium effect size between goal setting participation and procedural justice in goal setting ($\beta= 0.391$, $p < 0.000$, $f^2= 0.212$) and between goal setting formality and procedural justice in goal setting ($\beta= 0.264$, $p < 0.001$, $f^2= 0.102$).

Additionally, the results indicate to a strong positive association between participation in performance evaluation and procedural justice ($\beta= 0.412$, $p < 0.000$, $f^2= 0.271$) and between formality in performance evaluation and procedural justice in performance evaluation ($\beta= 0.415$, $p < 0.000$, $f^2= 0.271$).

These results are consistent with the procedural justice and management controls literature that indicates these design characteristics as determinants of procedural justice (Hartmann & Slapničar, 2009, 2012; Langevin & Mendoza, 2013; Van der Heyden et al., 2005). Participative and formal management control mechanisms are positively related to procedural justice perceptions since they are consistent with procedural justice norms (Langevin & Mendoza, 2013; Leventhal et al., 1980). Participation in the goal setting process has a strong association with procedural justice than formality, while in performance evaluation both coefficients are similar.

When we look at the sample of 120 respondents (composed by medium and large firms), the effect size is higher between formality and procedural justice in goal setting (0.307 , $p <$

0.000, $f^2 = 0.160$) if compared to the 152 respondents' sample. Therefore, we confirm statistically the hypotheses H1a and H1b (see Table 36).

Finally, participation and formality in management control mechanisms and the control variables explain together 51% and 63% of procedural justice, respectively in goal setting and performance evaluation processes, which are considered high R-squares.

5.3.4.2. Management control mechanisms' fair design and stewardship

We have found a positive statistically significant small effect of participation in goal setting ($\beta = 0.226$, $p < 0.005$, $f^2 = 0.073$) and participation in performance evaluation ($\beta = 0.212$, $p < 0.032$, $f^2 = 0.051$) on stewardship identification. This result is also aligned with the sample of medium and large family businesses ($n = 120$).

Additionally, at the individual level of stewardship, participative management control mechanisms were positively associated to stewardship identification, while no association was found for formality. As we discussed in the hypothesis section, there has been empirical evidence that participation foster managers pro-organizational attitudes (such as identification) both in the management accounting literature (De Baerdemaeker & Bruggeman, 2015) as well as in the family business literature (Henssen et al., 2014). On the other hand, the results of the association between formality and pro-organizational attitudes and behaviors have been mixed which Hartmann and Slapničar (2012) propose that it might depend on the firms' context (e.g., level of uncertainty).

Additionally, we have found a statistically significant and positive association between formality and participation in goal setting and stewardship-oriented culture. The results indicate a small effect of both participation in goal setting ($\beta = 0.186$, $p < 0.033$, $f^2 = 0.048$) and formality in goal setting ($\beta = 0.216$, $p < 0.010$, $f^2 = 0.069$) on stewardship-oriented culture. However, the results do not show statistically significant associations between performance evaluation fair design characteristics and stewardship-oriented culture. These results are also consistent with the sample of medium and large family businesses ($n = 120$).

Participation has been conceptualized as a necessary condition for stewardship-oriented culture, which has been discussed regarding involvement-oriented, collectivist and low power distance management culture (Davis et al., 1997; Donaldson & Davis, 1991; Neubaum et al., 2017). Additionally, formality may enhance transparency of the firm's goals to managers, which

is considered relevant to a stewardship culture (Simon et al., 2012). Therefore, we partially confirm statistically the following hypotheses H2a, H2b, H3a, and H3b (see Table 36).

5.3.4.3. Procedural justice and stewardship

Moreover, the results indicate that managers' perceptions of procedural justice in goal setting is positively associated with stewardship-oriented culture ($\beta = 0.243$, $p < 0.009$, $f^2=0.060$) and stewardship identification ($\beta = 0.301$, $p < 0.01$, $f^2=0.098$). In contrast, procedural justice in performance evaluation is not statistically significant associated with stewardship in both individual and organizational levels. In the sample of medium and large firms ($n= 120$) the coefficients of association between goal setting procedural justice and stewardship lose statistical significant at 5% significance level. These results are also consistent with the findings of the association between participation and formality with stewardship.

Therefore, we partially confirm statistically hypothesis H4a and H4b by showing that fair management control mechanisms enhance manager's stewardship identification (Lubatkin et al., 2007; Pieper, 2010) and a collective, professional and supportive environment in the family firm (Van der Heyden et al., 2005; Zahra et al., 2008). Goal setting process seems to be crucial management mechanisms in family firms since it relates to pro-organizational and collectivist attitudes and culture (Van der Heyden et al., 2005; Zahra et al., 2008). These findings indicate that is important to segregate manager's perceptions about procedural justice related to different mechanisms (Hartmann & Slapničar, 2012) since we show they have different associations to managers attitudes and also to the family firm's culture.

Management control mechanisms' fairness design, managers procedural justice perceptions and the control variables explain together 59% of the variance of the stewardship-oriented culture and 61% of the variance in stewardship identification, which are considered high R-squares.

Table 36**Structural Model – Part I**

		Controls				Sample 152					Sample 120				Sample 99 (nonfamily managers)			
		β	P Values	f2	R2ad	β	P Values	f2	R2ad	VIF	β	P Values	f2	R2ad	β	P Values	f2	R2ad
GS_part -> GS_pj	H1a					0.391	0.000	0.212	0.513	1.54	0.371	0.000	0.214	0.553	0.335	0.000	0.174	0.569
GS_form -> GS_pj	H1b					0.264	0.001	0.102		1.45	0.307	0.000	0.160		0.367	0.000	0.218	
Family -> GS_pj		0.06	0.43	0.00	0.24	0.026	0.729	0.001		1.26	0.025	0.750	0.001					
Tier -> GS_pj		0.11	0.15	0.01		0.031	0.613	0.002		1.27	0.045	0.532	0.004		0.076	0.237	0.014	
MLMV -> GS_pj		0.48	0.00	0.30		0.264	0.000	0.124		1.19	0.289	0.003	0.166		0.261	0.012	0.139	
PE_part -> PE_pj	H1a					0.412	0.000	0.271	0.633	1.76	0.425	0.000	0.292	0.624	0.445	0.000	0.413	0.716
PE_form -> PE_pj	H1b					0.415	0.000	0.271		1.79	0.412	0.000	0.272		0.456	0.000	0.411	
Family -> PE_pj		0.05	0.53	0.00	0.15	-0.025	0.629	0.001		1.26	-0.080	0.217	0.014					
Tier -> PE_pj		0.08	0.32	0.01		0.093	0.095	0.020		1.22	0.135	0.027	0.041		0.096	0.111	0.033	
MLMV -> PE_pj		0.38	0.00	0.17		0.111	0.059	0.029		1.17	0.084	0.185	0.017		0.067	0.294	0.014	
GS_part -> STEW_iden	H2a					0.226	0.005	0.073	0.605	1.894	0.238	0.007	0.093	0.639	0.248	0.010	0.089	0.613
PE_part -> STEW_iden	H2a					0.212	0.032	0.051		2.402	0.196	0.056	0.048		0.392	0.003	0.148	
GS_form -> STEW_iden	H3a					0.060	0.491	0.006		1.735	0.114	0.233	0.022		0.161	0.141	0.038	
PE_form -> STEW_iden	H3a					-0.092	0.353	0.010		2.282	-0.056	0.585	0.004		0.035	0.793	0.001	
GS_pj -> STEW_iden	H4a					0.301	0.001	0.098		2.518	0.223	0.075	0.051		0.162	0.133	0.027	
PE_pj -> STEW_iden	H4a					0.025	0.804	0.001		3.075	0.015	0.883	0.000		-0.109	0.436	0.009	
Family -> STEW_iden		0.31	0.00	0.11	0.34	0.190	0.001	0.073		1.345	0.216	0.002	0.106					
Founder -> STEW_iden		-0.35	0.00	0.17		-0.168	0.002	0.058		1.324	-0.165	0.009	0.060		-0.073	0.302	0.011	
r_superior -> STEW_iden		0.12	0.13	0.02		0.060	0.300	0.007		1.323	0.034	0.572	0.003		0.049	0.452	0.006	
MLMV -> STEW_iden		0.38	0.00	0.22		0.118	0.068	0.027		1.391	0.181	0.018	0.067		0.083	0.334	0.014	

Note 1. Classification of Cohen (1988): small effect ($f^2 = 0.02$), medium effect ($f^2 = 0.15$) and large effect ($f^2 = 0.35$)

Note 2. Sample n=152 is composed of all respondents. Sample 120 consists of private medium and large family firms with family ownership higher than 50%.

Note 3. The parameters that were estimated to evaluate model fit were: (i) sample 152 (SRMR - Saturated Model= 0.053, SRMR - Estimated Model = 0.070); (ii) sample 120 (SRMR - Saturated Model= 0.058, SRMR - Estimated Model= 0.073).

Table 36

Structural Model – Part II

		Controls				Sample 152					Sample 120				Sample 99 (nonfamily managers)			
		β	P Values	f2	R2ad	β	P Values	f2	R2ad	VIF	β	P Values	f2	R2ad	β	P Values	f2	R2ad
GS_part -> STEW_cult	H2b					0.186	0.033	0.048	0.587	1.90	0.205	0.028	0.069	0.640	0.180	0.090	0.042	0.561
PE_part -> STEW_cult	H2b					0.125	0.211	0.017		2.44	0.051	0.654	0.003		0.099	0.494	0.008	
GS_form -> STEW_cult	H3b					0.216	0.010	0.069		1.76	0.250	0.008	0.110		0.278	0.019	0.101	
PE_form -> STEW_cult	H3b					0.068	0.512	0.005		2.28	0.120	0.271	0.020		0.062	0.671	0.004	
GS_pj -> STEW_cult	H4b					0.243	0.009	0.060		2.55	0.222	0.071	0.051		0.187	0.113	0.032	
PE_pj -> STEW_cult	H4b					0.067	0.458	0.004		3.10	0.086	0.386	0.007		0.134	0.366	0.011	
Family -> STEW_cult		0.23	0.00	0.05	0.24	0.117	0.032	0.026		1.36	0.105	0.097	0.026					
ownership -> STEW_cult		0.06	0.37	0.01		0.015	0.792	0.001		1.12	-0.073	0.210	0.015		0.020	0.783	0.001	
Founder -> STEW_cult		-0.26	0.00	0.08		-0.057	0.361	0.006		1.33	-0.042	0.525	0.004		-0.055	0.470	0.006	
r_superior -> STEW_cult		0.10	0.22	0.01		0.053	0.365	0.006		1.33	0.073	0.238	0.012		0.072	0.356	0.011	
MLMV -> STEW_cult		0.36	0.00	0.17		0.041	0.603	0.003		1.39	0.112	0.163	0.026		-0.001	0.990	0.000	

Note 1. Classification of Cohen (1988): small effect ($f^2 = 0.02$), medium effect ($f^2 = 0.15$) and large effect ($f^2 = 0.35$)

Note 2. Sample n=152 is composed of all respondents. Sample 120 consists of private medium and large family firms with family ownership higher than 50%.

Note 3. The parameters that were estimated to evaluate model fit were: (i) sample 152 (SRMR - Saturated Model= 0.053, SRMR - Estimated Model = 0.070); (ii) sample 120 (SRMR - Saturated Model= 0.058, SRMR - Estimated Model= 0.073).

5.3.5. Results and discussion - subsamples

In this following subsections we explore the results for the subsamples, which are presented in Table 37.

5.3.5.1. Management control mechanisms' fair design and procedural justice

The conclusions for the full samples can be also extended to nonfamily managers subsample. We have found a statistically significant positive association between participation ($\beta = 0.354$, $p < 0.000$, $f^2=0.201$) and formality in goal setting ($\beta = 0.358$, $p < 0.000$, $f^2=0.207$) with procedural justice in goal setting. And also between participation ($\beta = 0.463$, $p < 0.000$, $f^2=0.445$) and formality in performance evaluation ($\beta = 0.442$, $p < 0.000$, $f^2=0.378$) with procedural justice in performance evaluation. Therefore, for nonfamily managers both participation and formality are considered determinants for procedural justice perceptions (Langevin & Mendoza, 2013; Leventhal et al., 1980).

In contrast, if we analyze family managers and founders, the results point to a nonsignificant association between formality in goal setting and participation in performance evaluation, respectively with procedural justice in goal setting and procedural justice in performance evaluation. However, a positive and significant association was found between participation in goal setting and procedural justice in goal setting ($\beta = 0.439$, $p < 0.000$, $f^2=0.276$) and between formality in performance evaluation and procedural justice in performance evaluation ($\beta = 0.373$, $p < 0.008$, $f^2=0.157$).

These results partially support the management accounting literature conceptualization (Hartmann & Slapničar, 2009, 2012; Langevin & Mendoza, 2013) and family firm's empirical evidence (Van der Heyden et al., 2005). Family managers may put more emphasis in participating in the definition of the firms' goals and measuring performance based on objective and quantitative metrics. They might not emphasize formality in goal setting and participation in performance evaluation as a fair design characteristic because this could put in risk the family authority and autonomy in the firm (Barnett & Kellermanns, 2006; Kellermanns, Eddleston, & Zellweger, 2012; Miller & Le Breton-Miller, 2014). Actually, family managers might participate in goal setting probably through family management control mechanisms such as relational mechanisms (Mustakallio, Autio, & Zahra, 2002), and not through formal corporate management control mechanisms.

5.3.5.2. Management control mechanisms' fair design and stewardship

Furthermore, the relationship between management control mechanisms' fair characteristics and stewardship are different if we analyze the subsamples of nonfamily and family managers (Table 37). For nonfamily managers, participation in goal setting ($\beta = 0.247$, $p < 0.011$, $f^2 = 0.088$) and participation in performance evaluation ($\beta = 0.398$, $p < 0.003$, $f^2 = 0.156$) are positively and statistically significant associated to stewardship identification, which evidence is aligned with previous literature (Henssen et al., 2014; Heyden et al., 2005). Hence, for nonfamily managers, participation and formality can foster their sense of membership in the firm.

For family managers, we have found that formality in performance evaluation ($\beta = -0.389$, $p < 0.041$, $f^2 = 0.243$) is negatively and statistically significantly associated with stewardship identification. Family managers' stewardship identification may have other antecedents related to the family member emotional attachment in the firm and altruistic relationships fostered by the owning family (Davis et al., 2010; James et al., 2017; Verbeke & Kano, 2012).

Additionally, for nonfamily managers, formality in goal setting is positively associated to stewardship-oriented culture ($\beta = 0.265$, $p < 0.029$, $f^2 = 0.094$). This indicates that the controlling family stimulates a professional, collectivist and long-term culture in the family firm (Barnett & Kellermanns, 2006; Neubaum et al., 2017). Professional values might be considered significant for nonfamily managers perceptions about stewardship (Simon et al., 2012). For family managers and founders, it is the participation design characteristic ($\beta = 0.363$, $p < 0.010$, $f^2 = 0.194$). These results for family managers can be due to the limitation of subsample size, but also indicate that family managers may place more value in trust and informal management control mechanisms (James et al., 2017; Madison et al., 2016) by which they foster a stewardship-oriented culture in the firm.

5.3.5.3. Procedural justice and stewardship

When we analyze the subsamples, procedural justice does not seem to be an antecedent of stewardship for nonfamily managers, both on the individual and organizational level at a 5% significance level. In contrast, family managers indicate a high effect size for this relationship specifically related to procedural justice in goal setting and stewardship identification ($\beta =$

0.641, $p < 0.000$, $f^2 = 0.615$). This might be an evidence of multicollinearity between the items of procedural justice in goal setting and stewardship identification for family managers and founders sample. In this sense, despite management mechanisms' fair characteristics were significantly positively associated, procedural justice perception may not be considered an antecedent of stewardship in the subsample of family and nonfamily managers.

5.3.6. Mediation results

Hypothesis H5 indicates the indirect effect of management control mechanisms' fair design on stewardship through procedural justice perceptions, following previous literature conceptualizations (Hartmann & Slapničar, 2009, 2012; Sieger, Bernhard, & Frey, 2011). We present these results in Table 38.

Our results show that participation in goal setting has a significant indirect association with stewardship-oriented culture ($\beta = 0.095$, $p < 0.05$) and stewardship identification ($\beta = 0.118$, $p < 0.01$), through procedural justice. In addition, formality of goal setting has an indirect significant effect on stewardship identification ($\beta = 0.080$, $p < 0.05$). Therefore, these results indicate that procedural justice in goal setting acts as a mediator between goal setting fair design characteristics and stewardship, while no association was found for performance evaluation mechanism.

Table 39 presents the summary of the research hypotheses and empirical evidence for the samples of family firms and subsamples of respondents divided regarding their family affiliation.

Table 37

Structural Model – Comparison about the subsamples of managers' family affiliation

		Sample (n=152)				Nonfamily managers (n=99)				Family managers and founders (n=53)				Family managers (n=36)			
		β	P Values	f2	R2ad	P Values	f2	R2	R2ad	β	P Values	f2	R2ad	β	P Values	f2	R2ad
GS_part -> GS_pj	H1a	0.407	0.000	0.249	0.518	0.354	0.000	0.201	0.568	0.440	0.000	0.276	0.425	0.496	0.000	0.478	0.527
GS_form -> GS_pj	H1b	0.257	0.001	0.098		0.358	0.000	0.207		0.069	0.573	0.007		0.188	0.220	0.057	
MLMV -> GS_pj		0.266	0.000	0.127		0.255	0.011	0.132		0.356	0.126	0.200		0.304	0.307	0.169	
PE_part -> PE_pj	H1a	0.411	0.000	0.266	0.631	0.463	0.000	0.445	0.710	0.301	0.169	0.097	0.476	0.253	0.302	0.068	0.415
PE_form -> PE_pj	H1b	0.417	0.000	0.268		0.442	0.000	0.378		0.373	0.008	0.157		0.441	0.006	0.198	
MLMV -> PE_pj		0.110	0.052	0.029		0.064	0.336	0.012		0.200	0.189	0.070		0.096	0.574	0.014	
GS_part -> STEW_iden	H2a	0.263	0.003	0.091	0.568	0.247	0.011	0.088	0.615	0.194	0.197	0.055	0.607	0.114	0.494	0.025	0.691
PE_part -> STEW_iden	H2a	0.201	0.052	0.042		0.398	0.003	0.156		-0.083	0.584	0.010		-0.113	0.539	0.026	
GS_form -> STEW_iden	H3a	0.034	0.687	0.002		0.158	0.152	0.037		-0.008	0.950	0.000		-0.177	0.256	0.068	
PE_form -> STEW_iden	H3a	-0.077	0.471	0.006		0.038	0.763	0.002		-0.254	0.111	0.086		-0.389	0.041	0.243	
GS_pj -> STEW_iden	H4a	0.377	0.000	0.150		0.191	0.071	0.039		0.641	0.000	0.615		0.790	0.000	0.965	
PE_pj -> STEW_iden	H4a	0.028	0.767	0.001		-0.108	0.442	0.009		0.107	0.518	0.013		0.195	0.319	0.053	
MLMV -> STEW_iden		0.108	0.111	0.021		0.076	0.356	0.011		0.183	0.253	0.068		0.302	0.260	0.229	
GS_part -> STEW_cult	H2b	0.216	0.013	0.063	0.580	0.184	0.092	0.043	0.570	0.363	0.010	0.194	0.610	0.133	0.468	0.030	0.643
PE_part -> STEW_cult	H2b	0.119	0.216	0.015		0.101	0.466	0.009		0.173	0.262	0.042		0.112	0.579	0.022	
GS_form -> STEW_cult	H3b	0.188	0.021	0.053		0.265	0.029	0.094		0.122	0.280	0.029		-0.038	0.801	0.003	
PE_form -> STEW_cult	H3b	0.076	0.459	0.006		0.064	0.643	0.004		0.060	0.678	0.005		0.039	0.840	0.002	
GS_pj -> STEW_cult	H4b	0.279	0.002	0.085		0.215	0.083	0.044		0.264	0.104	0.105		0.609	0.001	0.497	
PE_pj -> STEW_cult	H4b	0.072	0.390	0.004		0.138	0.325	0.013		-0.092	0.524	0.009		-0.023	0.913	0.001	
MLMV -> STEW_cult		0.041	0.582	0.003		-0.004	0.963	0.000		0.206	0.261	0.087		0.163	0.447	0.058	

Note 1. Classification of Cohen (1988): small effect ($f^2 = 0.02$), medium effect ($f^2 = 0.15$) and large effect ($f^2 = 0.35$)

Note 2. Sample n=152 is composed of all respondents. Sample 120 consists of private medium and large family firms with family ownership higher than 50%.

Note 3. Grey cells may indicate a multicollinearity problem between the latent variables supposed to occur in the family managers' subsample. We present the results of family manager's subsample as an exploratory analysis, since this sample size is insufficient for SEM analysis.

Table 38

Indirect effects - Models presented in Table 36

	Sample 152		Sample 120		Sample 99	
	β	P Values	β	P Values	β	P Values
GS_part -> STEW_cult	0.095	0.020	0.082	0.097	0.063	0.166
GS_part -> STEW_iden	0.118	0.003	0.083	0.094	0.054	0.139
PE_part -> STEW_cult	0.028	0.485	0.036	0.446	0.060	0.395
PE_part -> STEW_iden	0.010	0.799	0.006	0.888	-0.048	0.447
GS_form -> STEW_cult	0.064	0.062	0.068	0.131	0.069	0.211
GS_form -> STEW_iden	0.080	0.035	0.068	0.131	0.059	0.216
PE_form -> STEW_cult	0.028	0.456	0.035	0.388	0.061	0.374
PE_form -> STEW_iden	0.010	0.798	0.006	0.885	-0.050	0.465

Note 1. Sample n=152 is composed of all respondents. Sample 120 consists of private medium and large family firms with family ownership higher than 50%. Sample 99 contains just nonfamily managers.

Table 39

Summary of the results

Hypotheses	Full Model			Subsamples model		
	n=152	n=120	Nonfamily managers (n=99)	Nonfamily managers (n=99)	Founders and Family Managers (n=53)	Family Managers (n=36)
<u>Procedural Justice</u>						
H1a: GS_part -> GS_pj	(+)***	(+)***	(+)***	(+)***	(+)***	(+)***
H1a: PE_part -> PE_pj	(+)***	(+)***	(+)***	(+)***	No	No
H1b: GS_form -> GS_pj	(+)***	(+)***	(+)***	(+)***	No	No
H1b: PE_form -> PE_pj	(+)***	(+)***	(+)***	(+)***	(+)***	(+)***
<u>Stewardship identification</u>						
H2a: GS_part -> STEW_iden	(+)***	(+)***	(+)***	(+)***	No	No
H2a: PE_part -> STEW_iden	(+)**	(+)*	(+)***	(+)***	No	No
H3a: GS_form -> STEW_iden	No	No	No	No	No	No
H3a: PE_form -> STEW_iden	No	No	No	No	No	(-)**
H4a: GS_pj -> STEW_iden	(+)***	No	No	No	(+)***	(+)***
H4a: PE_pj -> STEW_iden	No	No	No	No	No	No
<u>Stewardship-oriented culture</u>						
H2b: GS_part -> STEW_cult	(+)**	(+)**	(+)*	(+)*	(+)***	No
H2b: PE_part -> STEW_cult	No	No	No	No	No	No
H3b: GS_form -> STEW_cult	(+)**	(+)**	(+)**	(+)**	No	No
H3b: PE_form -> STEW_cult	No	No	No	No	No	No
H4b: GS_pj -> STEW_cult	(+)**	(+)*	No	(+)*	(+)*	(+)***
H4b: PE_pj -> STEW_cult	No	No	No	No	No	No

Note 1. Statistical significance (Yes/No and $p < 0.01$ ***, $p < 0.05$ ** and $p < 0.10$ *)

Note 2. In the full model, we add all the control variables (Table 5.10) while in the subsamples model we add just the MLMV control variable (Table 5.11).

5.4. Conclusions

This study discussed management control mechanisms' design and procedural justice as situational mechanisms of stewardship in family firms (Davis et al., 1997; Neubaum et al., 2017). We argue that traditional agency mechanisms, such as goal setting and performance evaluation, might stimulate stewardship if they are aligned with procedural justice values (Lubatkin et al., 2007), regarding participation and formality fair design characteristics (Langevin & Mendoza, 2013).

Despite previous literature has been proposing that trust and social mechanisms maximizes the benefits of stewardship in organizations (Davis et al., 1997; Madison et al., 2016), this paper provides insights on how typical agency mechanisms are associated with stewardship in the family business context, by considering the procedural justice lens (Lubatkin et al., 2007). We support this understanding in the management accounting literature, due to the vast empirical evidence that shows that procedural justice is an antecedent of many pro-organizational attitudes and behaviors in organizations such as trust, identification, and commitment (Cugueró-Escofet & Rosanas, 2013; Hartmann & Slapničar, 2009; Langevin & Mendoza, 2013).

In this sense, we address the claim raised by Neubaum et al. (2017) that the antecedents of stewardship are still a conjecture, complementing empirical studies that have been developed recently in the context of family businesses (James et al., 2017; Madison et al., 2016; Madison et al., 2017). Aiming to expand the scope of these discussions, we considered both individual and organizational levels of stewardship, which were respectively named as manager's stewardship identification (Craig et al., 2011; James et al., 2017; Madison et al., 2017) and stewardship-oriented culture (Zahra et al., 2008).

Particularly, we show that participation and formality characteristics of goal setting as well as manager's procedural justice perceptions about goal setting are positively associated with stewardship-oriented culture (Hernandez, 2012; Neubaum et al., 2017; Simon, Marquès, Bikfalvi, & Muñoz, 2012; Zahra et al., 2008). Participative and formal goal setting mechanism seem to foster stewardship-oriented culture, what we did not find for performance evaluation mechanism (Ferreira & Otley, 2009; Malmi & Brown, 2008; Otley, 1999).

About manager's stewardship identification, our results indicate the relevance of participation in goal setting and in performance evaluation enhancing this attitude of managers in the family firm. Therefore, our results reveal the positive association between participative management control mechanisms and stewardship identification, which was also supported by

prior studies (Henssen et al., 2014; Hernandez, 2012; Madison et al., 2016). However, we find that formality in management control mechanisms can not be considered an antecedent of manager's stewardship identification. We also indicate that manager's perceptions about procedural justice are an important antecedent of stewardship identification and stewardship-oriented culture in family firms (Neubaum et al., 2017; Vallejo, 2009; Van der Heyden et al., 2005).

Furthermore, we have also explored the results based on the manager's family affiliation, since previous literature has revealed that it is a relevant characteristic to determine manager's attitudes and behaviours in family firms (Corbetta & Salvato, 2004; Davis et al., 2010; Verbeke & Kano, 2012), despite recent empirical evidence that questioned these assumptions (Hiebl, 2015; James et al., 2017; Madison et al., 2016). By analysing the subsamples, we suggest that family and nonfamily managers perceive the antecedents of stewardship differently in relation to stewardship identification and stewardship-oriented culture, while prior literature indicates that they can both behave as stewards in the family firm (Henssen et al., 2014; James et al., 2017). For nonfamily managers, formality in goal setting is a significant antecedent for stewardship-oriented culture while for family managers it is the level of manager's participation in this process. Additionally, we show that for nonfamily managers, participation in both goal setting and performance evaluation is positively associated with stewardship identification, while for family managers and founders we did not find statistically significant results.

Despite these contributions, this study has a series of limitations that should be highlighted. Our paper relied on a single respondent survey design which implicates in the possibility of response bias especially with regards to subjective measures such as procedural justice and stewardship identification (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Podsakoff, MacKenzie, & Podsakoff, 2012). The respondent's bias can also be extended to the organizational level constructs such as stewardship-oriented culture (Podsakoff et al., 2003; 2012). Additionally, this study comprises a cross-sectional design which also limits causal interpretations (Ittner, 2014; Van der Stede, 2014). We diagnosed common method bias by applying Harman test (Podsakoff et al., 2003; 2012) and treated this concern statistically by adding a common method variance control variable in the model (Chin et al., 2013; Nitzl, 2016). We also used validated instruments in the family business and management accounting literature and used a set of control variables in the model, related to the family firm and respondents characteristics.

Moreover, our sample is composed of small, medium and large Brazilian family firms. We addressed some differences by excluding small-sized firms, public listed firms and those firms with high dispersion in ownership (in a sample composed by 120 respondents), and the results of these analyses do not show significant differences from the whole sample (152 respondents). Our sample comprises most of the Brazilian regions, but regarding representativeness, it captured just the firms in EMIS database. Since Brazil is a large and heterogeneous country which implicates a population of more than 12 million small and medium firms we consider that these results may not generalize for all Brazilian family businesses, but mainly to medium and large family firms from manufacturing industry that are installed in the Southeast and South regions.

Finally, we highlight further avenues of research. First, participation has been treated as a conceptual dimension of stewardship in family firms (Davis et al., 1997; Hernandez, 2012; Neubaum et al., 2017), but future research could also address manager's participation in different management control mechanisms such as strategic planning and budgeting systems. For example, each management control mechanism has different time horizons, serves to different purposes in the Management Control Systems (Malmi & Brown, 2008), which might have a different influence over managers' attitudes and behaviors.

Second, we suggest that formality might be an important fair dimension of management control mechanisms, which influence stewardship. Different from the agency perspective of monitoring mechanism attributed to formal management practices, we suggest that formality has other dimensions that are needed to develop a collective and professional culture in family firms (Simon et al., 2012). For example, previous literature in management accounting has pointed that formal management control mechanisms can also enhance transparency, learning and innovation in organizations (Adler & Borys, 1996; Ahrens & Chapman, 2004; Chapman & Kihn, 2009; Simons, 1995), which might foster pro-organizational attitudes and behaviors in the family firm (Davis et al., 1997; Hernandez, 2012; Neubaum et al., 2017).

Third, as procedural justice perceptions might not be straightforward in terms of dimensions and management practices, we suggest future studies to treat these perceptions for different management control mechanisms such as goal setting, performance evaluation and rewarding (Hartmann & Slapničar, 2009, 2012; Voußem, Kramer, & Schäffer, 2016). Additionally, as we have suggested, procedural justice might be one of the antecedents of stewardship, whether more empirical evidence is still needed in the family firm field (Neubaum et al., 2017; Van der Heyden et al., 2005). We propose that future studies take into account manager's family affiliation characteristic as a critical dimensions that differentiate how

managers perceive fairness design characteristics and procedural justice in management control mechanisms, as well as their attitudes and behaviours in the family firm (James et al., 2017; Madison et al., 2016; Verbeke & Kano, 2012).

Fourth, with regards to stewardship, although some developments have been made in the field, there is opportunity for research about the antecedents and the consequences of stewardship in family firms (James et al., 2017; Madison et al., 2017; Neubaum et al., 2017). We suggest future scholars to investigate how management control mechanisms are associated with stewardship attitudes and behaviours (James et al., 2017; Madison et al., 2016; Neubaum et al., 2017) and whether stewardship influence firms competitive advantage in family firms (Eddleston & Kellermanns, 2007; Madison et al., 2017; Zahra et al., 2008).

6. STUDY 3: FAMILY INVOLVEMENT IN MANAGEMENT AND FAMILY FIRM'S PERFORMANCE: THE MODERATING ROLE OF STEWARDSHIP-ORIENTED CULTURE

6.1. Introduction

In the family business literature there are two opposing views on family firm performance depending on whether a family involvement can be considered as an advantage or as a disadvantage to the firm (Chirico & Bau', 2014; Miller & Le Breton-Miller, 2006; Rutherford, Kuratko, & Holt, 2008). One view considers that family firms outperform nonfamily firms because of the distinctive characteristics that derive from the controlling family involvement in the family firm, for example, regarding absent or limited agency costs (Anderson & Reeb, 2003; Rutherford et al., 2008). The second stream looks at the adverse effects that controlling family involvement brings to the firm such as nepotism, entrenchment and unprofessional management (Lubatkin, Schulze, Ling, & Dino, 2005; Rutherford et al., 2008), which negatively affects the family firms' performance.

Garcia-Castro and Aguilera (2014) present a summary of studies that suggest both positive and negative relationships between a family involvement in the business and family firm performance, and further argue that empirical evidence are still inconclusive (Garcia-Castro & Aguilera, 2014; González-Cruz & Cruz-Ros, 2016). Prior studies have used several elements for a family involvement in the business (Garcia-Castro & Aguilera, 2014) such as ownership (e.g., the percentage of family ownership), management control (e.g., board of directors composition), management (e.g., family CEO and Top Management Team composition), and experience (e.g., generations involved in the firm).

Therefore, despite the existence of a whole stream of literature on family firm performance, previous studies have used different samples, different definitions of family firms (Miller, Minichilli, & Corbetta, 2013; Sciascia & Mazzola, 2008), and especially insufficient attention to mediating and moderating variables, which can explain the mixed findings of the literature (Chirico & Bau', 2014; González-Cruz & Cruz-Ros, 2016; Kim & Gao, 2013). In fact, researchers propose that the association between family involvement in business and performance might be indirect rather than direct (Chrisman, Steier, & Chua, 2008) or that may be moderated by other family firm's capabilities (Dibrell & Moeller, 2011; Garcia-Castro & Aguilera, 2014; Kim & Gao, 2013).

The familiness framework has contributed to this discussion about firm's performance since it provides a broader perspective on the internal resources of the organization and their relationship with the firm's competitive advantage (Dawson & Mussolino, 2014; Habbershon & Williams, 1999). In prior studies, familiness has been conceptualized as a factor driving the family firm's performance (Rutherford et al., 2008; Sciascia & Mazzola, 2008). Familiness is considered a "fuzzy" concept (Irava & Moores, 2010; Moores, 2009) which is traditionally grounded on the resource-based view (RBV) theory.

In the family business literature, RBV offers a lens to discuss firm characteristics and distinctiveness (Irava & Moores, 2010) in which familiness is considered a central concept. Familiness is defined as the "*idiosyncratic firm-level bundle of resources and capabilities a particular firm has because of the systematic interaction between family, its individual members and the business*" (Irava & Moores, 2010, p. 131). The level of family involvement in the group of top executives might reflect the level of familiness (Minichilli, Corbetta, & MacMillan, 2010). Following Minichilli et al. (2010) we focus on two components included in this involvement, they are (i) whether the CEO is a family manager and (ii) the proportion of family managers in the Top Management Team (Ensley & Pearson, 2005; Minichilli et al., 2010).

However, familiness construct might be more complex than captured by family involvement in business proxies (Irava & Moores, 2010; Pearson, Carr, & Shaw, 2008). Prior literature suggests numerous sources of family firm's competitive advantage which has been addressed by the familiness studies (Dawson & Mussolino, 2014; Irava & Moores, 2010; Pearson et al., 2008).

Therefore, in this study, we also rely on the stewardship literature (e.g., Davis et al., 1997), specifically on the stewardship-oriented culture construct (Zahra et al., 2008). The stewardship theory portrays that managers develop a pro-organizational behavior (Davis et al., 1997) fostering motivation, care, and loyalty among individuals (Ward, 1988). In the family business context, stewardship is linked to reciprocal altruism, trust and collectivism (Davis et al., 2010, 1997; Eddleston, Kellermanns, & Sarathy, 2007).

Stewardship has been considered as a capability for family firm's dynamics by multiple studies (Dibrell & Moeller, 2011; Eddleston & Kellermanns, 2007; Zahra et al., 2008). There is evidence in the literature that a stewardship-oriented culture influences the family firm's capacity to react to strategic contingencies (Eddleston et al., 2007; Zahra et al., 2008). Eddleston, Kellermanns, and Zellweger (2012, pp. 349–350) argue that "*when stewardship is present in family firms, a competitive advantage may arise due to organizational members' collectivistic attitudes, psychological commitment, and trustworthy behaviors*". Hence, the

stewardship theory can expand the understanding about how a family involvement influence the family firm performance.

A stewardship-oriented culture might assist a family firm to deploy the familiness resources, related to the family involvement in the business. In this sense, we propose that a stewardship-oriented culture might enhance the association between family involvement in management and firm's performance, supporting the bright side of family involvement in the firm (Lubatkin et al., 2005; Minichilli et al., 2010; Villalonga & Amit, 2006). Based on the assumptions about the attitudes and behaviors of family managers in terms of stewardship (James et al., 2017), a stewardship-oriented culture might maximize the benefits of the presence of a family CEO and family managers in the Top Management Team (TMT) and lead into a higher level of firm's performance (Miller & Le Breton-Miller, 2006).

We use this previous conceptualization and consider stewardship-oriented culture as a capability that moderates the association between a family involvement in management and a family firm's financial performance (Corbetta & Salvato, 2004; Eddleston, Kellermanns, & Sarathy, 2007; Miller & Le Breton-Miller, 2006). Hence, based on the previous discussion grounded on the familiness construct (Dawson & Mussolino, 2014; Irava & Moores, 2010; Pearson, Carr, & Shaw, 2008) and on the stewardship literature (Dibrell & Moeller, 2011; Eddleston & Kellermanns, 2007; Miller & Le Breton-Miller, 2006; Zahra, Hayton, Neubaum, Dibrell, & Craig, 2008), we propose the following research question: **Does a stewardship-oriented culture moderates the association between the level of family involvement in management and a family firm's performance?**

This study contributes to the familiness and stewardship literature in multiple ways. First, prior empirical literature has focused on comparing family firms' versus nonfamily firms' performance, however so much is still to be uncovered regarding the investigation of the drivers of family firms' performance with inconclusive empirical evidence (e.g., Garcia-Castro & Aguilera, 2014). The reason could be the use of different samples, performance measures, or modeling strategies (Chrisman, Chua, & Sharma, 2005; Garcia-Castro & Aguilera, 2014; Rutherford et al., 2008; Sciascia & Mazzola, 2008).

Additionally, we use a sample of medium and large family firms from an emerging economy (Kim & Gao, 2013) and consider different performance measures for a family firm's performance (Garcia-Castro & Aguilera, 2014). These issues are important since previous studies focused mainly on family businesses from Europe and United States, which might have different institutional and cultural characteristics that influence family firms behaviors and were based in self-reported performance measures.

Furthermore, consistent with previous studies, we discuss a nonlinear association between the ratio of family managers in the TMT and firms' performance (Minichilli et al., 2010; Sciascia & Mazzola, 2008). Particularly, we extend the discussion of familiness by introducing the stewardship-oriented culture construct that has been conceptualized to be associated with firm's competitive advantage (Corbetta & Salvato, 2004; Dibrell & Moeller, 2011; Eddleston et al., 2007; Zahra et al., 2008). Previous literature that focused on the resource-based view in the family firm field investigated the influence of stewardship orientation on strategic flexibility (Zahra et al., 2008), innovativeness (Dibrell & Moeller, 2011), and entrepreneurial orientation (Eddleston et al., 2012). Only a few studies have investigated how stewardship is associated with family firm's performance (Alves, Gama, & Augusto, 2017; Eddleston et al., 2007).

Our results suggest that a stewardship-oriented culture moderates the association between family involvement in management regarding the presence of a family CEO and family firm's financial performance. However, differently from what we hypothesized (Dibrell & Moeller, 2011; Eddleston et al., 2007; Miller & Le Breton-Miller, 2006), a low level of stewardship-oriented culture, combined with the presence of a family CEO, is associated with a higher level of family firm's performance. Particularly, based on the analysis of the moderation effect, the slope of a low level of stewardship-oriented culture is sharp while a high level of stewardship-oriented culture is flat through the presence of a family or a nonfamily CEO. This indicates that for a low level of stewardship the presence of a family CEO leads to a high level of firm performance while in a high level of stewardship this influence is weaker in which the presence of a family CEO might not lead to competitive advantage. However, we did not find a statistically significant moderation effect for the relationship between the ratio of family managers in the TMT and family firm's performance.

Additionally, we analyzed the two components of family involvement that are (i) the presence of a family CEO and (ii) the ratio of family managers in the TMT (Ensley & Pearson, 2005; Minichilli et al., 2010). First, we show that the presence of a family CEO is positively associated with the firm's performance, which result is consistent with all three profitability measures (ROA, ROE, and ROS). This result is aligned to previous empirical evidence that a family leadership in the family firm drives a higher level of performance (González-Cruz & Cruz-Ros, 2016; Minichilli et al., 2010).

Second, the association between the ratio of family managers in the TMT and firm's performance has shown conflicting evidence. Different from what we have hypothesized, we have found a nonlinear U-shape association between the ratio of family managers in the TMT

and firm's performance. This finding indicates that the mix of family and nonfamily managers in the TMT drive a low level of performance, due to the tensions and conflicts that may occur between these two groups, which discussion is related to the 'faultlines' concept (Minichilli et al., 2010).

This paper is organized in four sections including this introduction (Section 1). In Section 2, we present the conceptual model and research hypotheses. In Section 3, we show the results of both descriptive statistics and Structural Equation Modeling. In Section 4, we present the discussions, conclusions and highlight the limitations of this study.

6.2. Theoretical model and hypotheses

Our theoretical model is based on the familiness construct, particularly on the family's involvement in management and on the stewardship-oriented culture. We investigate whether a stewardship-oriented culture moderates the relationship between family involvement in management and a family firm's financial performance. We present the research model in Figure 12.

Figure 12. Theoretical model – Paper 3

As indicated by the resource-based view (RBV), firms can have unique resources that enable them to develop a competitive advantage, which is expected to influence their performance positively (Barney, 1991; Habbershon, Williams, & MacMillan, 2003). These firm-particular resources can be both tangible and intangible, and therefore they are not accessible to all organizations (Amit & Schoemaker, 1993). Amit and Schoemaker (1993)

divided the previous called resources (Barney, 1991) in resources and capabilities, which can be approached from different angles. These authors define resources as “*stocks of available factors that are owned or controlled by the firm*” and capabilities as their “*capacity to deploy these resources*” (Amit & Schoemaker, 1993, p. 35). We discuss family involvement in management as a resource and stewardship-oriented culture as a capability in the umbrella of familiness construct (Dibrell & Moeller, 2011; Habbershon, Williams, & MacMillan, 2003; Irava & Moores, 2010).

Family involvement in management is divided into two components. There is the family affiliation of the CEO and the ratio of family managers in the TMT (Ensley & Pearson, 2005; Minichilli et al., 2010). Following previous literature (González-Cruz & Cruz-Ros, 2016; Sciascia & Mazzola, 2008), we also consider whether the relationship between the presence of family managers in the family firm’s TMT is linear or nonlinear.

A stewardship-oriented culture reflects the extent to which the family firm “*had adopted stewardship-oriented practices, like encouraging collectivism, or providing an environment of care and concern for employees*” (Zahra et al., 2008, p. 1048) what is expected to enhance the positive association between family involvement in management and performance, considering a moderating effect and not a mediating or direct effect such as addressed by previous studies (Alves et al., 2017; Eddleston, Kellermanns, & Sarathy, 2007).

A firm’s financial performance is a highly complex construct. In this study, we discuss three accounting performance measures that are ROA, ROE, and ROS available in the EMIS® database¹¹, which were adjusted based on the median of the industry (De Massis, Kotlar, Campopiano, & Cassia, 2015; Garcia-Castro & Aguilera, 2014). They are more desirable than perceptual measures (e.g., Eddleston & Kellermanns, 2007) since they represent real financial performance (Eddleston, Kellermanns, & Sarathy, 2007). In the next subsections, we present the underlying hypotheses of this model, which are supported by the previous literature. The overall model includes three main hypotheses and two moderator hypotheses.

6.2.1. The relationship between family CEO and firm performance

Chief Executive Officers (CEO) are leaders of the Top Management Team and are considered the most powerful actors in the organization (Finkelstein & Hambrick, 1996;

¹¹ EMIS database website (<https://www.emis.com/who-we-are>). EMIS operates in and reports on countries where high reward goes hand-in-hand with high risk. We bring you time-sensitive, hard-to-get, relevant news, research and analytical data, peer comparisons and more for over 125 countries emerging markets.

Finkelstein, Hambrick, & Cannella, 2008). They have the greatest power to influence the family firms' performance (González-Cruz & Cruz-Ros, 2016; Minichilli et al., 2010) because they dominate all the firm's decision processes, such as the delegation of responsibilities in the firm's governance structure. The power and dominance of a family CEO is expected to be higher than nonfamily CEO's, what can be reflected on the speed in which complex decisions related to acquisitions and long term investments, for example, are made (Miller & Le Breton-Miller, 2006), which can be beneficial to the family firm performance.

We argue that a family CEO increases a family firm's performance since they are expected to behave altruistically in the firm (Chrisman, Chua, & Sharma, 2005; Schulze, Lubatkin, & Dino, 2003) and add a long-term view to the decision-making process (Miller & Le Breton-Miller, 2006). Family CEO's usually have lengthy job tenures and long-term investment horizons which engender superior performance (Miller & Le Breton-Miller, 2006).

Additionally, a family CEO could reduce conflicts with respect to aligning managers' and principals' goals in the firm and reducing agency costs (Jensen & Meckling, 1976; Madison, Holt, Kellermanns, & Ranft, 2016). A family CEO is expected to behave as a steward in the firm, presenting a high level of loyalty, commitment and identification (Davis, Allen, & Hayes, 2010; Henssen, Voordeckers, Lambrechts, & Koironen, 2014) which has been conceptualized as positively related to performance (Miller & Le Breton-Miller, 2006). Minichilli et al. (2010) consider the presence of a family CEO as the bright side of family involvement.

We suggest that the presence of a family CEO is positively associated with a family firm's financial performance (Anderson & Reeb, 2003; González-Cruz & Cruz-Ros, 2016; Minichilli et al., 2010; Villalonga & Amit, 2006). Based on previous literature, we hypothesize that:

H1: There is a positive association between the presence of a family CEO and family firm's financial performance

6.2.2. The relationship between the ratio of family managers in the TMT and firm performance

Previous empirical literature has suggested that family involvement in management, captured by the number of family managers present in the Top Management Team has been positively associated with family firm performance (Rutherford et al., 2008; Sciascia, Mazzola,

& Chirico, 2013). These studies indicate that the benefits of a high level of family involvement in management is related to reduced agency problems, lower agency costs and reduced information asymmetry (Chrisman, Chua, & Litz, 2004; Miller & Le Breton-Miller, 2006).

With respect to manager's behavioral assumptions, family managers are expected to behave as stewards generating an individual sense of identification, loyalty, commitment, trust, among other pro-organizational attitudes and behaviors (Davis et al., 2010, 1997; Neubaum, Thomas, Dibrell, & Craig, 2017), which are expected to be positively related to higher family firm's performance. Therefore, we hypothesize that:

H2a: There is a positive association between the ratio of family managers in the TMT and family firm's financial performance.

However, recent studies have suggested conflicting evidence about the linear association of family involvement in management, regarding the presence of family managers in the Top Management Team, and firm's performance (Garcia-Castro & Aguilera, 2014; González-Cruz & Cruz-Ros, 2016; Rutherford et al., 2008). These conflicting findings motivated researchers to discuss nonlinear relationships of family involvement in management and a firm's performance (De Massis, Kotlar, Campopiano, & Cassia, 2015; González-Cruz & Cruz-Ros, 2016; Mazzola, Sciascia, & Kellermanns, 2013; Minichilli et al., 2010; Sciascia & Mazzola, 2008).

These studies reveal that the benefits of the family ratio in the TMT on firm's performance are significant just after a certain level of family manager's participation in the TMT (Sciascia & Mazzola, 2008). However, when the family involvement in management achieves a high degree, it brings negative effects on performance.

These negative effects are related to typical family agency costs (Madison, Holt, Kellermanns, & Ranft, 2016; Villalonga & Amit, 2006) such as nepotism (Jaskiewicz, Uhlenbruck, Balkin, & Reay, 2013), managerial entrenchment (Chrisman, Chua, & Sharma, 2005) and asymmetric altruism (Cherchem, 2017) that could lead to conflicts in the family firm. We argue that in extreme levels of family involvement in management the within-family agency costs resulting from family managers' conflicts and emotional involvement to the firm, exceeds the benefits of reduced traditional principal-agent costs (Chirico & Bau', 2014; Chrisman, Chua, & Litz, 2004; Lubatkin, Schulze, Ling, & Dino, 2005).

Moreover, a high level of family managers in the TMT leads to a lower diversity of expertise in the TMT (Patel & Cooper, 2014; Vandekerckhof, Steijvers, Hendriks, & Voordeckers, 2015), which might also negatively influence a firm's performance. The presence

of nonfamily managers could bring diverse perceptions and expertise to the TMT that are complimentary to those from family managers, what might improve the family firm's decision-making process (Chrisman, Memili, & Misra, 2014; De Massis et al., 2015; Vandekerckhof et al., 2015) such as formal strategic and financial planning (Filbeck & Lee, 2000; Speckbacher & Wentges, 2012). In sum, as family managers are constrained by the lack of professional competencies (Dyer, 1989), a high level of family managers in the TMT might negatively influence the firm's performance.

Moreover, family managers may attribute more value to nonmonetary (e.g., emotions, status) in detriment to monetary returns what could have an impact on the firm's financial performance. Therefore, in a high level of family managers in the TMT, the controlling family will determine decision-making based on the preservation of their socioemotional wealth in detriment of financial goals (Chrisman, Chua, Pearson, & Barnett, 2012; Gomez-Mejia, Cruz, Berrone, & De Castro, 2011; Kellermanns, Eddleston, & Zellweger, 2012; Miller & Le Breton-Miller, 2014).

In sum, Sciascia and Mazzola (2008, p. 337) argue that:

the benefits of FIM induced by lower agency costs, the stewardship effect, and lower compensation are not so evident until a certain level of FIM is reached, while, on the other hand, the negative effects deriving from conflict between family managers, nonmonetary goal orientation, reduced professional competencies, and less social capital are more likely to manifest themselves once the FIM percentage approaches 100. (Sciascia & Mazzola, 2008, p. 337)

Complementarily, González-Cruz & Cruz-Ros (2016, p. 1453) propose that “*an equal mix of family and non-family managers bring all the benefits of low agency cost, high and healthy stewardship behavior, and managerial competences*”. Therefore, we hypothesize that:

H2b: There is an inverted-U-shaped association between the ratio of family managers in the TMT and family firm's financial performance.

6.2.3. Moderation of stewardship-oriented culture

Stewardship theory is considered relevant for understanding the performance of family firms (Corbetta & Salvato, 2004; Zahra et al., 2008). There are several arguments to consider the stewardship-oriented culture as a capability of the family firm (Dibrell & Moeller, 2011; Eddleston & Kellermanns, 2007). Looking at the resource-based view, a firm's culture cannot be easily copied by the firm's competitors in the sense that is a complex issue. Moreover, the stewardship-oriented culture positively relates to the level of communication and cohesion

among managers, as well as pro-organizational behaviors which all create sustainable and inimitable competitive advantage to the firm (Miller & Le Breton-Miller, 2006; Zahra et al., 2008).

The sources of competitive advantage of family firms arise from the differential relational advantages of family-managed firms that are related to the stewardship lens (Dibrell & Moeller, 2011; Eddleston & Kellermanns, 2007; Eddleston, Kellermanns, & Sarathy, 2007; Zahra et al., 2008). Additionally, the prevalence of altruism, collectivism, and trust in the relationships among family firm's managers (Corbetta & Salvato, 2004) may foster their efforts to achieve a better performance in the firm. Finally, the benefits of stewardship rely on a long-term investment perspective (Davis et al., 1997; Eddleston et al., 2012), which can lead a superior performance. For instance, Kim and Gao (2013) shows how a firm's family-longevity goals moderate the relationship between family involvement in management and performance.

Prior literature has conceptualized that a stewardship-oriented culture leads to higher strategic flexibility (Zahra et al., 2008), entrepreneurial orientation (Eddleston et al., 2012), however little support about how it is related to performance. Based on the stewardship literature (Davis et al., 2010; James et al., 2017; Madison et al., 2016), we argue that stewardship-oriented culture might enhance the bright side of family involvement's influence in performance. A stewardship-oriented culture will support the positive influence of family managers' stewardship-like behaviors on the firm's performance. Therefore, the degree to which a stewardship-oriented culture exists in the firm might influence the relationship between FIM and performance.

Family managers are expected to behave as stewards in the family firm, presenting a high level of commitment, identification, among others pro-organizational attitudes (Corbetta & Salvato, 2004; Davis et al., 2010). James et al. (2017, p. 264) discuss that stewardship mechanisms "*will empower pro-organizational attitudes and behaviors amongst the majority of steward-like family managers*" while agency mechanisms will dampen their motivation. A stewardship governance is aligned to a culture that fulfills manager's needs for autonomy, belonging and competence (James et al., 2017; Zahra et al., 2008).

Particularly, we propose that a stewardship-oriented culture maximizes the benefits of a presence of a family CEO and of a high ratio of family managers in the TMT, enhancing the positive effect of familiness on the family firm's financial performance. This is aligned with Miller & Le Breton-Miller (2006, p. 74), which suggests that stewardship "*can engender far-sighted contributions that feed distinctive capabilities and produce superior performance*".

Therefore, we hypothesize that:

H3: The positive association between the presence of a family CEO and family firm's financial performance will be stronger for higher levels of stewardship-oriented culture than for lower levels of stewardship-oriented culture.

H4: The positive association between the ratio of family managers in the TMT and family firm's financial performance will be stronger for higher levels of stewardship-oriented culture than for lower levels of stewardship-oriented culture.

We present the theoretical model and hypothesis in Figure 13.

Figure 13. Theoretical model and hypotheses – Paper 3

6.3. Data analyses

First, we report the descriptive statistics of the variables and then discuss the Structural Equation Modeling results.

6.3.1. Descriptive Statistics

We present the descriptive statistics in Table 40. We show the firm's financial information in 2016 in terms of Total Operating Revenue, Total Assets, and Total Equity. The firm's Total Assets ranges between 13.91 million Brazilian reais (BRL¹²) to 7.38 billion reais. We use the logarithm of Total assets as one of our control variables.

¹² In 16th September 2017, US\$ 1 BRL was equivalent to BRL 3.125 dollars.

Table 40

Sample descriptive statistics

Variable	n	Mean	Std. Dev.	Min	Max
TOpRev_16 (million BRL)	59	592.93	748.48	2.38	4228.95
Tassets_16 (million BRL)	59	667.84	1083.77	13.91	7385.26
Tequity_16 (million BRL)	59	304.17	420.88	3.93	2648.36
ROA_16 (%)	59	5.42	12.12	-27.05	71.27
ROE_16 (%)	59	5.19	51.41	-263.76	187.03
ROS_16 (%)	59	4.85	9.69	-28.20	37.55
familyCEO	59	0.78	-	0	1
pfamilyTMT	58	0.39	0.32	0	1
size_TMT	58	6.21	3.55	2	20
d_ownership_100%	58	0.66	-	0	1
STEWcult_1. Your company allows managers to reach their full potential contributing to the company.	59	3.83	1.04	1	5
STEWcult_2. Your company promotes a professionally orientated workplace.	59	3.71	1.09	1	5
STEWcult_3. Your company inspires managers' care and loyalty to the company.	59	4.25	0.77	2	5
STEWcult_4. Your company encourages a collectivist culture focused on business group rather than an individualistic culture.	59	3.93	1.06	1	5

Note 1: TOpRev_16 (Total Operating Revenue in 2016), Tassets_16 (Total Assets in 2016), Tequity_16 (Total Equity in 2016), ROA_16 (Return on Assets in 2016), ROE_16 (Return on Equity in 2016), ROS_16 (Return on Sales in 2016), familyCEO (it is a dummy variable that indicates 1 if a family manager is the CEO and 0 otherwise), pfamilyTMT (it is the ratio of family manager in the Top Management Team), size_TMT (size of the Top Management Team), d_ownership_100% (it is a dummy variable that indicates 1 if the controlling family holds 100% of the shares/quotas and 0 otherwise), and STEWcult_1 to STEWcult_4 are stewardship-oriented culture indicators.

Note 2. From the 59 family firms, the ISI Emerging Markets database (EMIS) indicates that the financial information of 35 of the firms were audited and 24 were not audited in 2016.

Note 3. In 16th September 2017, US\$ 1 was equivalent to BRL 3.125.

Additionally, we present the statistics of the performance measures that are ROA (Return on Assets), ROE (Return on Equity) and ROS (Return on Sales). The average scores for those variables are respectively 5.42%, 5.19%, and 4.85%. The highest standard deviation and range can be seen in ROE measure. It is important to mention that in our analyses we used the adjusted-industry performance measure, which was estimated by subtracting the firm's performance from the median in the industry. We present additional information about the industries and firms financial information in Appendix 5.

Table 40 also shows the level of family involvement in management regarding the presence of a family CEO (familyCEO) and percentage of family managers in the TMT (pfamilyTMT). In about 78% of the firms in our sample, the family firm is managed by a family CEO, and in average 39% of the TMT is composed of family managers. We also present

information about the family involvement in ownership, which in 66% of the firms in our sample the controlling family owns 100% of the shares/quotas.

With respect to stewardship-oriented culture, respondents indicate the highest score that for the firm inspires managers' care and loyalty to the company (4.25) and the lowest score for the assertive related to the promotion of a professionally orientated workplace (3.75).

6.3.2. Structural Equation Modeling

We tested the theoretical path model using Partial Least Squares (PLS) which is a technique of structural equation modeling that is recommended for small-size samples and complex models. We present the results of the measurement model followed by the results of the structural model.

6.3.2.1. Measurement model assessment

We validated the measurement model for the analysis of reflective measurement models following Hair et al. (2013). The evaluation of reflective models includes convergent validity, internal consistency, and discriminant validity which we conducted exclusively for a stewardship-oriented culture latent variable since the other variables are single-item constructs in which the latent variable is the indicator itself. For the convergent validity we analyze the outer loadings and Average Variance Extracted (AVE) and for internal consistency, the Composite Reliability (CR). We analyzed the discriminant validity using Fornell-Larcker criterion (Fornell & Larcker, 1981) and cross-loadings (level indicators), respectively in Table 41 and Table 42. Our results meet the criteria suggested by Hair et al. (2013) about the validation of the measurement model.

The correlation coefficients presented in Table 41 indicate preliminary associations between the quadratic variable of the percentage of family managers in the top management team and stewardship-oriented culture. Table 41 also shows a negative correlation between stewardship and financial performance (Return on Assets), which is statistically significant at 5% significance level. This result contradicts previous literature that stewardship is positively correlated to family firm's performance (Chrisman, Chua, & Litz, 2004).

Table 41

First-Order Latent Variable Correlations (n=59)

	1	2	3	4	5	6	7	8
1. familyCEO	1							
2. pfamily TMT	0.437	1						
3. pfamily TMT ²	-0.079	0.463	1					
4. M_familyCEO_STEW	-0.055	-0.035	0.096	1				
5. M_FIM_STEW	-0.034	0.312	0.234	0.484	1			
6. STEW_cult	0.038	-0.071	0.244	0.127	0.026	0.83		
7. Performance (AdjROA)	0.118	-0.107	0.046	-0.285	-0.162	-0.185	1	
8. size	-0.274	-0.272	-0.121	0.002	-0.161	0.031	-0.018	1
AVE	-	-	-	-	-	0.898	-	-
CR	-	-	-	-	-	0.689	-	-

Note 1. Grey cells indicate correlations between dimensions of the same theoretical constructs.

Note 2: Composite Reliability (CR) and Average Variance Extracted (AVE)

Note 3: 1. familyCEO (it is a dummy variable that indicates 1 if a family manager is the CEO and 0 otherwise); 2. pfamilyTMT (it is the ratio of family manager in the Top Management Team); 3. pfamilyTMT² (quadratic effect of pfamilyTMT); 4. M_familyCEO_STEW (moderation based on the interaction between familyCEO and STEW_cult); 5. M_pfamilyTMT_STEW (moderation based on the interaction between pfamilyTMT and STEW_cult); 6. STEW_cult (stewardship-oriented culture); 7. Performance (Industry-adjusted ROA); and 8. Size (the logarithm of total assets).

Note 4. Model with ROA dependent variable. The same conclusion can be found for ROE and ROS dependent variable.

Table 42

Crossloadings between the items and the constructs (n=59)

	1	2	3	4	5	6	7	8
d_familyCEO	1	0.437	-0.079	-0.055	-0.034	0.038	0.118	-0.274
perc_family_TMT	0.437	1	0.463	-0.035	0.312	-0.071	-0.107	-0.272
perc_family_TMT ²	-0.079	0.463	1	0.096	0.234	0.244	0.046	-0.121
M_familyCEO_STEW	-0.055	-0.035	0.096	1	0.484	0.127	-0.285	0.002
M_FIM_STEW	-0.034	0.312	0.234	0.484	1	0.026	-0.162	-0.161
STEWcult_1	0.188	-0.048	0.135	0.037	0.02	0.756	-0.048	-0.072
STEWcult_2	0.085	-0.029	0.213	-0.003	-0.044	0.897	-0.217	0.022
STEWcult_3	-0.09	-0.029	0.296	0.263	0.069	0.825	-0.127	0.008
STEWcult_4	0.005	-0.15	0.139	0.169	0.09	0.836	-0.127	0.091
ROAadj	0.118	-0.107	0.046	-0.285	-0.162	-0.185	1	-0.018
ln_assets	-0.274	-0.272	-0.121	0.002	-0.161	0.031	-0.018	1

Note 1: 1. familyCEO (it is a dummy variable that indicates 1 if a family manager is the CEO and 0 otherwise); 2. pfamilyTMT (it is the ratio of family manager in the Top Management Team); 3. pfamilyTMT² (quadratic effect of pfamilyTMT); 4. M_familyCEO_STEW (moderation based on the interaction between familyCEO and STEW_cult); 5. M_pfamilyTMT_STEW (moderation based on the interaction between pfamilyTMT and STEW_cult); 6. STEW_cult (stewardship-oriented culture); 7. Performance (Adjusted-industry ROA); and 8. Size (the logarithm of total assets).

Note 2: We used Size as a control variable which is measured as the logarithm of the firm's assets.

6.3.2.2. Structural model analyses

Once the validation of the measurement model has been completed, we conducted the analysis of the structural model (Hair Jr. et al., 2013). In the first step, we analyzed multicollinearity based on Variance Inflation Factor (VIF), which is expected to be lower than five. Second, we analyzed the structural path coefficients statistical significance of effects by running the bootstrapping procedure (1,000 subsamples, bias-corrected confidence level and two-tailed tests). Additionally, the determination of R^2 , which indicates the percentage of a dependent variable variance that is explained by the independent variables and moderators in the model. We present the results for the adjusted coefficient of determination (R_{adj}^2) as suggested by Hair et al. (2013). The fourth parameter is the effect size coefficient (f^2), which indicates the extent to which the independent variable has a substantial impact on the dependent variable. We follow the criteria suggested by Cohen (1988): small effect ($f^2 = 0.02$); medium effect ($f^2 = 0.15$); and large effect ($f^2 = 0.35$). Hair et al. (2016) mention that f^2 lower than 0.02 indicates no relationship. To test for the moderation, Hair et al. (2013) suggest the following parameters, based Kenny (2016): small effect ($f^2 = 0.005$); medium effect ($f^2 = 0.01$); and large effect ($f^2 = 0.025$).

Our model has a quadratic effect of the ratio of family managers in the TMT (pfamilyTMT^2) and a moderator variable that is stewardship-oriented culture. Hair et al. (2013) indicate three different procedures for moderator and quadratic effects. The three procedures are the product indicator approach, the two-step approach, and the orthogonal approach. Hair et al. (2013) explain that the two-step approach can be used to reveal the significance of the moderating effect while the orthogonal approach is recommended to minimize estimation bias and maximize prediction. Due to the objectives of this study, we run the analyses based on the orthogonal and on the two-step approaches. The orthogonalization approach uses standard residuals as indicators for the interaction term while the two-stage approach uses the product of the latent scores of the moderator and the independent variable as the indicator of the interaction term (Hair Jr. et al., 2013).

Additionally, we run three different models based on three different financial industry-adjusted performance measures (e.g., De Massis, Kotlar, Campopiano, & Cassia, 2015) that are (i) Return on Assets (ROA), (ii) Return on Equity (ROE) and (iii) Return on Sales (ROS). The difference in the models are based on the significance of the associations, but they provide consistency when we analyze the signs, independent of statistical significance. We present the results in Table 43, Table 44 and Table 45.

Table 43

Structural model – Dependent variable industry-adjusted Return on Assets (ROA)

			<u>QUADRATIC</u>			<u>MODERATOR</u>			
	Hypotheses	β	P Values	f ²	R ² adj	β	P Values	f ²	R ² adj
<u>MODERATOR: TWO STAGE APPROACH</u>									
familyCEO -> PerformanceROA	H1	0.280	0.122	0.058	0.011	0.370	0.031	0.113	0.145
pfamilyTMT -> PerformanceROA	H2a	-0.334	0.118	0.067		-0.504	0.003	0.150	
pfamilyTMT^2 -> PerformanceROA	H2b	0.185	0.333	0.037		0.328	0.012	0.121	
M_familyCEO_STEW -> PerformanceROA	H3					-0.352	0.065	0.098	
M_pfamilyTMT_STEW -> PerformanceROA	H4					0.087	0.627	0.006	
STEW_cult -> PerformanceROA						-0.293	0.207	0.097	
size -> PerformanceROA		-0.005	0.950	0.000		0.017	0.873	0.000	
<u>MODERATOR: ORTHOGONAL APPROACH</u>									
familyCEO -> PerformanceROA	H1	0.280	0.120	0.058	0.011	0.377	0.019	0.120	0.187
pfamilyTMT -> PerformanceROA	H2a	-0.231	0.093	0.044		-0.293	0.017	0.089	
pfamilyTMT^2 -> PerformanceROA	H2b	0.185	0.352	0.037		0.305	0.014	0.111	
M_familyCEO_STEW -> PerformanceROA	H3					-0.377	0.017	0.131	
M_pfamilyTMT_STEW -> PerformanceROA	H4					0.049	0.793	0.002	
STEW_cult -> PerformanceROA						-0.322	0.196	0.124	
size -> PerformanceROA		-0.005	0.952	0.000		0.023	0.820	0.001	

Note 1: Classification of Cohen (1988): small effect ($f^2 = 0.02$), medium effect ($f^2 = 0.15$) and large effect ($f^2 = 0.35$).

Note 2: familyCEO (it is a dummy variable that indicates 1 if a family manager is the CEO and 0 otherwise); pfamilyTMT (it is the ratio of family manager in the Top Management Team); pfamilyTMT^2 (quadratic effect of pfamilyTMT); M_familyCEO_STEW (moderation based on the interaction between familyCEO and STEW_cult); M_pfamilyTMT_STEW (moderation based on the interaction between pfamilyTMT and STEW_cult); STEW_cult (stewardship-oriented culture); PerformanceROA (Industry-Adjusted ROA); and 8. Size (the logarithm of total assets).

Note 3: We used Size as a control variable which is measured as the logarithm of the firm's assets.

Table 44

Structural model – Dependent variable industry-adjusted Return on Equity (ROE)

		<u>QUADRATIC</u>				<u>MODERATOR</u>			
	Hypotheses	β	P Values	f²	R²adj	β	P Values	f²	R²adj
<u>MODERATOR: TWO STAGE APPROACH</u>									
familyCEO -> PerformanceROE	H1	0.421	0.016	0.139	0.062	0.427	0.016	0.144	0.140
pfamilyTMT -> PerformanceROE	H2a	-0.154	0.502	0.015		-0.099	0.677	0.006	
pfamilyTMT^2 -> PerformanceROE	H2b	0.068	0.678	0.005		0.071	0.641	0.006	
M_familyCEO_STEW -> PerformanceROE	H3					0.179	0.538	0.039	
M_pfamilyTMT_STEW -> PerformanceROE	H4					-0.296	0.106	0.045	
STEW_cult -> PerformanceROE						-0.250	0.437	0.060	
size -> PerformanceROE		0.064	0.546	0.004		0.062	0.547	0.005	
<u>MODERATOR: ORTHOGONAL APPROACH</u>									
familyCEO -> PerformanceROE	H1	0.421	0.018	0.139	0.062	0.515	0.001	0.267	0.314
pfamilyTMT -> PerformanceROE	H2a	-0.116	0.456	0.012		-0.141	0.327	0.025	
pfamilyTMT^2 -> PerformanceROE	H2b	0.068	0.676	0.005		0.119	0.377	0.023	
M_familyCEO_STEW -> PerformanceROE	H3					-0.510	0.015	0.274	
M_pfamilyTMT_STEW -> PerformanceROE	H4					0.073	0.671	0.004	
STEW_cult -> PerformanceROE						-0.287	0.357	0.130	
size -> PerformanceROE		0.064	0.545	0.004		0.081	0.407	0.010	

Note 1: Classification of Cohen (1988): small effect ($f^2 = 0.02$), medium effect ($f^2 = 0.15$) and large effect ($f^2 = 0.35$).

Note 2: familyCEO (it is a dummy variable that indicates 1 if a family manager is the CEO and 0 otherwise); pfamilyTMT (it is the ratio of family manager in the Top Management Team); pfamilyTMT^2 (quadratic effect of pfamilyTMT); M_familyCEO_STEW (moderation based on the interaction between familyCEO and STEW_cult); M_pfamilyTMT_STEW (moderation based on the interaction between pfamilyTMT and STEW_cult); STEW_cult (stewardship-oriented culture); PerformanceROE (Industry-Adjusted ROE); and 8. Size (the logarithm of total assets).

Note 3: We used Size as a control variable which is measured as the logarithm of the firm's assets.

Table 45

Structural model – Dependent variable industry-adjusted Return on Sales (ROS)

	<u>QUADRATIC</u>					<u>MODERATOR</u>			
	Hypotheses	β	P Values	f ²	R ² adj	β	P Values	f ²	R ² adj
<u>MODERATOR: TWO STAGE APPROACH</u>									
familyCEO -> PerformanceROS	H1	0.415	0.033	0.145	0.128	0.554	0.010	0.316	0.316
pfamilyTMT -> PerformanceROS	H2a	-0.525	0.005	0.188		-0.760	0.000	0.427	
pfamilyTMT^2 -> PerformanceROS	H2b	0.219	0.142	0.058		0.389	0.002	0.211	
M_familyCEO_STEW -> PerformanceROS	H3					-0.455	0.067	0.182	
M_pfamilyTMT_STEW -> PerformanceROS	H4					0.224	0.252	0.043	
STEW_cult -> PerformanceROS						-0.294	0.188	0.122	
size -> PerformanceROS		-0.077	0.662	0.006		-0.045	0.755	0.003	
<u>MODERATOR: ORTHOGONAL APPROACH</u>									
familyCEO -> PerformanceROS	H1	0.415	0.027	0.145	0.128	0.522	0.004	0.303	0.366
pfamilyTMT -> PerformanceROS	H2a	-0.404	0.001	0.154		-0.465	0.000	0.290	
pfamilyTMT^2 -> PerformanceROS	H2b	0.219	0.133	0.058		0.351	0.003	0.189	
M_familyCEO_STEW -> PerformanceROS	H3					-0.478	0.002	0.268	
M_pfamilyTMT_STEW -> PerformanceROS	H4					0.209	0.254	0.039	
STEW_cult -> PerformanceROS						-0.345	0.171	0.185	
size -> PerformanceROS		-0.077	0.667	0.006		-0.031	0.830	0.001	

Note 1: Classification of Cohen (1988): small effect ($f^2 = 0.02$), medium effect ($f^2 = 0.15$) and large effect ($f^2 = 0.35$).

Note 2: familyCEO (it is a dummy variable that indicates 1 if a family manager is the CEO and 0 otherwise); pfamilyTMT (it is the ratio of family manager in the Top Management Team); pfamilyTMT^2 (quadratic effect of pfamilyTMT); M_familyCEO_STEW (moderation based on the interaction between familyCEO and STEW_cult); M_pfamilyTMT_STEW (moderation based on the interaction between pfamilyTMT and STEW_cult); STEW_cult (stewardship-oriented culture); PerformanceROS (Industry-Adjusted ROS); and 8. Size (the logarithm of total assets).

Note 3: We used Size as a control variable which is measured as the logarithm of the firm's assets.

6.3.2.3. The relationship between family CEO and firm performance

Table 43, Table 44 and Table 45 show a statistically significant and positive association between family CEO and family firm's performance, regarding the orthogonal approach and the following dependent variables, ROA ($\beta = 0.377$, $p < 0.019$, $f^2 = 0.120$), ROE ($\beta = 0.515$, $p < 0.001$, $f^2 = 0.267$) and ROS ($\beta = 0.522$, $p < 0.004$, $f^2 = 0.303$). This association was positively and statistically significant also for the two-stage approach moderation models.

This result is aligned with previous empirical evidence that a family CEO may behave altruistically and as steward (e.g., loyalty, commitment) serving the best interests of the principals (González-Cruz & Cruz-Ros, 2016; Miller & Le Breton-Miller, 2006; Minichilli et al., 2010). Aligned to empirical evidence from prior literature, we suggest that a family leadership, with respect to the CEO position, has a positive impact on the family firms' performance. Some authors interpret this association as the "bright side" of family involvement in the firm (Minichilli et al., 2010; Villalonga & Amit, 2006).

6.3.2.4. The relationship between the ratio of family managers in the TMT and firm performance

A linear effect between the ratio of family managers in the TMT on family firm's performance was validated just for the quadratic model which has ROA and ROS as the dependent variables. This result, contrarily from what we have hypothesized in H2a, indicates a negative association between the ratio of family managers in the TMT on family firm's performance. Minichilli et al. (2010) hypothesized that increasing the proportion of family managers in the TMT they would enhance misappropriation of firm's resources (Mazzola et al., 2013) and subverts the CEO's potential altruist to the family's noneconomic interests, which they argue as the dark side of family involvement (Lubatkin, Schulze, Ling, & Dino, 2005; Naldi, Cennamo, Corbetta, & Gomez-Mejia, 2013).

However we have found more support in our results for a nonlinear association between the percentage of family managers in the Top Management Team and financial performance. Therefore, when we analyze the models with the moderators, our results contradict hypothesis H2a (Rutherford, Kuratko, & Holt, 2008) by showing a nonlinear association between the ratio of family managers in the Top Management Team and financial performance. Our results also contradict hypothesis H2b regarding the inverted-U-shaped association.

In Figure 14 and Figure 15, we demonstrate that a predominance of one subgroup, being family managers or nonfamily managers in the TMT, is related to a higher level of Return on Assets and Return on Sales. On the other hand, when the TMT mix both family and nonfamily managers, the graphs show a lower level of performance regarding ROA and ROS. These results contradict the hypothesis about an inverted-U-shaped association and support a U-shaped relationship, such as suggested by previous literature (González-Cruz & Cruz-Ros, 2016; Minichilli et al., 2010; Sciascia & Mazzola, 2008). Actually, a TMT composed exclusively by nonfamily managers present the highest level of performance (see Figure 14 and Figure 15).

Figure 14. Quadratic effect pfamilyTMT – dependent variable industry-adjusted ROA (orthogonal approach)

Figure 15. Quadratic effect pfamilyTMT – dependent variable industry-adjusted ROS (orthogonal approach)

However, this finding is also consistent with Minichilli et al. (2010) that indicates that the association between the percentage of family managers in the TMT and performance has a U-shape format in a sample of Italian small and medium family firms, and not an inverted-U-shape as we have hypothesized (Chirico & Bau', 2014; Sciascia & Mazzola, 2008). Minichilli et al. (2010, p. 217) claim that "*tensions and conflicts emerge when both 'principal' (owners and family members) and 'agents' (non-family managers) coexist in the same decision-making arena*".

In family firms, there are two basic subgroups that are family and nonfamily managers. While family managers share common values related to their relatives and emotional attachment to the firm, nonfamily managers share professional values and the feeling that they are outsiders from the family clan (Davis et al., 2010; Lubatkin et al., 2005; Verbeke & Kano, 2012). This argument is aligned to the 'faultlines' concept suggested by Minichilli et al. (2010), which determines that faultlines occur in a Top Management Team that is composed by both family and nonfamily managers. These 'faultlines' rely on the 'schisms' due to the presence of both family and nonfamily managers, which has been discussed in the TMT heterogeneity literature (Certo, Lester, Dalton, & Dalton, 2006; Lau & Murnighan, 1998). These 'schisms' can motivate conflicts between the subgroups of family and nonfamily managers, what would negatively impact their tasks' effectiveness and by consequence a family firm's performance.

6.3.2.5. Moderation of stewardship-oriented culture

The moderation effect was significant for the association between the presence of a family CEO and firm performance (H3) in the orthogonal approach models, regarding Return on Assets ($\beta = -0.377$, $p < 0.017$, $f^2 = 0.131$), Return on Equity ($\beta = -0.510$, $p < 0.015$, $f^2 = 0.274$), and Return on Sales ($\beta = -0.478$, $p < 0.002$, $f^2 = 0.268$) dependent performance variables. These results are similar to the results from the two-step approach model.

In Figure 16 and Figure 17 we show that firms without a family CEO that have a higher stewardship-oriented culture perform slightly better than those firms with a lower stewardship-oriented culture, concerning ROA and ROS. The difference is much representative with the presence of a family CEO, however different from what we have hypothesized. Therefore, a family firm that has a family CEO and a low level of stewardship-oriented culture perform much better than those that have a family CEO and a high level of stewardship-oriented culture.

Figure 16. Moderating effect of stewardship – orthogonal approach – dependent variable industry-adjusted ROA

Figure 17. Moderating effect of stewardship – orthogonal approach – dependent variable industry-adjusted ROS

Additionally, the slope in the graphs are much representative in a scenario of a low level of stewardship-oriented culture than a high level. Hence, having or not a family CEO might be more important in a low level of stewardship-oriented culture, in terms of family firm's financial performance. This finding contradicts previous literature that suggests that stewardship governance and culture improve the financial performance of family managed firms, since stewardship-oriented culture enhances the benefits of family manager's stewardship behaviors (James et al., 2017; Madison et al., 2016; Madison et al., 2017). In this

sense, we would expect that a family CEO that behaves as a steward would increasingly influence performance in a scenario of a high level of stewardship-oriented culture, which was not supported by our results.

Finally, the stewardship-oriented culture moderating effect on the association between the ratio of family managers in the TMT and family firm's performance was not statistically significant at 10% significance level, which result does not support hypothesis H4.

6.4. Discussion and conclusions

This study discusses the association between family involvement in management and family firm's financial performance (González-Cruz & Cruz-Ros, 2016; Minichilli et al., 2010; Rutherford et al., 2008; Sciascia & Mazzola, 2008) considering stewardship-oriented culture as a moderator of this relationship (Dibrell & Moeller, 2011). This paper combines insights from the stewardship literature with insights from the literature on family firm performance grounded in the familiness concept. Different from previous literature, we considered the moderation effect of stewardship-oriented culture in this relationship.

We found that family involvement in management is associated with family firm's performance, in particular for the presence of a family CEO that shows positive influence on the firm's financial performance, in the three performance measures used in this study (ROA, ROE, and ROS). This result is consistent with previous literature (González-Cruz & Cruz-Ros, 2016; Minichilli et al., 2010).

Additionally, the results for the association between the ratio of family managers in the TMT and family firms' performance suggest a nonlinear relationship. We showed a statistically significant association for ROA and ROS performance measures, specifically a U-shape relationship. Therefore, different from what we have hypothesized, but also consistent with prior empirical evidence (Minichilli et al., 2010) we indicate that the presence of just nonfamily managers or family managers in the TMT is positively associated to family firms' performance. We propose that conflicts and tensions between these subgroups of family and nonfamily managers might be avoided (Lubatkin et al., 2005; Minichilli et al., 2010). This is consistent with the discussion about 'faultlines', which main argument is that differences inside groups can motivate conflicts that damage a family firm's performance (Minichilli et al., 2010).

Finally, this study provides evidence that stewardship-oriented culture moderates the association between the presence of a family CEO and firm's performance. However, different

from our hypothesis (Eddleston et al., 2007; Miller & Le Breton-Miller, 2006), the results indicate that a low level of stewardship-oriented culture combined with the presence of a family CEO produces a higher level of performance (ROA, ROE and ROS). Particularly, for a lower level of stewardship-oriented culture, the presence of a family CEO is associated with higher firm's performance.

In a high level of stewardship, the presence of a family CEO might not bring a representative difference in the family firm's performance. We could argue that in a low level of stewardship-oriented culture, having a family CEO, which is expected to behave as a steward, might lead to competitive advantage since we show that it is related to a higher level of performance. However, we did not find support for the moderating effect of stewardship-oriented culture on the relationship between the ratio of family managers in the TMT and performance. This study provides elements to the discussion about managers' behaviors and management control mechanisms fit in family firms (James et al., 2017; Madison et al., 2016) and its influence on the firm's performance (Madison et al., 2017), which needs further investigation.

Despite the contributions that this paper provides, our findings are subject to some limitations. First, this study is developed based on cross-sectional data which combine survey data (family involvement in management and stewardship) with archival data (financial information). Due to this design, we are not concerned about common method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Podsakoff, MacKenzie, & Podsakoff, 2012). However, as we focus on cross-sectional data, our causal conclusions might have some limitations related to the timing that we developed the survey and the year that we considered the financial profitability measures (ROA, ROE, and ROS). We have no assurance that the family firm maintained the family involvement in management stable during the full 2016 year, regarding family CEO and the ratio of family managers in the TMT. However the tenure of top managers in family firms is expected to be higher than it is in nonfamily firms.

Also, our sample can be considered small and exclusively composed by Brazilian firms, which has limitation concerning generalization. Although we develop analyses with a small sample size ($n=59$), it is sufficient for Structural Equation Modeling in SmartPLS (see methodology section - Nitzl, 2016). Due to the complexity of information and the availability of archival data, we consider the sample relevant to the purposes of this study. Despite these considerations, the results show statistical significance aligned to previous literature. In addition, we work with financial information and indexes from which 35 from 59 family firms

published audited financial statements and with firms that have a high level of ownership concentrated in the controlling family's hands. This might be a characteristic of family firms from emerging economies (e.g., Kim & Gao, 2013) and it is an important issue since prior studies used ownership as one dimension of familiness construct.

Furthermore, we focused on three profitability measures that were ROA, ROE, and ROS, which were commonly used by previous research (e.g., De Massis et al., 2015; Garcia-Castro & Aguilera, 2014; Minichilli et al., 2010). The use of other measures such as total revenue growth (Rutherford et al., 2008) or indirect measures (Eddleston & Kellermanns, 2007; Eddleston et al., 2007) might suggest different results.

Based on these limitations we suggest future avenues of research. First, we used cross-sectional information for performance. As the effect of stewardship in performance might be in the long-term (Corbetta & Salvato, 2004), future studies could investigate these associations based on performance change measures such as a change in profitability or growth in total operating revenue (e.g., Rutherford et al., 2008). Indirect performance measures might also be used (e.g., González-Cruz & Cruz-Ros, 2016; Rutherford et al., 2008; Sciascia & Mazzola, 2008), besides their subjectivity, they can capture better a firm's performance, for example, in periods of economic crisis.

Additionally, as family firms have both financial and nonfinancial goals related to socioemotional wealth preservation (Berrone, Cruz, & Gomez-Mejia, 2012; Holt, Pearson, Carr, & Barnett, 2017), future studies might consider both financial and nonfinancial performance measures as dependent variables (Alves et al., 2017). We also recommend that future scholars employ another measure for stewardship such as stewardship climate (Neubaum et al., 2017), due to the complexity of this construct. Moreover, as familiness can be considered a complex construct, with many dimensions (Habbershon, Williams, & MacMillan, 2003; Irava & Moores, 2010), we suggest investigating how stewardship-oriented culture might moderate other constructs in the familiness umbrella (Habbershon et al., 2003; Irava & Moores, 2010).

Finally, longitudinal studies could provide a more robust view about how the familiness dimensions related to the family involvement in management influence the family firm's performance, that could capture the bright and dark side of family involvement in the firm in the long term (Lubatkin et al., 2005; Minichilli et al., 2010; Villalonga & Amit, 2006). The relationship between familiness and performance is complex to address and by using longitudinal data researchers can consider the moderating effect of stewardship-oriented culture also in the long-term perspective.

7. FINAL REMARKS

7.1. Ph.D. dissertation's story

We present, in Figure 18, the summary of the story presented in the three studies of the Ph.D. Despite they were presented in different sections, the three empirical studies can be structured as a chain with respect to the antecedents and consequences of management control mechanisms and stewardship in family firms. Our contribution to the management accounting area rests on the understanding that management control mechanisms are designed and used by family firms, which are affected by the controlling family's influence on the firm, and which also influence stewardship attitudes and behaviors of both family and nonfamily managers in the family firm. As a final consequence we show how these elements are associated with a family firm's performance.

Our story begins by looking at the distinctive characteristics of family firms. We follow the framework presented by De Massis et al. (2014) and divided a controlling family's influence in two dimensions that are a controlling family's ability and a controlling family's willingness. We treat ability as the level of family involvement in ownership and in management. Willingness refers to SEW sub-dimensions (1) family control and influence intentions (2) and renewal of family bonds intentions. Therefore, we first discussed how a family's ability and willingness are associated. Our results suggest that a family involvement in ownership is positively associated with both controlling family's SEW intentions. Then, we show that a controlling family's willingness to control and influence the firm is positively associated with the level of family involvement in management. In that sense, we suggest that what determines the number of family managers in the TMT is the family's intentions to keep their autonomy and legitimacy in the decision making process.

After analyzing the association among a controlling family's ability and willingness, we discussed how these distinctive characteristics of family firms, named by prior studies as family contingencies (Songini et al., 2017), are associated with management control mechanisms design such as the level of formality and participation in goal setting and performance evaluation. Prior studies have shown strong empirical evidence that a family involvement in management is related to the design of management control mechanisms, which literature is rested on the agency theorizations. However, our results indicate to a different direction with respect to the strong association of a controlling family's willingness and the design of

management mechanisms, regardless the family's ability dimension. Our findings provide evidence that the dimensions of a controlling family's willingness to influence the firm, which was treated as control intentions and renewal of family bonds intentions, are associated with management control mechanisms design. On one hand, the intention to control and influence the firm is negatively associated with formal and participative goal setting. On the other hand, the intention to transfer the family bonds to the next generation is positively associated with formal and participative goal setting and performance evaluation.

Thereafter, we focus on the consequences of these management control mechanisms design to manager's attitudes and behaviors in family firms. Based on the procedural justice and stewardship theoretical rationales, we study how formal and participative management control mechanisms foster stewardship attitudes and stewardship behaviors in family firms. Management control mechanisms might be seen as organizational procedures in the procedural justice literature, which characteristics drive procedural justice perceptions, and pro-organizational attitudes and behaviors. Particularly, the level of formality and participation of a procedure are seen as determinants for procedural justice perceptions. Therefore, we investigate how these mechanisms' design and procedural justice perceptions, which are aligned with the underlying situational mechanisms that constitute organizational level antecedents of stewardship, influence manager's stewardship identification and a stewardship-oriented culture in family firms. Our results show that participative and formal management control mechanisms are positively associated with procedural justice. These design characteristics were also positively associated with stewardship identification and stewardship-oriented culture. Participative goal setting and performance evaluation are seen as antecedents for manager's stewardship identification. Moreover, participative and formal goal setting is positively associated to a stewardship-oriented culture. We also indicate that procedural justice perceptions in goal setting is positively associated with both stewardship identification and stewardship-oriented culture. We also discussed the differences that might exist among family and nonfamily managers with respect to their stewardship attitudes towards the firm, which might also be influenced by differences in management control mechanism's design.

After discussing the antecedents of stewardship in family businesses, an issue that still come up was whether stewardship is actually a driver of family firm's competitive advantage, such as suggested by prior literature. Hence, we relied on the familiness background about family firm's resources and capabilities and on the stewardship literature, to investigate how a stewardship-oriented culture enhances the benefits of a family involvement in the business on

a family firm's performance. We first explore the association of family involvement and family firm's performance. We show a positive association between the presence of a family member as the CEO of the organization with a family firm's performance. With respect to the ratio of family managers in the Top Management Team, our findings suggest a U-shape association with performance, which result is aligned with the 'faultlines' concept discussed by Minichilli et al. (2010). Looking at stewardship as a competitive advantage, our results indicate that stewardship-oriented culture moderates the association between the presence of a family member as the Chief Executive Officer and family firm's performance. Particularly, based on the analysis of the moderation effect, we suggest that a low level of stewardship enhances the association between the presence of a family CEO and performance. In a high level of stewardship, there is an inexpressive difference for the presence or not of a family CEO and a family firm's performance, which finding contradicts prior literature insights. Our results do not support the moderation effect for the relationship between the ratio of family managers in the TMT and family firm's performance.

Figure 18. Theoretical portrait and empirical results

7.2. The three empirical studies theoretical background

In this Ph.D. dissertation, we have developed three empirical studies that aimed to enhance the comprehension about the stewardship theoretical perspective in family firms with respect to its antecedents and consequences. We have investigated the antecedents of stewardship related to the controlling family's ability and willingness to influence the firm, management control mechanisms design and procedural justice and the consequences of stewardship regarding its moderating effect on the relationship between family influence and performance.

As we have discussed during this dissertation, the stewardship theory has different conceptualizations from the agency paradigm and has not been widely discussed by prior management accounting literature. Stewardship holds itself in the sociological and psychological perspective regarding manager's behaviors and the role of management control mechanisms in organizations (Davis, Schoorman, & Donaldson, 1997).

The family firms' field has been conceptualized as promising for the stewardship foundations, since family firms have distinctive characteristics basically originated from the family involvement in the business, and which makes stewardship a particular phenomenon in family firms (Davis et al., 2010; Madison et al., 2016). Therefore, family firms are complex organizations with respect to their distinctive characteristics that have implications over management practices and organizational behaviors.

Particularly, we have investigated a controlling family's ability (e.g., family involvement in the business) and willingness (socioemotional wealth) to influence the family firm regarding management control's design. We also examined the familiness construct with respect to a family's involvement association with firm performance. All these constructs (family involvement, Socioemotional Wealth and familiness) have been explored in the family firm literature.

In addition, we have discussed management control mechanisms design and procedural justice which constructs and discussions were supported in the management accounting literature, procedural justice literature and in the general management literature. These studies about the design and use of Management Control Systems are vast in management journals, however the fairness dimensions of those mechanisms have been not deeply studied.

Throughout the empirical studies, we have brought elements mainly from the stewardship literature but also foundations from other fields such as management accounting,

procedural justice and family firms. As you could see, the stewardship theorizations were present in diverse degrees in the three empirical studies of this Ph.D. dissertation. The stewardship lens has been a promising perspective to the family firm field, contradicting and complementing the agency theory assumptions for those firms, in terms of managers' behaviors and the role of governance mechanisms in family firms (Madison et al., 2016; Davis et al., 1997).

Therefore, the results of each of the three studies have important contributions to the academic literature and also provide elements that can be explored by practitioners such as founders, heirs, family managers, nonfamily managers, and consultants that are interested in family businesses. In this final section, we summarize the main findings of the three empirical studies of this Ph.D. dissertation and indicate their implications for the literature and for practitioners.

7.3. Summary of the results

In the first study of this Ph.D. dissertation (Section 4), we explored how the controlling family's ability and willingness to influence the family firm is associated with formality and participation on goal setting and performance evaluation, based on a sample of 152 Brazilian family firms. In contrast to prior empirical evidence, our results reveal that rather than the controlling family's ability, it is their willingness that influences how management control mechanisms are designed in those firms. Particularly, we show that a family's intention to maintain their autonomy and independence in the decision-making process is negatively associated to formality and participation in the goal setting process. On the other hand, a family's intention to transfer the firm to the next generations is positively related to formality and participation in both goal setting and performance evaluation processes.

Hence, a family's emphasis on the maintenance of family control and autonomy, leads to higher centralization and less transparency of decision making in the family firm, while a family's succession intention is associated to formal and participative goal setting and performance evaluation processes, strong communication, knowledge transfer and transparency. We additionally show that a family's ability and willingness are strongly and positively associated to each other. These results are consistent for the two dimensions that we analyzed for the controlling family involvement in management, that were family involvement

in ownership and family involvement in management (the presence of a family CEO and the ratio of family managers in the TMT).

In the second study of this Ph.D. dissertation (Section 5), we examined the influence of the design of goal setting and performance evaluation on stewardship identification and stewardship-oriented culture, through procedural justice. Our results complement the literature about stewardship by addressing its situational mechanisms (Davis et al., 1997; Neubaum, Thomas, Dibrell, & Craig, 2017). Based on a sample with 152 family firms, we indicate that management control mechanisms' fair design characteristics are positively associated with stewardship identification and stewardship-oriented culture. The results point to the relevance in terms of significance and effect size of procedural justice in both goal setting and performance evaluation in fostering a pro-organizational and collective culture in the family firm. These results in the organizational level of the stewardship construct is also aligned with the individual level, named stewardship identification.

Further, we explored how these relationships might differ when we consider the respondents' family affiliation. Therefore, we analyzed subsamples of nonfamily and family managers, which results suggest different significant associations between management control mechanisms design and procedural justice with stewardship. Particularly, for nonfamily managers, formality in goal setting is a significant antecedent for stewardship-oriented culture and participation in both goal setting and performance evaluation is positively associated with stewardship identification. In contrast, for family managers we have just found that participation in goal setting is associated with stewardship-oriented culture. These results suggest that family and nonfamily managers might perceive differently the determinants of stewardship.

In the third paper of this Ph.D. dissertation (Section 6), we investigated the moderating effect of a stewardship-oriented culture on the family involvement-performance relationship framed in the familiness framework. Based on a sample of 59 medium and large Brazilian family firms, we reveal, consistent with prior literature, that the presence of a family CEO is positively related to a family firm's performance and also show a nonlinear U-shape association between the ratio of family managers in the TMT and family firm's performance. These results are significant for different dependent variables, such as industry-adjusted ROA and ROS.

In addition to the traditional familiness-performance literature (González-Cruz & Cruz-Ros, 2016; Minichilli et al., 2010; Sciascia & Mazzola, 2008), our results indicate that a stewardship-oriented culture has a significant moderating effect on the association between the

presence of a family CEO and performance. Based on the analysis of the moderation effect, we suggest that for a low level of stewardship the presence of a family CEO is associated with a high level of performance while in a high level of stewardship the presence of a family CEO might not foster a high level of performance, which result contradicted our theoretical arguments.

7.4. Implications for the literature

Our findings, based on the three empirical studies developed in this Ph.D. dissertation, provide developments in the following areas of family firm's research (1) stewardship theoretical perspective, (2) antecedents of stewardship, (3) family contingencies of management control mechanisms design and (4) consequences of stewardship. In this subsection, we provide a broader view about this dissertation's contributions to the literature, which we also outline, in some extent, in the empirical studies sections.

First, as we have presented, the stewardship perspective is different from traditional agency theory, and offers a different perspective on organizations (Davis et al., 1997; Donaldson & Davis, 1991; Hernandez, 2012) that is still unexplored by empirical studies in the management literature. The agency paradigm and its branches have been attracting the majority if not totally of the research attention in the management field in the last decades. However, despite this scenario, we argued that the stewardship paradigm might offer relevant insights that require in-depth investigations especially for different organizational forms, such as family firms. Recent efforts have been made in the family firm's field to analyze both agency and stewardship paradigms, which studies lead to inconclusive findings. Due to the complexity of the stewardship construct (Neubaum et al., 2017; Zahra, Hayton, Neubaum, Dibrell, & Craig, 2008), we address this discussion based on both the individual level and the organizational level which are respectively conceptualized as stewardship identification (Craig, Dibrell, & Neubaum, 2011; James et al., 2017; Madison et al., 2017) and stewardship-oriented culture (Zahra et al., 2008).

Second, one of the streams that needs further investigation is the analyses of the antecedents of stewardship (Davis et al., 1997; Neubaum et al., 2017), which we partially addressed in this dissertation. Neubaum et al. (2017) claim that the antecedents of stewardship are still a conjecture and propose a multidimensional construct named stewardship climate to capture this complex phenomena in family firms. Other recent studies have addressed this issue

by looking at the fit between governance mechanisms and behavioral assumptions in the context of family firms (James et al., 2017; Madison et al., 2016, 2017). Therefore, we address the lack of studies in the literature about organizational-level factors (Hernandez, 2012) such as management control mechanisms' design and procedural justice, which influence stewardship. The traditional studies have treated these organizational level factors as situational mechanisms for stewardship (Davis et al., 1997). In particular, with respect to the stewardship assumptions in family firms, prior literature indicates the importance of considering the family affiliation as an attribute of stewardship behaviors. This discussion has been rested in the bifurcation bias perspective about managers' behaviors in family firms (Verbeke & Kano, 2012). Due to the complexity of behaviors in the family firm, we also consider the manager's family affiliation in our analyses such as explored by recent empirical studies (James et al., 2017; Madison et al., 2017; Davis et al., 2010).

Regarding the antecedents of stewardship, this Ph.D. dissertation also contributes to the area of Management Control Systems fairness and procedural justice (Hartmann & Slapničar, 2012; Langevin & Mendoza, 2013; Libby, 1999), which is usually discussed in context of agency theoretical perspective. By considering the stewardship lens in the family business field, we show that procedural justice is an important antecedent of stewardship. We address the claim from prior literature about the different perceptions of justice that might exist among family and nonfamily managers (Barnett & Kellermanns, 2006; Carmon, Miller, Raile, & Roers, 2010; Sieger, Bernhard, & Frey, 2011; Van der Heyden, Blondel, & Carlock, 2005). In this sense, the overlap of family and business boundaries might drive how procedural justice is perceived in the family firm. For instance, nonfamily managers' justice perceptions have received little attention by researchers, and the effect of family influence on these perceptions is argued to be largely unknown (Barnett & Kellermanns, 2006; Carmon et al., 2010; Pieper, 2010). Procedural justice has attracted the interests in Human Resource (HR) practices (e.g., Barnett & Kellermanns, 2006), but we suggest that management accounting scholars might also investigate the fairness discussions on the MCS umbrella, and how can drive pro-organizational behaviors (Langevin & Mendoza, 2013; Voußem et al., 2016).

Procedural justice has been conceptualized as a driver to various positive attitudinal and behavioral organizational outcomes (Folger & Bies, 1989; Kim & Mauborgne, 2003; Kim & Mauborgne, 1993; Libby, 1999) which indicates the importance of this construct for organizations. In this sense, Langevin and Mendoza (2013, p. 218) state that "*managers must fully appreciate the importance of fairness and be willing to involve themselves, knowing that*

fairness is a key dimension of their role". In sum, this Ph.D. dissertation strengthens the discussion that the procedural justice might provide insights to the existing theoretical background of stewardship regarding stewardship governance mechanisms in family firms (Lubatkin, Ling, & Schulze, 2007; Madison et al., 2016, 2017; Neubaum et al., 2017). Particularly, we suggest that the goal setting process might be seen as a key management mechanisms for both family and nonfamily managers, which is associated to managers pro-organizational attitudes and behaviors, which is in line with the goal setting theory arguments (Locke & Latham, 1990).

Third, we provide insights on the antecedents of management control mechanisms adopted in family firms, considering both a family's ability and a family's willingness to influence the firm (De Massis, Kotlar, Chua, & Chrisman, 2014; Helsen, Lybaert, Steijvers, Orens, & Dekker, 2017). In this regard, Chrisman et al. (2015) indicate that researchers should address the paradoxes engendered by the association and interaction of a family's ability and willingness to influence the family firm. This stream of discussion has not been widely investigated by prior literature since they have concentrated in the ability dimension, which is mainly supported by the agency theoretical arguments about agency problems in family firms, and its relationship with management mechanisms design (Songini & Gnan, 2015; Speckbacher & Wentges, 2012).

Recently, studies have been suggesting many opportunities in this field of research (Helsen et al., 2017; Songini, Gnan, & Malmi, 2013; Songini, Vola, & Gnan, 2017) with respect to how family elements named family contingencies impact management control mechanisms design and use. We also contribute to this literature by examining exclusively family firms, since previous studies have focused on the comparison among family and nonfamily firms, ignoring the heterogeneity that exists among family firms (Chua et al., 2012).

In particular, we address the lack of studies that investigated the family contingencies and management controls design and use in family firms that study a controlling family's willingness. Therefore, we expand prior literature by addressing willingness and by also considering Socioemotional Wealth as the lens to interpret the controlling family's willingness. Actually, we show that the controlling family's reference points for decision making, which are explored in the SEW theoretical lens, have different implications over management mechanisms and organizational behaviors (Gomez et al., 2011; Berrone et al., 2012). We additionally contribute to the literature in SEW by showing that SEW is a complex construct which dimensions should be explored independently (Chua et al., 2015).

Fourth, with respect to the consequences of stewardship, we explored the combination of stewardship insights and familiness construct, bringing the stewardship-oriented culture construct, which has not yet been far discussed by prior literature. For example, Kim and Gao (2013) discuss the moderating effect of long-term orientation on familiness, and other authors investigate the association of stewardship to different organizational behaviors such as strategic flexibility (Zahra et al., 2008), innovativeness (Dibrell & Moeller, 2011), and entrepreneurial orientation (Eddleston, Kellermanns, & Zellweger, 2012). Particularly, this stream of research about mediating and moderating models to discuss the familiness-performance relationship (Chirico & Bau', 2014; González-Cruz & Cruz-Ros, 2016; Kim & Gao, 2013) is important due to the existence of multiple inconclusive findings by prior literature (Garcia-Castro & Aguilera, 2014; Rutherford, Kuratko, & Holt, 2008). With this respect, an additional contribution of this Ph.D. is providing empirical evidence on family firms from an emerging economy such as Brazil, which enriches the literature that is mainly focused on the US and European family firms. Brazil carries institutional characteristics of an emerging economy and cultural characteristics (Xu & Meyer, 2013) which might bring differences to family firm's organizational behaviors (Kim & Gao, 2013).

7.5. Implications for practitioners

This Ph.D. dissertation also bring relevant contributions to practitioners. The first implication regards the growing interest of family and nonfamily managers about the professionalization of family firms. A family firm professionalization has been treated by empirical research based on multiple dimensions (Dekker, Lybaert, Steijvers, Depaire, & Mercken, 2013; Stewart & Hitt, 2012) such as adopting management practices, as having diluted governance and ownership structure, or pursuing financial in detriment to nonfinancial goals.

The professionalization topic has been treated widely based on the life-cycle perspective, which indicates that a family firm professionalization occurs naturally with the development and growth of family firms (Gersick et al., 1997; Giovannoni, Maraghini, & Riccaboni, 2011). However, this broad assumption might not explain why, for example, young firms with a high level of participation of the owning family are considered professionalized firms while large and traditional firms with a similar involvement of family members are not. We address the discussion of professionalization by looking at two elements of a family firm professionalization, (i) the adoption of formal management and (ii) the participation of

managers in the decision-making process, with respect to goal setting and performance evaluation.

Particularly, we address this issue and provide evidence that a family firm professionalization is driven by the controlling family's intentions that is reflected in the decision-making processes, and not by the presence of a high level of family managers in the TMT or of a family CEO. Our study contradicted prior evidence and show that the presence of family managers in the TMT does not drive the design of management mechanisms (formality and participation), but rather the controlling family's willingness, which, in turn, is translated into multiple family-centric noneconomic goals. Hence, a controlling family that is willing to maintain its autonomy and legitimacy in strategic decisions will be less likely to adopt formal and participative management control mechanisms such as goal setting and performance evaluation.

On opposite, a family firm that envisages a long-term perspective toward a succession process will be expected to adopt formal and participative management control mechanisms. Therefore, we show practitioners that the succession intention is relevant for the family firm because it drives the firm's actions to the long-term perspective, which makes the family firm's leaders to implement formal and participative mechanisms, to increase transparency and knowledge transfer to sustain the firm's longevity.

In addition to the insights provided by prior literature based on agency problems conceptualization of management controls, our results show practitioners that in family firms there are subjective and intangible forces (which we explored as SEW reference points) that determine how management control mechanisms are designed in those firms. Our findings are helpful to nonfamily managers who aim to work for a family firm. Based on this study they can understand that the decisions related to the design and use of professional mechanisms in family firms might rest in a subjective zone of a controlling family's SEW intentions and not because, for example, contingency factors such as size and uncertainty.

These findings are also important for family members (e.g., founders and heirs) to reflect about how their willingness can inhibit or enhance the adoption of participative and formal mechanisms. Family managers can better manage their influence over the firm. We suggest that family firms can implement professional practices by managing their noneconomic SEW intentions and not necessarily by hiring nonfamily managers to the firm. It might exist a counterbalance between the different controlling family's willingness that impact the design of mechanisms in the family firm.

The second implication relates to the comprehension that stewardship has been seen as a vantage point for family firms that has been linked to their competitive advantage. There are many arguments in the literature that stewardship is a relevant issue for family firms, which we also address in this study. Therefore, practitioners should understand the implications that the stewardship behavioral assumptions have for the governance mechanisms and how that leads to a higher level of performance in the family firm. Family firm's leaders might understand that not all the governance and management mechanisms that benefit a nonfamily firms, will naturally be positive if implemented in family firms. There is evidence that stewardship assumptions might better fit to the family firm context, and in that case, monitoring and incentive systems might produce negative effects to a family firm's performance. On the other side, an involvement-oriented mechanism might bring more benefits in a context where stewardship is prevalent, which is used to be the case of family firms.

In this study, we provide evidence that a stewardship-oriented culture has a moderator effect on the familiness-performance relationship. Specifically, when there is a nonfamily CEO, a high level of stewardship-oriented culture might drive a slightly higher level of performance. On the other hand, when there is a family CEO, a low level of stewardship-oriented culture drive a higher level of performance. This result offer insights to family owners when it is beneficial to keep a family member as the CEO of the firm, and when the nomination of a nonfamily manager might produce a higher level of performance.

Regarding the antecedents of stewardship, we reveal that goal setting and performance evaluation, usually studied as agency mechanisms can foster stewardship in the family firm, if they are designed based on the fairness principles. Family firm's leaders should take into account both the controlling family's willingness and the fairness of goal setting and performance evaluation processes, as situational mechanisms to foster stewardship identification and culture in their family firms. We reveal that stewardship culture is fostered by the design of formal and participative management mechanism, in which transparency of decisions and involvement of nonfamily managers in the decision-making circle might benefit the firm in the long-term, what should be considered by founders and family managers. These issues are relevant for attracting nonfamily managers for the family firm and to enhance the exchanges that occur between family and nonfamily managers in the decision-making process.

Finally, our third implication to practitioners relates to the results that we found by analyzing the relationship between family involvement in management and performance. First, we indicate a positive and strong association between the presence of a family CEO and

performance, which might indicate the benefits of maintaining a family member as the leader of the firm. Additionally, we reveal a U-shape relation between the ratio of family managers in the TMT and performance, what might suggest that ‘faultlines’ might occur when you have different sub-groups in the TMT (Minichilli, Corbetta, & MacMillan, 2010). Therefore, by having a TMT composed by both family and nonfamily managers, a family firm might occur in conflicts that in our study had driven to a low level of performance. Actually, a homogeneous TMT formed completely by nonfamily managers has been linked to a higher level of performance. Therefore, due to the contradictory findings of our study and in prior literature, we suggest that the mix of family and nonfamily managers in the TMT, which discussion has been studied in the professionalization umbrella, is a complex issue for family firms with empirical evidence for both bright and dark sides of family involvement.

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APPENDIX – Section 2

Appendix 1. Overview of publication Topics (Id) and objective – Part I

Paper	Id	Objective
Amboni, Andrade, & Lima (2011)	(2)	The present study aims at analyzing management practices adopted by the Group Cecrisa SA. In different stages of development of the 1980 and 1990 and their reflections in the process of professionalization and modernization.
Bertucci, Silva, Pimentel, & Pereira (2009)	(2)	The objective of this study was to analyze the way in which the development of structures and mechanisms of corporate governance influence the direction of the succession and the mediation of conflicts between the family, the property, and the management in a family-owned enterprise.
Beuren & Muller (2010)	(2)	The objective of the study is to identify evidence of institutionalization of comptrollership in light of the habits and routines of Brazilian family run companies.
Beuren, Althoff, & Stédile (2010)	(2)	The objective of the present study is to analyze the praxis of comptrollership in family run companies whose shareholder control is Brazilian and which have at least one member on the company board.
Beuren, Fachini, & Nascimento (2010)	(2)	The objective is to verify the evidence of isomorphism in the functions of controlling family textile business in Santa Catarina.
Beuren, Santos, & Santos (2010)	(2)	The study aims to identify the types of organizational culture prevailing in the controlling area of family businesses in the textile industry, having as reference the culture types proposed by Trompenaars (1994).
Ésther (2014)	(2)	The aim of this paper is to analyze the process of construction of culture and organizational identity of a small family business, emphasizing the influence and role of the founder in this process.
Grande & Beuren (2011a)	(2)	This study employs critical discourse analysis to examine the treatment of management accounting practices in the administrative reports of family businesses in Brazil to determine if there have been changes in these practices and whether changes are related to generational succession.
Grande & Beuren (2011b)	(2)	The goal of this study is to identify changes in management accounting practices, considering the stages described of the IMAP 1 (IFAC, 1998), by means of Critical Discourse Analysis of the Administration Reports of family businesses.
Grande & Beuren (2011c)	(2)	The goal of this study is determine whether the changes in managerial accounting practices can be identified in a company's Administration Report through the application of the Critical Discourse Analysis.
Leal & Botinha (2013)	(2)	This article analyzes the attributions and participation of the controller in the succession process of a family firm.
Maia (2009)	(2)	This article is proposed to understand the problem of family businesses considering the interaction between organizational culture, translated into values, and people management practices.
Muller & Beuren (2010)	(2)	The study aims to investigate the formal structure and controllership support practices to the management process in Brazilian family businesses.
Nelson & Pimentel (2015)	(2)	The purpose of this study is to enrich the study of corporate governance in Brazilian family firms by including Max Weber's typology of legitimate authority as a source of analytical insight. We emphasize governance in family firms because of the perception that they are more likely to mix different authority types into their governance, particularly as they age.
Nepomuceno & Dos Santos (2009)	(2)	The objective of this study was to reflect on concepts and practices related to the management competency in a family business.
Oliveira, Álvares, Pinheiro, & Pimentel (2011)	(2)	The present paper seeks to identify and analyze the governance structure implemented in a family-owned business in the crucial moment of professionalization and definition of policies to guide the future succession processes in the company.
Oliveira, Albuquerque, & Pereira (2012)	(2)	This work was carried out in order to analyse the governance mechanisms and the succession and formalization processes implemented in traditional and long running family-owned company, seeking to identify likely levels of interrelation and control in such company

Appendix 1. Overview of publication Topics (Id) and objective – Part II

Paper	Id	Objective
Teixeira, Toso, & Grzybovski. (2009)	(2)	The aim of this paper is to describe and analyze the management practices adopted in industrial family businesses, small and micro businesses (SMEs), located in Ijuí (RS), assisted by the Extended Enterprise Program (EEP)
Theodoro & Beuren (2010)	(2)	The research aims to check the information support of controllership in the management of centenary companies in Rio Grande do Sul State, in Brazil.
Pinto & Leal (2013)	(3)	This article analyzes the relationship between the degree of share concentration and the compensation of managers.
Machado, Grzybovski, Teixeira & da Silva (2013)	(3)	The aim is to discuss the concept and model as well as the governance structure appropriate to the management of small family businesses in Brazil, because this can minimize agency problems related to family ownership.
Barcia & Grzybovski (2008)	(6)	The present project considers to focus the question of the relationship between the controllers of the companies and the members of the family proprietor verifying of that it forms the relation company-family route to the sustainability of the business under the property of the same family can be lead to entrepreneur who established the enterprise.
Eccel, Cavedon, & Craide. (2007)	(6)	This research aims to analyze how family concepts developed by Anthropology can contribute to understand a familial company.
Filardi, Freitas, Pinto, Silveira (2012)	(6)	From the Resource-Based View perspective, this study aimed to analyze as a Brazilian family owned distributor of veterinary products in the pet shop business has managed to achieve superior performance in its segment.
Jacinto & Vieira. (2008)	(6)	The purpose of this survey was to describe how the model of competences management articulates with the strategic guidelines of an organization and contributes to a successful implantation of technological innovations.
Lissoni, Pereira, Almeida, & Serra (2010)	(6)	This article's main purpose consists in showing how family and ownership cultures may influence the process of making a "well-performing" organization, based on an empirical study in family business in Brazil.
Peixoto & Buttini (2013)	(6)	This investigation makes a diagnosis of the current situation of the ownership and control structure of Brazilian publicly traded companies traded on the São Paulo Stock Exchange in the years 2004, 2006 and 2008. It then seeks to identify a possible relationship between the concentration of rights of voting rights and the concentration of rights on the cash flow with the performance and value of the companies.
Tomei & Riche (2016)	(6)	This work analyzed leadership styles and organizational performance comparing two small Brazilian family-owned companies using a mixed-method quantitative and qualitative approach.
Mizumoto & Machado Filho (2007)	(2) & (3)	This paper analyses corporate governance practices adopted by family-owned business to identify its influence on the management model and on the family and business relationship.
Kalm & Gomez-Mejia (2016)	(4) & (7)	Review literature on socioemotional wealth.
Nóbrega e Hoffmann (2014)	(6) & (9)	The purpose of this study is to analyse how family businesses can create a unique context for entrepreneurship through their internal resources, mentioned by Habbershon and Williams (1999) as familiness.

Appendix 1. Overview of publication Topics (Id) and objective – Part III

Paper	Id	Objective
Fontes Filho, Ventura, & Oliveira (2008)	(7)	This article explores the references of the agency theory and the stewardship theory, characterized by different assumptions about human nature and motivation of the managers, in order to investigate the contribution of these theories in the formulation of models of governance to credit cooperatives.
Beuren & dos Santos (2012)	(8)	The goal of this study is to verify the perception of organizational justice in controllers performance evaluation of companies adopting variable compensation systems.
Beuren, Amaro, & da Silva (2015)	(8)	The goal of this study is to investigate the perception of managers regarding the principle of controllability to the achievement of organizational justice.
Beuren, Barros, & Dal Vesco (2016)	(8)	This study examines the perception of Organizational Justice of managers in the use of the balanced scorecard to measure the strategic performance of a manufacturing company.
Beuren, Klein, Lara, & de Almeida (2016)	(8)	The goal of this study is to determine whether the perception of fairness regarding the dimensions of the Management Control Systems increases managers' commitment and confidence.
Beuren, Kreuzberg, & Franz (2016)	(8)	The goal of this study is to investigate the relationship between performance evaluation measures and the perception of procedural fairness in light of uncertainty and tolerance to ambiguity
dos Santos, Beuren, & Hein (2015)	(8)	The study aims to verify the relationship between the perception of organizational justice in performance evaluation and the level of controllers' organizational slack in the form of financial and human resources, of the easiness in reaching the budgetary and power targets.
dos Santos, de Oliveira, & Konopka (2016)	(8)	This study aims to understand the effects of organizational justice and ethical climate in the workplace and its relationship with stress

Appendix 2. Overview of publication Topics (Id) and Methodology description – Part I

Paper	Id	Methodology and data collection	Time-frame	Sample size	Firm size	Informants	Analytical approach
Amboni, Andrade, & Lima (2011)	(2)	Case study	Cross-sectional	NI	Large	Top executives	interpretive (historical)
Bertucci, Silva, Pimentel, & Pereira (2009)	(2)	Case study	Cross-sectional	5 interviews	Medium	Top executives	NI
Beuren & Muller (2010)	(2)	Survey	Cross-sectional	12 firms	Large	Managers (accounting area)	descriptive
Beuren, Althoff, & Stédile (2010)	(2)	Multi-case	Cross-sectional	4 firms	Large	Managers (accounting area)	descriptive
Beuren, Fachini, & Nascimento (2010)	(2)	Survey	Cross-sectional	13 firms	Small, medium and large	Managers (accounting area)	descriptive
Beuren, Santos, & Santos (2010)	(2)	Multi-case	Cross-sectional	3 firms	Large	Managers (accounting area)	
Ésther (2014)	(2)	Case study	Longitudinal	6 interviews	Small	Top executives and employees	content analysis
Grande & Beuren (2011a)	(2)	Archival	Longitudinal	9 firms	Large	-	discourse analysis
Grande & Beuren (2011b)	(2)	Archival	Longitudinal	9 firms	Large	-	discourse analysis
Grande & Beuren (2011c)	(2)	Archival	Longitudinal	1 firm	Large	-	discourse analysis
Leal & Botinha (2013)	(2)	Case study	Cross-sectional	8 interviews	Large	Top executives and Managers (accounting area)	content analysis
Maia (2009)	(2)	Multi-case	Cross-sectional	13 interviews (3 firms)	Small and Medium	Top executives	content analysis
Muller & Beuren (2010)	(2)	Survey	Cross-sectional	12 firms	Large	Managers (accounting area)	descriptive
Nelson & Pimentel (2015)	(2)	Interviews	Cross-sectional	17 interviews	Large	Top executives	discourse analysis
Nepomuceno & Dos Santos (2009)	(2)	Case study	Cross-sectional	NI	Medium	Top executives	discourse analysis
Oliveira, Álvares, Pinheiro, & Pimentel (2011)	(2)	Case study	Cross-sectional	NI	Large	NI	content analysis
Oliveira, Albuquerque, & Pereira (2012)	(2)	Case study	Cross-sectional	8 interviews	Large	Top executives	content analysis
Teixeira, Toso, & Grzybovski. (2009)	(2)	Interviews	Cross-sectional	11 industries	Small	Top executives	discourse analysis
Theodoro & Beuren (2010)	(2)	Survey	Cross-sectional	13 firms	Small, medium and large	NI	descriptive
Pinto & Leal (2013)	(3)	Archival	Cross-sectional	315 firms	Large	-	descriptive and multiple regression
Machado, Grzybovski, Teixeira & da Silva (2013)	(3)	Case study	Cross-sectional	5 interviews	Small	Top executives and Managers	content analysis

Appendix 2. Overview of publication Topics (Id) and Methodology description – Part II

Paper	Id	Methodology and data collection	Time-frame	Sample size	Firm size	Informants	Analytical approach
Barcia & Grzybowski (2008)	(6)	Bibliographic	-	-	-	-	-
Eccel, Cavedon, & Craide. (2007)	(6)	Case study	Longitudinal	NI	Small	NI	ethnographic
Filardi, Freitas, Pinto, Silveira (2012)	(6)	Case study	Cross-sectional	7 interviews	Medium	Top executives	content analysis
Jacinto & Vieira. (2008)	(6)	Case study	Cross-sectional	10 interviews	Medium	Top executives, managers and employees	content analysis
Lissoni, Pereira, Almeida, & Serra (2010)	(6)	Case study	Longitudinal	9 interviews	Large	Top executives	analytic description
Peixoto & Buttini (2013)	(6)	Archival	Longitudinal	246 firms	Large	-	descriptive and panel data
Tomei & Riche (2016)	(6)	Mixed methods	Cross-sectional	28 respondents (16 from firm A and 12 from B)	Small	Top executives and employees	descriptive and content analysis
Mizumoto & Machado Filho (2007)	(2) & (3)	Case study	-	NI	Large	Top executives/consultants	content analysis
Kalm & Gomez-Mejia (2016)	(4) & (7)	Theoretical	-	-	-	-	-
Nóbrega e Hoffmann (2014)	(6) & (9)	Case study	Cross-sectional	NI	Small	Top executives and employees	NI
Fontes Filho, Ventura, & Oliveira (2008)	(7)	Interviews	Cross-sectional	4 credit cooperatives	-	Top executives	NI
Beuren & dos Santos (2012)	(8)	Survey	Cross-sectional	26 respondents	Large	Managers (accounting area)	descriptive and correlation
Beuren, Amaro, & da Silva (2015)	(8)	Survey	Cross-sectional	63 respondents	Large	Managers (accounting area)	descriptive and structural equation modeling
Beuren, Barros, & Dal Vesco (2016)	(8)	Survey	Cross-sectional	47 managers (1 firm)	Large	Managers (accounting area)	descriptive and structural equation modeling
Beuren, Klein, Lara, & de Almeida (2016)	(8)	Survey	Cross-sectional	67 respondents	Large	Managers (accounting area)	descriptive and structural equation modeling
Beuren, Kreuzberg, & Franz (2016)	(8)	Survey	Cross-sectional	119 employees (1 firm)	Large	Employees	descriptive and structural equation modeling
dos Santos, Beuren, & Hein (2015)	(8)	Survey	Cross-sectional	26 respondents	Large	Managers (accounting area)	descriptive and correlation
dos Santos, de Oliveira, & Konopka (2016)	(8)	Survey	Cross-sectional	82 respondents (22 accounting offices)	Small	Managers (accounting area)	descriptive, correlation and multiple regression

Appendix 3. First Letter (Portuguese)

ASSUNTO: Pesquisa Acadêmica FEA-USP - Mecanismos de gestão nas empresas brasileiras controladas por famílias

Caro(a) Sr.(a)

Bom dia!

Meu nome é Daniel Magalhães Mucci, aluno de doutorado em Controladoria e Contabilidade na Universidade de São Paulo. Participo da realização de pesquisas na área de contabilidade e controle gerencial, mais especificamente, **discuto o efeito de mecanismos de gestão nas empresas controladas por famílias e sua influência sobre as percepções dos gestores**. O Professor Fabio Frezatti (USP - Brasil) e a Professora Ann Jorissen (UAntwerpen - Bélgica) são os orientadores dessa pesquisa de doutorado.

Convido o(a) Sr.(a) a participar dessa pesquisa, cujas discussões o permitirão refletir sobre diferentes aspectos do seu trabalho e que deverá proporcionar importantes conhecimentos sobre como os sistemas de controle gerencial impactam a percepção dos gestores nas empresas. Os resultados deste estudo **podem ajudar as organizações a melhorar seus sistemas de gestão, o que será benéfico para os gestores e também para a organização**. O tema abordado pela pesquisa é inédito no Brasil e presente em pesquisas desenvolvidas recentemente na Europa.

A **população** de empresas do estudo é formada por **empresas de médio e grande porte**, que apresentam a característica de serem **controladas por grupos familiares, independentemente do nível de profissionalização, e se a família atua ou não na gestão do dia-a-dia do negócio**. Os respondentes indicados são profissionais que ocupam cargos de gestão na empresa, podendo ser da família controladora ou não. As respostas individuais serão direcionadas ao nosso banco de dados e os dados serão tratados de modo agregado.

Como agradecimento, vamos lhe enviar um **sumário executivo** dos resultados do nosso estudo, adicionado a um **relatório individual** através do qual vai ser possível comparar a sua organização com as outras empresas da amostra. Por isso, pedimos para deixar o seu e-mail ao final da pesquisa.

Sua participação neste estudo é voluntária e todas as suas respostas serão mantidas em sigilo. A pesquisa deve levar entre 10 e 15 minutos para ser concluída. Pela metodologia só podemos considerar para análise os questionários completos.

Caso aceite participar, por favor, clique no link abaixo "**Iniciar questionário**" para acessar o site da pesquisa.

Caso esteja interessado(a) nas nossas pesquisas anteriores, acesse o site do nosso Laboratório de Pesquisas sobre Práticas Gerenciais da FEA/USP (www.lppgfea.com). Lá vai encontrar relatórios de pesquisas e links para alguns dos nossos trabalhos acadêmicos publicados.

Sou muito grato pelo seu tempo. Somente com a sua ajuda é que seremos capazes de entender melhor esse segmento tão importante e pouco pesquisado no Brasil. Como consequência poderemos fornecer às organizações sugestões importantes sobre a forma como os seus processos de gestão são desenvolvidos.

Mais uma vez, muito obrigado!

APPENDIX – Section 5

Appendix 4. Measurement model evaluation for subsamples of family and nonfamily managers

First-Order Latent Variable Correlations for nonfamily managers subsample (n=99)

	GS_for m	GS_par t	GS_p j	PE_for m	PE_par t	PE_p j	STEW_cul t	STEW_ide n
GS_form	0.868							
GS_part	0.548	0.877						
GS_pj	0.637	0.639	0.955					
PE_form	0.433	0.346	0.482	0.943				
PE_part	0.458	0.535	0.571	0.642	0.932			
PE_pj	0.517	0.448	0.585	0.765	0.768	0.965		
STEW_cult	0.647	0.603	0.668	0.514	0.589	0.608	0.873	
STEW_iden	0.583	0.660	0.670	0.488	0.678	0.561	0.789	0.931
CR	0.902	0.930	0.977	0.941	0.929	0.964	0.928	0.951
AVE	0.754	0.769	0.912	0.889	0.868	0.931	0.763	0.867

Cross loadings between the items and the constructs for nonfamily managers subsample (n=99)

	GS_form	GS_part	GS_pj	PE_form	PE_part	PE_pj	STEW_cult	STEW_iden	MLMV
GSform_1	0.851	0.429	0.514	0.383	0.421	0.468	0.553	0.480	0.259
GSform_2	0.892	0.505	0.516	0.308	0.389	0.425	0.518	0.531	0.292
GSform_4	0.861	0.492	0.622	0.431	0.386	0.454	0.608	0.507	0.312
GSpartic_1	0.412	0.861	0.490	0.336	0.480	0.390	0.470	0.594	0.265
GSpartic_2	0.497	0.909	0.536	0.316	0.438	0.400	0.502	0.521	0.307
GSpartic_3	0.503	0.916	0.588	0.307	0.500	0.384	0.564	0.602	0.319
GSpartic_4	0.502	0.818	0.612	0.257	0.453	0.395	0.565	0.589	0.317
GSpj_1	0.564	0.607	0.936	0.426	0.541	0.504	0.604	0.624	0.478
GSpj_2	0.655	0.611	0.959	0.487	0.541	0.582	0.670	0.638	0.496
GSpj_3	0.590	0.640	0.969	0.444	0.556	0.561	0.630	0.658	0.489
GSpj_4	0.623	0.584	0.957	0.485	0.543	0.584	0.647	0.639	0.436
PEform_1	0.442	0.341	0.490	0.952	0.612	0.758	0.539	0.500	0.419
PEform_2	0.370	0.309	0.414	0.934	0.600	0.680	0.423	0.414	0.332
PEpart_1	0.383	0.440	0.508	0.544	0.923	0.689	0.482	0.603	0.252
PEpart_2	0.467	0.551	0.553	0.647	0.940	0.740	0.608	0.658	0.344
PEpj_1	0.498	0.467	0.563	0.730	0.746	0.963	0.553	0.528	0.362
PEpj_2	0.500	0.399	0.566	0.746	0.736	0.966	0.618	0.553	0.392
STEWcult_1	0.458	0.508	0.580	0.458	0.518	0.555	0.871	0.672	0.330
STEWcult_2	0.597	0.488	0.596	0.501	0.522	0.564	0.888	0.657	0.341
STEWcult_3	0.640	0.565	0.558	0.487	0.579	0.576	0.873	0.748	0.326
STEWcult_4	0.553	0.543	0.603	0.342	0.431	0.420	0.860	0.674	0.280
STEWident_1	0.562	0.599	0.637	0.465	0.624	0.526	0.783	0.940	0.397
STEWident_2	0.523	0.644	0.554	0.354	0.637	0.502	0.666	0.918	0.384
STEWident_3	0.545	0.602	0.678	0.541	0.633	0.538	0.754	0.934	0.366
MLMV_1	0.151	0.123	0.233	-0.049	0.049	0.095	0.105	0.145	0.357
MLMV_2	0.287	0.281	0.332	0.356	0.259	0.348	0.278	0.347	0.777
MLMV_3	-0.167	-0.185	-0.326	-0.271	-0.245	-0.179	-0.236	-0.206	-0.573
MLMV_4	0.097	0.140	0.197	0.110	0.030	0.182	0.127	0.163	0.402

First-Order Latent Variable Correlations for family managers and founder (n=53)

	GS_for m	GS_par t	GS_p j	PE_for m	PE_par t	PE_p j	STEW_cul t	STEW_ide n
GS_form	0.820							
GS_part	0.459	0.820						
GS_pj	0.397	0.571	0.920					
PE_form	0.342	0.529	0.404	0.941				
PE_part	0.349	0.409	0.437	0.662	0.948			
PE_pj	0.531	0.610	0.573	0.631	0.621	0.976		
STEW_cult	0.499	0.674	0.671	0.518	0.538	0.578	0.850	
STEW_iden	0.342	0.504	0.763	0.172	0.239	0.453	0.687	0.908
CR	0.859	0.890	0.957	0.939	0.946	0.976	0.912	0.934
AVE	0.672	0.673	0.847	0.885	0.898	0.952	0.722	0.825

Cross loadings between the items and the constructs for family managers and founder subsample (n=53)

	GS_form	GS_part	GS_pj	PE_form	PE_part	PE_pj	STEW_cult	STEW_iden	MLMV
GSform_1	0.848	0.340	0.424	0.151	0.267	0.382	0.445	0.436	0.388
GSform_2	0.873	0.384	0.239	0.319	0.215	0.405	0.395	0.196	0.268
GSform_4	0.732	0.432	0.265	0.452	0.399	0.564	0.372	0.125	0.163
GSpartic_1	0.345	0.899	0.451	0.439	0.369	0.572	0.548	0.445	0.252
GSpartic_2	0.384	0.647	0.144	0.349	0.237	0.327	0.273	0.052	0.066
GSpartic_3	0.366	0.868	0.453	0.436	0.362	0.492	0.609	0.421	0.245
GSpartic_4	0.444	0.843	0.629	0.492	0.345	0.545	0.640	0.522	0.262
GSpj_1	0.288	0.540	0.901	0.331	0.328	0.482	0.670	0.732	0.383
GSpj_2	0.423	0.449	0.904	0.350	0.378	0.516	0.523	0.648	0.495
GSpj_3	0.345	0.613	0.949	0.352	0.424	0.510	0.623	0.704	0.407
GSpj_4	0.413	0.492	0.927	0.451	0.476	0.598	0.643	0.718	0.568
PEform_1	0.291	0.520	0.378	0.946	0.563	0.621	0.499	0.188	0.265
PEform_2	0.355	0.473	0.383	0.935	0.688	0.563	0.475	0.133	0.291
PEpart_1	0.333	0.447	0.425	0.735	0.950	0.645	0.510	0.152	0.338
PEpart_2	0.329	0.325	0.402	0.514	0.945	0.528	0.509	0.304	0.354
PEpj_1	0.487	0.549	0.536	0.613	0.564	0.974	0.529	0.398	0.425
PEpj_2	0.547	0.637	0.580	0.618	0.643	0.978	0.595	0.482	0.396
STEWcult_1	0.456	0.534	0.544	0.551	0.524	0.522	0.819	0.542	0.419
STEWcult_2	0.519	0.662	0.567	0.455	0.484	0.525	0.869	0.557	0.559
STEWcult_3	0.221	0.564	0.578	0.436	0.453	0.458	0.880	0.615	0.456
STEWcult_4	0.487	0.515	0.595	0.307	0.357	0.451	0.830	0.632	0.331
STEWident_1	0.343	0.386	0.634	0.132	0.218	0.416	0.588	0.899	0.500
STEWident_2	0.351	0.594	0.700	0.262	0.285	0.460	0.707	0.907	0.431
STEWident_3	0.244	0.392	0.739	0.076	0.152	0.362	0.577	0.919	0.425
MLMV_1	0.164	-0.052	0.111	-0.133	-0.095	-0.042	-0.022	0.007	0.031
MLMV_2	0.283	0.234	0.445	0.383	0.379	0.463	0.445	0.410	0.899
MLMV_3	-0.187	-0.150	-0.185	0.117	-0.045	0.014	-0.266	-0.271	-0.380
MLMV_4	0.202	0.005	0.068	0.056	0.004	0.161	0.054	0.135	0.207

First-Order Latent Variable Correlations for family managers subsample (n=36)

	GS_for m	GS_par t	GS_p j	PE_for m	PE_par t	PE_p j	STEW_cul t	STEW_ide n
GS_form	0.822							
GS_part	0.396	0.823						
GS_pj	0.523	0.639	0.917					
PE_form	0.289	0.507	0.511	0.955				
PE_part	0.357	0.349	0.521	0.651	0.950			
PE_pj	0.590	0.595	0.639	0.645	0.575	0.979		
STEW_cult	0.445	0.589	0.820	0.531	0.534	0.572	0.829	
STEW_iden	0.381	0.496	0.788	0.195	0.243	0.458	0.737	0.932
CR	0.861	0.892	0.955	0.954	0.949	0.979	0.898	0.952
AVE	0.675	0.677	0.840	0.911	0.903	0.959	0.688	0.868

Cross loadings between the items and the constructs for family managers subsample (n=36)

	GS_form	GS_part	GS_pj	PE_form	PE_part	PE_pj	STEW_cult	STEW_iden	MLMV
GSform_1	0.857	0.245	0.532	0.078	0.273	0.423	0.426	0.488	0.530
GSform_2	0.869	0.352	0.316	0.296	0.246	0.472	0.309	0.196	0.327
GSform_4	0.731	0.438	0.376	0.448	0.376	0.607	0.327	0.141	0.170
GSpartic_1	0.291	0.922	0.491	0.499	0.359	0.575	0.448	0.400	0.201
GSpartic_2	0.332	0.678	0.219	0.341	0.129	0.314	0.142	0.079	0.012
GSpartic_3	0.261	0.852	0.499	0.339	0.269	0.440	0.541	0.423	0.211
GSpartic_4	0.426	0.820	0.688	0.468	0.309	0.544	0.586	0.513	0.210
GSpj_1	0.405	0.604	0.882	0.417	0.384	0.529	0.820	0.763	0.341
GSpj_2	0.540	0.505	0.896	0.449	0.471	0.590	0.661	0.670	0.521
GSpj_3	0.461	0.688	0.952	0.416	0.507	0.575	0.738	0.725	0.403
GSpj_4	0.517	0.538	0.935	0.588	0.548	0.649	0.777	0.727	0.580
PEform_1	0.204	0.488	0.488	0.956	0.512	0.618	0.514	0.220	0.347
PEform_2	0.350	0.479	0.487	0.953	0.734	0.614	0.500	0.152	0.425
PEpart_1	0.326	0.417	0.507	0.740	0.953	0.605	0.512	0.160	0.336
PEpart_2	0.353	0.241	0.482	0.489	0.947	0.483	0.501	0.306	0.349
PEpj_1	0.556	0.532	0.559	0.635	0.511	0.976	0.518	0.385	0.348
PEpj_2	0.596	0.627	0.685	0.629	0.609	0.982	0.598	0.504	0.367
STEWcult_1	0.388	0.420	0.705	0.570	0.551	0.556	0.786	0.569	0.442
STEWcult_2	0.502	0.629	0.670	0.460	0.466	0.487	0.842	0.588	0.516
STEWcult_3	0.120	0.447	0.662	0.450	0.406	0.402	0.860	0.633	0.430
STEWcult_4	0.462	0.448	0.679	0.260	0.332	0.444	0.828	0.661	0.356
STEWident_1	0.430	0.368	0.674	0.196	0.256	0.484	0.642	0.924	0.539
STEWident_2	0.351	0.564	0.771	0.250	0.249	0.430	0.709	0.918	0.423
STEWident_3	0.294	0.448	0.754	0.107	0.180	0.374	0.707	0.952	0.486
MLMV_1	0.203	-0.173	-0.025	-0.231	-0.184	-0.110	-0.126	-0.047	-0.154
MLMV_2	0.394	0.232	0.443	0.497	0.394	0.447	0.479	0.381	0.897
MLMV_3	-0.220	-0.027	-0.205	0.139	0.020	0.090	-0.197	-0.390	-0.403
MLMV_4	0.233	0.022	0.058	-0.070	-0.065	0.202	0.069	0.224	0.273

APPENDIX – Section 6

Appendix 5. Sample versus industry information

Part I

Activity	Sample						Industry					
	n	TOp Rev	Tasset s	ROA	ROE	ROS	n	TOp Rev	Tassets	ROA_ median	ROE_ median	ROS_ median
Animal Slaughtering and Processing (3116)	1	928	706	-0.8	-1.8	-0.6	19	283	267	1.86	6.64	0.61
Apparel Manufacturing (315)	1	593	907	5.2	7.1	7.9	16	289	221	0.56	0.65	0.32
Biomass Electric Power Generation (221117)	1	2423	7385	2.6	7.3	8.3	5	2306	5293	-1.50	10.57	-1.39
Broadcasting (except Internet) (515)	1	1012	836	0.8	2.2	0.7	1	1012	836	0.80	2.17	0.66
Building Material and Garden Equipment and Supplies Dealers (444)	1	2434	2341	3.2	6.1	3.1	17	392	467	-4.55	-6.87	-4.67
Business Support Services (5614)	1	452	295	-0.2	-0.7	-0.1	4	165	128	0.75	4.13	0.77
Chemical Manufacturing (325)	1	366	593	7.1	21.1	11.6	12 2	509	679	5.99	10.34	5.61
Fabricated Metal Product Manufacturing (332)	1	458	569	7.8	20.9	9.7	66	98	90	1.75	4.78	1.99
Flour Milling and Malt Manufacturing (31121)	3	331	315	7.5	32.8	7.2	14	155	360	4.70	8.04	2.35
Food Manufacturing (311)	4	638	400	15.8	28.0	9.2	11 5	835	468	4.82	13.71	3.75
Footwear Manufacturing (3162)	1	228	172	-6.1	-15.3	-4.6	10	641	322	5.17	14.89	7.36
Furniture and Home Furnishings Stores (442)	2	648	558	5.6	8.8	4.9	11	387	296	3.30	10.42	1.93
Furniture and Related Product Manufacturing (337)	1	231	371	-4.5	-10.4	-7.2	20	41	39	0.57	1.35	0.78
General Merchandise Stores (452)	1	325	179	13.5	17.9	7.4	11	383	348	8.47	5.59	2.74
Grain and Oilseed Milling (3112)	1	211	60	17.6	42.9	5.0	8	920	2168	5.89	9.20	3.18
Grocery and Related Product Merchant Wholesalers (4224)	1	1997	1015	17.2	24.6	8.7	48	360	352	5.57	14.95	2.82
Grocery Stores (4451)	1	314	132	13.0	19.9	5.5	7	633	2073	8.10	19.94	2.10
Management of Companies and Enterprises (55)	1	2	14	6.4	9.3	37.6	44	1106	1802	4.74	9.46	7.55
Management of Companies and Enterprises (551)	1	366	628	0.9	2.1	1.5	44	1106	1802	3.32	6.65	2.83
Merchant Wholesalers, Durable Goods (421)	1	365	503	6.5	7.4	8.9	13 8	268	223	2.35	6.24	1.28
Merchant Wholesalers, Nondurable Goods (422)	2	371	255	8.1	12.7	6.1	80	379	290	4.37	13.66	3.38

Note. TOpRev and Tassets are in million BRL and ROA, ROE and ROS are in percent. The sample values are the average, when there is more than 1 firm.

Part II

Activity	Sample						Industry					
	n	TOp Rev	Tasset s	ROA	ROE	ROS	n	TOp Rev	Tassets	ROA_ median	ROE_ median	ROS_ median
Miscellaneous Manufacturing (339)	1	114	171	1.6	2.9	2.5	45	1447	775	4.21	6.88	3.62
Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers (4211)	1	95	52	-0.3	-0.5	-0.2	42	881	461	0.05	0.67	0.02
Motor Vehicle and Parts Dealers (441)	2	207	136	1.0	1.8	0.4	41	112	135	-0.61	-1.14	-0.32
Motor Vehicle Parts Manufacturing (3363)	1	431	136	-0.2	-0.5	-0.1	33	65	72	-0.22	0.11	-0.19
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing (33451)	1	302	731	5.0	7.6	12.1	7	49	48	-2.35	7.55	-2.87
Newspaper, Periodical, Book, and Directory Publishers (5111)	2	500	503	-12.5	-143.6	-10.7	7	4863	2066	-11.48	-23.49	-9.56
Nonmetallic Mineral Mining and Quarrying (2123)	1	133	760	0.2	0.2	1.0	2	15	20	13.37	14.14	29.91
Other Food Manufacturing (3119)	2	2195	1922	5.5	12.6	3.9	30	268	258	4.91	9.64	2.76
Paper Manufacturing (322)	1	353	505	-0.7	-2.6	-1.0	83	196	397	1.07	4.63	1.77
Pharmaceutical and Medicine Manufacturing (3254)	2	1966	1604	11.0	25.2	9.2	37	607	603	6.68	15.16	7.84
Primary Metal Manufacturing (331)	1	686	754	2.0	4.5	2.2	23	347	436	-0.41	0.34	-0.37
Printing and Related Support Activities (323)	1	460	220	71.3	187.0	34.1	14	2373	985	1.97	5.56	2.15
Professional, Scientific, and Technical Services (541)	2	248	521	-1.6	-7.0	-4.0	81	211	410	-0.56	-4.70	-0.52
Publishing Industries (except Internet) (511)	1	86	94	3.8	18.5	4.1	1	32312	12733	3.79	18.47	4.12
Real Estate (531)	1	420	350	5.9	10.6	4.9	16	37	50	-0.13	5.00	-4.67
Repair and Maintenance (811)	1	280	263	-9.0	-28.3	-8.5	43	95	95	1.17	3.83	0.69
Soap, Cleaning Compound, and Toilet Preparation Manufacturing (3256)	2	249	287	8.2	11.5	8.5	18	106	126	2.74	6.68	4.46
Soft Drink and Ice Manufacturing (31211)	1	678	357	14.2	25.8	7.5	16	588	557	5.21	6.94	3.93
Sugar and Confectionery Product Manufacturing (3113)	1	76	357	0.6	2.6	2.9	25	946	558	1.33	19.98	3.25
Sugarcane Farming (11193)	1	524	1996	6.3	16.0	24.1	30	335	621	3.12	5.93	8.81
Textile Mills (313)	2	367	433	-13.0	-90.8	-13.3	51	44	61	0.32	2.74	0.25
Textile Product Mills (314)	1	237	254	7.8	12.7	8.3	8	380	387	4.69	8.04	3.14
Transit and Ground Passenger Transportation (485)	1	272	585	3.2	4.9	6.9	1	237	254	3.21	4.94	6.91
Water Transportation (483)	1	79	133	8.3	12.0	14.1	1	17244	30219	8.32	12.00	14.10

Note. TOpRev and Tassets are in million BRL and ROA, ROE and ROS are in percent. The sample values are the average, when there is more than 1 firm.