Influence of institutional economics on firm birth and death: A comparative analysis of hospitality and other industries

Abstract

This paper investigates how public policies, such as taxes and regulations influence firm formation (birth) and closure (death) in the hospitality and other industries in the United States (US), using an institutional economics approach and the dimensions of the Economic Freedom of North America (EFNA) index. The literature has been scant when it comes to examining the effects of policies of formal institutions on firms' birth and death in the hospitality industry, and whether these effects in hospitality differ from those of other sectors. The study uses panel data from government sources and the EFNA dimensions and applies cross-sectional dependence and unit root tests, followed by a panel generalized least square approach for the analysis. Our findings show that components of economic freedom have varying effects on firms' birth and death. The study provides practical contributions for policymakers and managers by improving the understanding of firm births and deaths in the US.

Keywords

Entrepreneurship, hospitality industry, economic freedom, institutional economics, firm birth and death, public policies

1. Introduction

Firms play crucial roles in job creation and economic growth. Given the problems associated with the economy, many states consider job creation and small business growth as essential issues for stability and economic development (Johnson, 2013). There are thousands of firms being established every month, while many others cease to exist in the United States (US) (Campbell, Heriot, Jauregui, & Mitchell, 2012). These developments could affect the stability and economic balance in many state economies. Understanding the reason(s) behind the birth (formation) and the death (closure) of these firms becomes, therefore, important for policymakers, local governments, and managers. More specifically, the service sector, which includes the hospitality industry, might require different policies than do other industries. The earlier American economy was based on large manufacturing firms, but in recent years the contribution of services has increased substantially (Fulop and Gyomai, 2012). Local and state governments might not fully embrace these changes, and their manufacturing-based regulations and policies might not be able to support this new era. The outcome of this study might cast some light on the entrepreneurship side of these changes.

Many influential aspects on birth and death of firms and the success of small businesses have been investigated from an economic perspective (Acs, 2006; Castano, Mendez and Galindo, 2015: Wennekers and Thurik, 1999). However, the literature has been scant on how the activities and policies of formal institutions, such as government spending, taxes, and labor market freedom, influence firm births and deaths in the hospitality industry, and whether the outcomes differ systematically from those of other economic industries. Therefore, this paper investigates how the activities and policies of formal institutions influence the birth and death of firms in the hospitality and other industries in the US. Moreover, the paper considers the possibility that the

effects of these policies and activities may be nonlinear over time, meaning that they either cease in relevance or become more relevant with more or fewer activities and policies of formal institutions.

In order to examine the factors affecting firm births and deaths, this study uses institutional economics as a theoretical foundation, and utilizes several databases including the Statistics of US Businesses (SUSB), Economic Freedom of North America (EFNA), Bureau of Economic Analysis (BEA), Bureau of Labor Statistics (BLS), and Census data incorporating panel data from 1999 to 2014 in 50 states. The study investigates two dependent variables, i.e., firm birth (percentage of firms established) and firm death (percentage of firms closed). Independent variables from the three arease of the EFNA (Government spending, Taxes, and Labor Market Freedom) were used to proxy formal institutions. Also, the study uses population percentage change, per capita real GDP percentage change, and unemployment levels as control variables for the analysis.

This investigation makes several significant contributions to hospitality and tourism literature. First, the study compares the effects of activities and policies of formal institutions on both the hospitality and other industries. Except for Singal (2015), available studies have solely emphasized differences between businesses in the hospitality industry (e.g. Claver-Cortés, Molina-Azorín, & Pereira-Moliner, 2006; Wagener, Gorgievski, & Rijsdijk, 2010) or between the hospitality and tourism industries (e.g., Altin, 2014; 2017; Singal, 2015). The findings from this study will contribute to further understanding of the dissimilarities between these sectors, this time from an institutional economics perspective. Second, the study employs the dimensions of the EFNA and additional secondary data sources to measure the quality of formal institutions for the hospitality industry. The hospitality and tourism industries have insufficiently used

secondary data for research, and exploring publicly available data (such as from government and non-profit sources) might help other researchers employ this valuable source of information. Third, as a case study, this study contributes to the formulation of new ideas for the analysis of firm birth and death. The goal of case studies is to expand and generate theories (analytical generalization) instead of enumerating frequencies (statistical generalizations) (Yin, 2009). In other words, a case study does not seek to produce findings that are representative in a general sense (Veal, 2006), but to express new ideas derived from the accrued evidence (Smith, 2010). Also, this study provides practical contributions for policymakers and managers by improving the understanding of what policies foster growth and create incentives for entrepreneurship activities in the US.

The following sections briefly review the literature on institutional economics (Section 2), the development of the hypotheses (Section 3), the features of the US hospitality industry (Section 4), the methodology employed (Section 5), and the statistical findings and discussions (Section 6). The final section discusses the implications, the limitations of the study, and future research.

2. Theoretical foundation

According to North (1987), the new institutional economics theory explains how institutions designate the "rules of the game" in an economy; they reduce uncertainty, dictate incentives, and affect transaction costs among agents. Both formal and informal institutions exert an influence on people’s actions and social interactions; but they differ in that informal institutions originate from culture to shape social norms, beliefs, and behavioral codes (Crum, 2011). Because informal institutions are constantly reinforced by a central value system, they are

exceptionally stable, and thus, difficult to change (Kwok & Tadesse, 2006). On the other hand, formal institutions may change more effortlessly and often, since they are derived from constitutions, laws, and regulations (Altin, Memili, & Sönmez, 2017; Crum, 2011). Considering the common value system but varying laws and regulations from state to state in the US, this study focuses on formal institutions and their effect on firm birth and death.

Given the crucial role that institutions perform on reducing uncertainty, in affecting incentives, and influencing transaction costs in a society and how they, in turn, affect economic performance (Altin, 2014; North, 1990; Nyström, 2008; Roxas & Chadee, 2013), it can also be assumed that institutions are instrumental in individuals' firm creation or closure decisions (Altin et al., 2017; Nyström, 2008). Moreover, entrepreneurship creates a link between institutions and economic growth. According to Hall and Sobel (2008), institutions that support economic freedom stimulate productive entrepreneurial activity, which translates to higher income levels and economic growth. Economic freedom is defined here as the freedom with which individuals can choose the goods they buy, the investments they make, the people with whom they trade, and at what price (Campbell et al., 2012; Gwartney & Lawson, 1996; Kreft & Sobel, 2005; Nyström, 2008). Alternatively, institutions can also determine the barriers that can hamper the success of businesses, eventually leading them to closure (Campbell, Fayman, & Heriot, 2011; Campbell et al., 2012).

As discussed previously, formal institutions come in the form of political, legal, and economic norms and rules. Economic freedom, for example, is considered an indicator of the quality of these institutions (Acemoglu & Johnson, 2001; Rodrik, Subramanian, and Trebbi, 2004). Following the example of many similar studies (Altin et al., 2017; Campbell et al., 2012;

Kreft & Sobel, 2005; Nyström, 2008), this investigation also employed economic freedom as a measurement for formal institutions.

3. Economic freedom and firm birth and death hypotheses

3.1. General

Researchers have developed different indices to measure the economic freedom construct; these indices reflect the institutional quality of a country or a state to the degree that it conforms to the classical liberal social and economic ideals (Campbell, Mitchell, & Rogers, 2013). This study used data from the Frasier Institute's Economic Freedom of North America (EFNA), which measures state or provincial economic freedom in the US, Mexico, and Canada. The index published by the EFNA is based on three regulatory factors: government spending, taxation, and labor market freedom (Karabegovic, McMahon, and Mitchell, 2005). Formal institutions affect these indicators through regulations, taxes and public policies that may decrease or increase economic freedom and, consequently, the likelihood of new businesses to open and thrive (Campbell, Rogers, & Heriot, 2007). Moreover, the three EFNA factors have been found to have a significant positive effect on growth in the number of firm births (Campbell et al., 2011). Hall, Pulito, and VanMetre (2013) discovered that a "state increasing its overall freedom score by one standard deviation (0.26) should experience an increase of approximately 42 (158.69 x 0.26) new business starts every month for every 100,000 non-business owners" (p. 12). Many other studies (Hall & Sobel, 2008; Stansel & Tuszynski, 2017; Murphy, 2016) led to similar conclusions: the quality of formal institutions supportive of economic freedom can increase productive entrepreneurial activity that manifests through increased venture capital investments, capital

income, patents, and sole proprietorship growth rates, large nascent firms, total firm births, and economic growth rates.

By contrast, low-quality formal institutions might deter growth and could even lead to the death of these firms in the end due to costs incurred after the initial investment and other issues related to welfare and social security programs, tax compliance, licenses and other legal requirements (Wiseman, 2013). However, high-quality formal institutions supportive of economic freedom may also lead to firm deaths due to increased competition (Campbell et al., 2007), which is necessary and natural to create wealth in a free market (Campbell et al., 2011).

The proposed conceptual model of the effects of the EFNA factors on firm births and deaths is based on several dimensions of economic freedom (government spending, taxation, and labor market freedom) and is presented in Figure 1 (see the next subsection for a discussion of the analytical framework). The initial assumption is that the effect of the dimensions of economic freedom can fluctuate over time, given the nature of (economic) data, which can be influenced by cyclical fluctuations above and below the long-term pattern of the data (Bails & Peppers, 1993; Gaynor & Kirkpatrick, 1994; Makridakis, Wheelwright, & Hyndman, 1998). These business cycle developments could lead to deviations from the linear assumption, which could subsequently affect the relationship between economic freedom indicators and firm births and deaths.

[INSERT FIGURE 1 ABOUT HERE]

3.2. Government Spending

The EFNA groups three different indicators associated with government spending, namely general government consumption, transfers and subsidies, and insurance and retirement payments. Crum (2011) found that government size had no significant influence on firm births nor deaths, although most researchers have found that a smaller government has benefits on firm creation in developed economies, like that of the US (Altin et al., 2017; Stansel, & Tuszynski, 2017; Powell & Weber, 2013). The latter is because a small government would require a small budget to operate and finance public programs, meaning that it would impose lower taxes and fewer regulations that affect the cost of opening and operating a business. Specifically, lower government consumption and other spending lead to more economic growth, more firm births, and fewer firm deaths (Campbell et al., 2011; Campbell et al., 2012; Campbell & Rogers, 2007; Stansel, & Tuszynski, 2017). Similarly, the bigger the size of the government, the more money it will need to operate and function. The extra money could come from bigger taxes and/or borrowed money, where both could lower available funds to the private sector (crowding-out effect) or increase interest rates due to a higher demand for money. Also, higher government consumption expenditure could be associated and justified with more regulations, restrictions, and requirements (e.g., licenses, certifications, etc.).

However, there is a need for governments to create stable institutions to protect the rights of business owners and develop infrastructures to support businesses (Altin et al., 2017). The latter would thrive in an environment with an effective legal system and established property rights that reduce uncertainty and transaction costs. Based on the above discussion, we can argue that there is a nonlinear relationship between government spending and firm birth/death.

H1a: Government consumption expenditures have a nonlinear effect on firm births.

H1b: Government consumption expenditures have a nonlinear effect on firm deaths.

H2a: Government transfers and subsidies have a nonlinear effect on firm births.

H2b: Government transfers and subsidies have a nonlinear effect on firm deaths.

H3a: Insurance and retirement payments have a nonlinear effect on firm births.

H3b: Insurance and retirement payments have a nonlinear effect on firm deaths.

3.3. Tax freedom

Tax freedom is monitored using income and payroll taxes, top marginal income tax rate and threshold, property tax and other taxes, and sales taxes. Researchers have confirmed multiple times the negative relationship between taxation and entrepreneurship (Campbell & Rogers, 2007; Crum, 2011; Cumming & Li, 2013; Stansel, & Tuszynski, 2017). Tax rates are powerful tools and may influence many aspects of investment, consumption, and new firm formation (Mendoza, Razin, & Tesar, 1994). When taxes are low, people are more likely to start new firms (Kreft & Sobel, 2005). According to Crum and Gohmann (2016) and Campbell and Rogers (2007), this is because low taxation allows individuals desiring to become entrepreneurs to have funds available to invest in a profitable business opportunity when they discover it.

Support for this relationship also holds when the different taxes are measured individually. First, high individual and corporate income taxes decrease firm births (Campbell et al., 2011; Cumming & Li, 2013; Johnson, 2013), while increasing firm deaths (Campbell et al., 2011). Second, a low top marginal income tax rate and threshold increases firm births, while it simultaneously increases firm deaths (Campbell et al., 2012). Third, many businesses lease their space (LaVecchia & Mitchell, 2016) and do not have to deal with property taxes. However,

property owners might pass these taxes to businesses through higher rent prices. Finally, lower sales taxes encourage more firm births and discourage firm deaths (Campbell et al., 2011; Campbell et al., 2012). Only the study by Crum and Gohmann (2016) found no significant relationship between state tax levels and firm births.

Similar to the argument made for the size of the government, we can argue here that the government requires income, which comes from collected taxes, to properly function. However, these taxes should not be excessive to the point of becoming a burden for businesses. Following the discussion above, we hypothesize that taxation has a non-linear effect on firm birth and death.

H4a: Income and payroll taxes have a nonlinear effect on firm births.

H4b: Income and payroll taxes have a nonlinear effect on firm deaths.

H5a: Top marginal income tax rate and threshold have a nonlinear effect on firm births.

H5b: Top marginal income tax rate and threshold have a nonlinear effect on firm deaths.

H6a: Property taxes and other taxes have a nonlinear effect on firm births.

H6b: Property taxes and other taxes have a nonlinear effect on firm deaths.

H7a: Sales taxes have a nonlinear effect on firm births.

H7b: Sales taxes have a nonlinear effect on firm deaths.

3.4. Labor market freedom

Labor market freedom is observed using three indicators, which are minimum wage legislation, government employment, and union density. Regulations that affect labor market freedom may affect entrepreneurs' decision to form a firm or may contribute to the death of firms. Stansel, & Tuszynski (2017) and Reynolds, Miller, and Maki (1995) confirmed that more labor market freedom and more flexible employment relations boost firm births. When the effect of minimum wage on firm births and deaths is measured exclusively, this leads to mixed results. Crum and Gohmann (2016) and Crum (2011) found no significant effect, while Stansel, & Tuszynski (2017), Cumming and Li (2013), and Campbell et al. (2012) found that a lower minimum wage encourages more economic growth, firm births and, also, firm deaths. Alternatively, minimum wage legislation can provide more money to workers, which can boost the demand for goods and services and stimulate business growth (Ghani, 2016). The previous findings suggest possible counteracting effects of minimum wage, where businesses can initially afford to pay a certain level of minimum wage, which can become a burden beyond a certain threshold.

There are two approaches to government employment and the firm birth/death relationship. One point of view argues that businesses need talented people to thrive; however, government jobs can take talent out of the market, especially when government employment may offer better benefits. In this case, a smaller government workforce and payroll might boost firm births (Campbell et al., 2012; Campbell & Rogers, 2007). On the other hand, according to Cumming and Li (2013), government employment could be beneficial to businesses due to more demand for goods and services by high paid employees. These arguments suggest that there could be a non-linear relationship between government employment and firm birth/death.

More significant union density is detrimental to firm births but is also a deterrent to firm deaths (Campbell et al., 2012; Crum & Gohmann, 2016). In contrast, unionization may have a positive effect on productivity due to better information provision throughout the company and the efficient use of effort (Barth, Bryson, & Dale-Olsen, 2017). This outcome could be highly dependent on the relationship between the union and the company management and could explain the non-significant results found by Crum (2011). Previous arguments suggest possible countervailing effects of unionization, implicating a potential non-linear association between union density and firm birth and death.

H8a: Minimum wage legislation has a non-linear effect on firm births.

H8b: Minimum wage legislation has a non-linear effect on firm deaths.

H9a: Government employment has a nonlinear effect on firm births.

H9b: Government employment has a nonlinear effect on firm deaths.

H10a: Union density has a nonlinear effect on firm births.

H10b: Union density has a nonlinear effect on firm deaths.

4. The US hospitality industry

The hospitality industry is a comprehensive collection of many types of businesses, including accommodation (e.g., hotels, timeshare, motels, bed & breakfast), food (e.g., fast-food, cafeterias, and restaurants), meetings and convention, entertainment (e.g., nightclubs), and public houses (e.g., Airbnb) (Goeldner & Brent Ritchie, 2012; Page, 2019). This complex set of businesses has one thing in common, which is to enhance the mutual well-being of the parties

involved in the human exchange through the provision of accommodation, and food and drink (Ridderstaat & Okumus, 2019). This human interchange is one of the reasons why this sector is characterized as labor-intensive (Mill, 2010).

According to IBISWorld (2018), the accommodation and foodservice sector in the US is mainly dependent upon consumer spending, and comprises more than 940 thousand businesses, with US$ 1.1 trillion in sales and almost US$ 90 billion in profits. Data from the US Bureau of Economic Analysis indicate that this sector accounted for more than US$ 616 billion to the value-added of the US economy in 2018, which is about 3 percent of the GDP (Bureau of Economic Analysis, 2019). The latter is generally lower than many other sectors (e.g., construction, manufacture, wholesales, retail, transportation and warehousing, finance and insurance, real estate and renting), where the contribution varied between 3.1% and 13.3%. However, this relates only to the direct outcome, as the ripple effect of the hospitality industry may be considerably larger than the case of other industries (Kim, 2015). The unemployment rate in this sector has been steadily decreasing over time, reaching 5.4% in 2018. The latter is 1.6 percentage points higher than the general rate of unemployment (3.8%). Additional data from the US Bureau of Labor Statistics indicate that the hospitality industry accounted for more than 16 million employees, which is about 12 percent of the overall employed population in the US.

Except for Singal (2015), available studies have solely emphasized differences between businesses in the hospitality industry (e.g., Claver-Cortés, Molina-Azorín, & Pereira-Moliner, 2006; Wagener, Gorgievski, & Rijsdijk, 2010) or between the hospitality and tourism industries (e.g., Altin, 2014; 2017; Singal, 2015). This lacuna gives additional impetus to further study the hospitality industry in relation to other economic industries.

5. Methodology

5.1. Data collection and variable description

The researchers collected the data (1,600 panel observations from 1999 to 2014 in 50 states in the US) from different sources, including the Statistics of US Businesses (SUSB), the Fraser Institute, the Bureau of Economic Analysis (BEA), and the Bureau of Labor Statistics (BLS). The data were classified based on the North American Industry Classification System (NAICS), which is an industry classification system that groups establishments into industries, considering the similarity of their production system (Office of Management and Budget, 2017). Out of 1,600 observations, 800 data points were associated with the hospitality industry (NAICS=72, accommodation & food services), while the remainder (800 observations) were related to the other sectors of the economy. Other industries include, for example, manufacturing, retail trade, and construction sectors, and were derived by subtracting the accommodation and food services from the overall total of firm births and deaths. Ultimately, the data consisted of 15 variables in a balanced panel dataset. Panel data are more attractive than time-series data because panel data often contain more abundant information compared to single cross-sections, allowing for better precision in estimation (Hoechle, 2007). Table 1 describes the employed variables and their sources. The study distinguishes between two dependent variables, i.e., the percentage of firm births (perbirth) and the percentage of firm deaths (perdeaths).

[INSERT TABLE 1 ABOUT HERE]

5.2. Models

This study will estimate the impact of the institutional variables on both firm births and deaths according to these equations.

Hospitality industry:

$$\text{perbirth}_{it} = \alpha_0 + \sum_{a=1}^{10} \alpha_a X_{it}^a + \alpha_7 (X_{it}^7)^2 + \alpha_8 (X_{it}^8)^2 + \sum_{c=1}^{3} \alpha_c Y_{it}^c + \varepsilon_{it} \quad (1)$$

$$\text{perdeath}_{it} = \beta_0 + \sum_{a=1}^{10} \beta_a X_{it}^a + \beta_7 (X_{it}^7)^2 + \beta_8 (X_{it}^8)^2 + \beta_9 (X_{it}^9)^2 + \sum_{c=1}^{3} \beta_c Y_{it}^c + \psi_{it} \quad (2)$$

Other industries:

$$\text{perbirth}_{it} = \gamma_0 + \sum_{a=1}^{10} \gamma_a X_{it}^a + \gamma_4 (X_{it}^4)^2 + \gamma_7 (X_{it}^7)^2 + \sum_{c=1}^{3} \gamma_c Y_{it}^c + \omega_{it} \quad (3)$$

$$\text{perdeath}_{it} = \delta_0 + \sum_{a=1}^{10} \delta_a X_{it}^a + \sum_{c=1}^{3} \delta_c Y_{it}^c + \varphi_{it} \quad (4)$$

where

i	=	Cross-sectional component of the panel (i.e., state);
t	=	The time component of the panel;
X	=	A vector of independent variables representing the institutional variables;
X^4, X^7, X^8	=	Independent variables for which the U-test has determined that their behavior is nonlinear of nature;
Y	=	A vector of independent variables included as control variables in the regression;
α, β, γ, δ	=	Coefficients;

$\varepsilon, \psi, \omega, \varphi$ = Residual error terms assumed to have an expected value of zero and a constant variance.

Equations (1) – (4) include several squared variables to indicate possible nonlinear effects of some variables on both firm births and deaths. To determine these nonlinear variables, the study first determined whether the relationship between the dependent variables and the independent ones was linear or non-linear of nature. For this purpose, the authors applied a formal test suggested by Lind & Mehlum (2010), also known as the U-test. In a U-shape relationship, the test looks for decreasing values on the left side (low side) in an interval of outcomes and increasing values on the right side (high side) of the interval. Alternatively, in the case of an inverse U-shaped relationship, the test looks for increasing values, respectively decreasing values on the set of intervals. If these conditions are not present, then the conclusion from the test is that there is neither a U-shape nor an inverse U-shape relationship (i.e., only linear relationships). The results (available upon request) show that in the case of firm births in the hospitality industry, only sales taxes and minimum wage legislation were statistically significant, indicating, respectively, an inverse U-shaped and U-shaped development. With Firm deaths, sales taxes, minimum wage legislation, and government employment were found to be statistically significant, indicating, respectively, inverse U-shaped (the first variable) and U-shaped developments (the last two variables). In the case of firm births of the other industries, the results showed inverse U-shaped developments for the variables income and payroll tax revenue and sales taxes. For firm deaths in the other industries, no variable was found to be statistically significant from the U-test. Therefore, this study will estimate the impact of the institutional variables on both firm births and deaths according to these equations.

The previously mentioned equations also include several so-called control variables, which are non-focal variables that may affect the dependent variable (Atinc, Simmering, & Kroll, 2012). The use of control variables is needed if (i) the variable affects the dependent variable, and (ii) the variables may be correlated with those variables whose effects are the focus of the study (Allison, 1999). Using these criteria, the authors tested the control variables to assess their requirement. First, the authors tested the causality of the dependent variables and the three control variables using a simple panel Granger causality test. This test is based on Granger (1969) and examines whether the lagged values of one variable in a vector autoregression model help predict another variable (Verbeek, 2012). The results (which are available upon request) show that in all cases, all three control variables affected both independent variables (firm births and firm deaths). Next, the authors calculated the Pearson pairwise correlation coefficients between control variables and the other independent variables. The results of the correlation tests (also available upon request) indicate that the correlation between the other independent variables and population change was in all cases statistically significant, and to some extent statistically significant when considering the other two control variables. Considering these findings, the authors decided to include these three control variables in the analysis, as also indicated in the equations above.

5.3. Methodological procedures

Given the panel data, the study first analyzed whether there is dependence among the different cross-sections in the data. In other words, the study determined whether the errors of the state-based data depended upon each other. Ignoring the cross-sectional dependence of errors in panel data could have severe consequences for the estimations, such as misleading inference and

inconsistent estimators (Pesaran, 2015). One possible reason for cross-sectional dependence is that the cross-sections could be simultaneously affected by a common shock (Cerrato & Sarantis, 2002), In the context of this study, this would mean that all 50 states are collectively impacted by a single factor, for example, a sudden jump in crude oil prices that affects gas prices in all US states. The researchers applied the cross-sectional dependence test commonly known as the CD-test, which is based on the average of pair-wise correlation coefficients of the OLS residuals from the individual regressions in the panel (Pesaran, 2004), to test for group dependency.

Next, the authors applied two panel-oriented unit root tests, the Levin-Lin-Chu (LLC) (Levin, Lin, & Chu, 2002) and the Im-Pesaran-Shin (IPC) (Im, Pesaran, & Shin, 2003) tests, on both the level and first difference forms of the variables. Both unit root tests can consider cases of cross-sectional dependence or independence (Levin et al., 2002).

The last step is to estimate the elasticity effects of the different independent variables on both dependent variables (perbirth and perdeath), following the models in equations (1) - (4). For this purpose, the authors applied a generalized least squares (GLS) approach, which explicitly considers the possibility of difference in variability in the applied variables, and can produce best linear unbiased estimators (BLUE) (Gujarati & Porter, 2009). The GLS model is a weighted form of the ordinary least squares method (using standard deviations of the error term as weights), which can resolve problems of heteroskedasticity (Asteriou & Hall, 2007).
The next section will present the empirical findings and a discussion of these results.

6. Empirical findings and discussion

6.1. Cross-sectional dependency

The CD test for cross-sectional dependency shows that virtually all variables were correlated across the panel, except for the top marginal income tax rate for both the hospitality and other industries (Table 2). Further analysis of this variable shows that while the top marginal income tax rates varied among the states, they were mostly flat over the years in each state. These characteristics may explain the statistical absence of cross-sectional dependency of each group's error term. Given this outcome, the authors omitted this variable from further analysis. The presence of correlation among the different cross-sections has implications for the way to apply the unit root tests, to be discussed in the next section.

[INSERT TABLE 2 ABOUT HERE]

6.2. Unit root tests

With the results from the cross-sectional dependency analysis, the authors tested the variables for stationarity using both the LLC and IPS tests (Table 3). In the presence of cross-sectional correlations, the data for both unit root tests were first corrected for their cross-sectional mean, to control for correlation, in line with Levin, Lin, & Chu (2002). The results show that all variables were stationary at both level and first difference forms. Consequently, the authors proceeded with the analysis using the level form of the variables.

[INSERT TABLE 3 ABOUT HERE]

6.3. Elasticity effects

Using the first difference form of the variables, the authors estimated the elasticity effect of each of the applied independent variables on the dependent variables (firmbirth and firmdeath), using the generalized least squares approach. Table 4 presents the results, with the further discussion below (per factor). Before the detailed discussion of the findings, the authors want to discuss conventions, based on Renshaw (2009), that serve as a guideline for the analysis. If we denote the coefficient of the independent institutional variable as c_1, and its squared version as c_2, the following can be concluded:

- If $c_1 > 0$ and $c_2 > 0$: The relationship is nonlinear (convex ()), with a minimum point, after which the effect of the dependent variable on the independent variable shows an increasing pattern.
- If $c_1 < 0$ and $c_2 > 0$: The relationship is nonlinear (convex ()), with a minimum point, after which the effect of the dependent variable on the independent variable is increasing of nature.
- If $c_1 < 0$ and $c_2 < 0$: The relationship is nonlinear (concave ()), with a maximum point, after which the effect of the dependent variable on the independent variable is decreasing of nature.
- If $c_1 > 0$ and $c_2 < 0$: The relationship is nonlinear (concave ()), with a maximum point, after which the effect of the dependent variable on the independent variable is decreasing of nature.

[INSERT TABLE 4 ABOUT HERE]

6.4. Discussions of results and coefficient testing

6.4.1. Results

General government consumption as a percentage of income was not found to be statistically significant in affecting firm birth developments in both the hospitality and other industries (α = 0.1912; γ = -0.1542) meaning that less government interference through its spending behavior (and, thus, more economic freedom) did not affect the establishment of new businesses in all industries. More economic freedom through less government spending was also not influential on firm deaths in the hospitality industry, but slightly negative on business closures in the other industries (β = -0.1069; δ = -0.1965*). Studies by Campbell et al. (2011; 2012), Campbell & Rogers (2007), Stansel, & Tuszynski (2017) have indicated that lower government consumption leads to fewer firm deaths, which may explain the negative connection found above for the other industry.

Government spending through transfers and subsidies as a percentage of income was not significant in affecting firm births and deaths, considering that the estimated coefficient in all four cases was found to be not statistically significant.

Insurance and retirement payments as a percentage of income were not found to be significant in affecting firm births in the hospitality industry (α = -0.1014), but they were a driving force behind more firm births in the other industry (γ = 0.2648***). The latter implies that when government intervention decreases (and, thus, more economic freedom), there will be an increase in entrepreneurship in other industries, but not in the hospitality industry. Lower government spending for social insurance programs may lead to more economic growth, which may be conducive to more firm births (Campbell et al., 2011; Campbell et al., 2012; Campbell & Rogers, 2007; Stansel, & Tuszynski, 2017). In the case of firm deaths, the results indicate that lower insurance and retirement payments (or more economic freedom) have a decreasing effect

on business closures in the hospitality industry (β= -0.3429***), but an increasing effect on the other industries (δ= 0.2308***). While the effect of lower government spending and increased economic growth may be causing lower business closures in the hospitality industry, this does not appear to be the case for firm deaths in the other industries. Lower insurance and retirement payments may at the same time increase the risk of business ownership and credit constraints (Olds, 2014), and the lack of an adequate safety net may discourage entrepreneurs from staying longer in business.

With relative income and payroll tax revenue as a percentage of income, the results show a positive statistically significant effect on firm births in the hospitality industry (α = 0.2887***), but no statistically relevant effect in the other industries (γ = 0.0394). One explanation for this outcome is that low taxation is a sign of tax freedom, which has been found to have a positive effect on entrepreneurship (Campbell & Rogers, 2007; Crum, 2011; Cumming & Li, 2013; Stansel, & Tuszynski, 2017), and thus, on firm births. With firm deaths in the hospitality industry, the positive and statistically significant effect of relative income and payroll taxes on business deaths in (β = 0.1452***) could be attributed to possible lower expenditures of the government in an environment of low taxation. A small government would, for example, spend less on insurance and retirement payments, which, as indicated above, may discourage entrepreneurs from staying longer in business. The effect of low income and payroll taxation seems to be only relevant for the hospitality industry, as no statistically significant effect was found on firm deaths in the other industries.

Property taxes and other taxes in percentage of income had a statistically significant positive effect on firm births in the hospitality industry (α = 0.4359***), but not on new business establishments in the other industries (γ = 0.0841). Similarly, these types of taxes had a positive

effect on firm deaths in the hospitality industry ($\beta = 0.4066$***), but not on business closures in the other industries ($\delta = 0.1041$). These findings were in line with those of the income and payroll taxes and may share the same explanations as discussed above.

The results for sales taxes were mostly in line with those found for the previous forms of taxation, and the explanations provided for income and payroll tax revenue equally apply in this case. There are, however, two differences. First, sales taxes were also statistically significant for firm births and deaths in the other industries, along the same lines as those of the hospitality industry. Second, the effect of lower sales taxes on firm births in the hospitality and other industries were found to be nonlinear, and, thus, temporary, as the squared values of sales taxes for both the hospitality and other industries were negative and statistically significant, indicating a concave relationship. The latter means that as fewer sales are collected, the effect on more business establishments in both the hospitality and other industries will gradually reduce, up to a certain point where the influence of lower sales taxes on business establishments will become negative. In other words, more economic freedom due to sales tax increases is not always positive for business establishments.

More economic freedom through less minimum wage legislation had a negative and statistically significant impact on firms' births in the hospitality industry, but not in other industries ($\alpha = -0.4518$***; $\gamma = -0.1579$). One explanation for this outcome could be that minimum wage legislation can provide more money to workers, which can boost the demand for goods and services and stimulate business growth (Ghani, 2016). More limited minimum wage legislation can cause an opposite effect, which could reduce the demand for goods and services, and, thus, profitability, making it less attractive for entrepreneurs to establish new businesses.

The results for government employment as a percentage of state/provincial employment show no statistically significant effects on firm births in the hospitality and other industries (α = -0.1288; γ = -0.0378). In the case of firm deaths, the results indicate a statistically significant effect on business closures in the hospitality industry and no effect on the other industries (β = 0.2201***; δ = -0.0073). Furthermore, the squared variable of government employment was positive and statistically significant, implying a nonlinear convex effect. Specifically, when government employment is high, this will encourage businesses to stay longer in business due to higher demand for goods and services by better-paid government employees (Cummings & Li, 2013). Alternatively, when available government jobs decrease, this could lower the demand for goods and services, which could lead to more business closures.

Union density had a negative and statistically significant effect on firm births in both the hospitality and other industries (α = -0.2568***; γ = -0.1304*). While more union density could be detrimental to firm births, it could also be a deterrent to firm deaths (Campbell et al., 2012; Crum & Gohmann, 2016), as more unionization may have a positive effect on productivity due to better information provision throughout the company and the efficient use of effort (Barth, Bryson, & Dale-Olsen, 2017). Less unionization may damp this positive effect and may affect the willingness of entrepreneurs to establish new businesses. In the case of firm deaths, less unionization had a positive but weakly statistically significant impact on business closures in the hospitality industry, but no statistical effect on closures in the other industries (β = 0.1172*; δ = -0.1035). The negative and statistically significant effect for firm deaths in the hospitality industry may reflect the inverse of the negative effect of unionization on firm deaths signaled by Campbell et al. (2012) and Crum & Gohmann (2016).

Looking at the effect of the control variables, the results indicate that an increase in the population had a positive and statistically significant effect on firm births in both the hospitality and other industries ($\alpha = 0.8798^{***}$; $\gamma = 1.1083^{***}$), as population increase could stimulate demand for goods and services, which could influence the perception of profitability and induce entrepreneurs to open new businesses. With firm deaths, the results indicate no statistically significant effect on business closures in the hospitality industry, but a positive and statistically significant effect on business closures in the other industries ($\beta = -0.0098$; $\delta = 1.1162^{***}$). The latter could be associated with increased competition as more business establishments could increase competition and, therefore, the likelihood of business failures.

Concerning growth in the per capita real income, the results indicate no statistically significant effect on firm births in both the hospitality and other industries ($\alpha = -0.0258$; $\gamma = 0.0191$). In the case of firm deaths, only business closures in the hospitality industry were negatively and statistically significantly affected by the increase in the per capita real income ($\beta = -0.0403^{***}$; $\delta = 0.0243$). According to Braunerhjelm (2010), entrepreneurship is often a necessity-based venture, where entrepreneurship is the last resort when people cannot find other sources of income. The statistically significant negative effect of per capita income on business closures reflects an incentive of business owners to keep their company open because it generates enough financial incentive to do so.

With unemployment, the results suggest negative statistically significant effects on firm births in both the hospitality and other industries ($\alpha = -0.0996^{*}$; $\gamma = -0.3460^{***}$). According to Ritsilä & Tervo (2002), a long-run unemployment period might discourage people's ambition to become self-employed, which may explain the negative relation found for business establishments in both the hospitality and other industries. With firm deaths, the results suggest

only a negative and statistically significant effect on business closures in the other industries (no statistically relevant effect on firm death in the hospitality industry) (β = -0.0222; δ = -0.3385***). Higher unemployment may work as an incentive for business owners to keep their business longer open, given the limited opportunities to get a job elsewhere.

6.4.2 Coefficient testing

The previous analysis has shown instances of possible similarities and differences of effects between the hospitality industry and other sectors of the economy. The authors determined whether there are statistically significant differences between the coefficients of the hospitality and other industries by following in part the approach of Croes, Ridderstaat, & Rivera (2018), where the difference between the coefficients for each variable is determined as follows:

$$\delta_v = \beta_v - \gamma_v \quad (5)$$

Where

δ = Difference between the coefficients

β = Coefficient of a variable *v* in the hospitality industry equation (either firm birth or firm death).

γ = Coefficient of a variable *v* in the other industries equation (either firm birth or firm death).

We can transform this equation (5) into:

$$\beta_v = \delta_v + \gamma_v \quad (6)$$

Equations (7) and (8) describe the effect of an independent variable on the dependent variable:

$$D^{H}_{v,it} = \alpha_0 + \beta_1 I_{1,it} + \cdots + \beta_n I_{n,it} + \varepsilon_{1,t} \quad (7)$$

$$D^{O}_{v,it} = \alpha_1 + \gamma_1 I_{1,it} + \cdots + \gamma_n I_{n,it} + \varepsilon_{2,t} \quad (8)$$

where

D	=	Dependent variable
H	=	Hospitality industry
O	=	Other industries
I	=	Independent variable
ε	=	Error (white noise).

Substituting (6) in (7) results in the following:

$$D^{H}_{v,it} = \alpha_0 + (\delta_1 + \gamma_1) I_{1,it} + \cdots + (\delta_n + \gamma_n) I_{n,it} + \varepsilon_{1,t} \quad (9)$$

$$D^{O}_{v,it} = \alpha_1 + \gamma_1 I_{1,it} + \cdots + \gamma_n I_{n,it} + \varepsilon_{2,t} \quad (10)$$

Calculating the difference between equations (9) and (10) results in the following equation:

$$\left(D^{H}_{v,it} - D^{O}_{v,it}\right) = (\alpha_0 - \alpha_1)\alpha_0 + \delta_1 I_{1,it} + \cdots + \delta_n I_{n,it} + \varepsilon_{1,t} \quad (11)$$

Equation (11) can be tested using the same GLS approach as when the coefficients were estimated. In line with Croes et al. (2018), the authors used the Wald test to determine whether coefficients $\delta_1 \ldots \delta_n$ were significantly different from zero or not:

- if an element of $\delta_1 \ldots \delta_n = 0 \rightarrow$ coefficients of both the hospitality industry and the other industries were statistically the same;
- if an element of $\delta_1 \ldots \delta_n \neq 0 \rightarrow$ coefficients of both the hospitality industry and the other industries were statistically different.

The results of this analysis indicate that in the majority of cases, the coefficients for the hospitality industry were statistically different from those of the other industries when considering both firm births and deaths. These outcomes indicate that firm births and deaths in the hospitality industry are generally affected differently by the institutional factors than the case of the other industries. For firm births, this was the case when considering general government consumption, insurance, and retirement payments, income and payroll tax revenue, property tax and other taxes, sales taxes, minimum wage legislation, and union density. Additionally, changes in population, real per capita GDP, and unemployment also affected the hospitality industry differently than the other industries. Concerning firm deaths, the picture is the same as with firm births, except for the effects of the institutional factors minimum wage legislation and union density. Notably, the type of industry

does not matter when it comes to the effects of transfers and subsidies on either firm births or firm deaths, as the coefficients were statistically the same for the hospitality and tourism industries.

7. Implications, limitations, and future research

In conclusion, this study examined the effect of formal institutions on firm birth and death in hospitality firms while comparing the outcomes with those of other industries. The study applied different tests to assess the impacts of different public policies on business establishments and closures in both the hospitality and other industries. The findings show that firm births and deaths in the hospitality industry are generally affected differently when it comes to the dimensions of formal institution intervention, the intensity, direction (positive or negative) and (non) persistence of the effects. Overall, the results indicate that some public policy tools were useful (e.g., income and payroll taxes as well as property and other taxes on firm births in the hospitality industry), while others were ineffective (e.g., transfers and subsidies on firm births in the hospitality industry) or even counterproductive (e.g., minimum wage legislation on firm births in the hospitality industry).

The study makes several contributions to the hospitality literature, specifically in terms of (i) comparing the effects of activities and policies of formal institutions on both the hospitality and other industries from an institutional economic perspective; (ii) using secondary data sources to measure the quality of formal institutions for the hospitality industry; and (iii) providing new ideas for the analysis of firm birth and death. On the latter, the study also provided a new view on the analysis of firm births and deaths by comparing the effects of institutional factors on both the hospitality and other industries. Likewise, the study provided several practical solutions for deciding on the need for nonlinearity assumption (squared variables) and whether additional

variables (control variables) were needed, and if the estimated effects of institutional factors were statistically significant or not.

The study also provided some useful results for policymakers and managers. Our findings are helpful to both existing companies in the hospitality industry and entrepreneurs who want to enter the industry. We suggest policymakers invest in more industry-specific and entrepreneurship-friendly policies such as a general reduction in regulation and taxes that will lower the cost of doing business (Garrett and Wall, 2005) to encourage firm births and reduce firm deaths in their respective states. Managers of existing companies should consider public policies in formulating and implementing strategies since the policies could influence the growth and profit significantly. Also, entrepreneurs should consider these policies when opening businesses since these policies may create/eliminate barriers to enter the market.

Some limitations apply to this study. There may be some characteristics that the authors did not consider, such as government-initiated small business administration agency programs, loans, and incentives provided by the government, and different financing/investment options available in some states. Also, there could be a variation in startup costs and difficulties in opening a business from state to state. Moreover, the other industries were considered as one homogenous group when comparing them with the hospitality industry, while in reality, this could be different. Lastly, this study does not consider how long firms stay in business. Longitudinal studies where the same firms are followed for multiple years to determine their death could help to get a clearer picture of the environment.

Future studies should consider the differences between the hospitality industry and individual industries that may have a possible connection with this sector, for example, the retail industry. In this way we could get a better understanding of the similarities and differences

between these industries in an institutional economic environment. Also, future research should focus on finding the optimal level of government intervention for when the effect of formal institutions on firm birth and death in the hospitality industry is non-linear. Another future research topic to consider is how other government policies, such as initiated entrepreneurship incentives and programs, affect the difficulty of opening businesses in the hospitality industry. Moreover, while we assume that informal institutions are similar among states, investigating if this assumption holds could be another topic for future research. The proposed research path offers several opportunities to expand our understanding of the uniqueness and intricacies of the hospitality industry.

7. References

Acemoglu, D., Johnson, S., & Robinson, J. (2001). The colonial origins of comparative development: An empirical investigation. American Economic Review, 9, 1369–1401.

Acs, Z. (2006). How is entrepreneurship good for economic growth?. *Innovations: technology, governance, globalization*, *1*(1), 97-107.

Allison, P. (1999). *Multiple regression: A primer*. California: Pine Forge Press.

Altin, M. (2014, June 3-8). *Economic Freedom, Ease of Doing Business and Entrepreneurship in Hospitality and Tourism Sector.* Paper presented at the 7th World Conference for Graduate Research in Tourism, Hospitality and Leisure, Istanbul Turkey.

Altin, M., Memili, E., & Sönmez, S. (2017). Institutional economics and firm creation in the hospitality and tourism industry: A comparative analysis of developing and developed economies. *Tourism Economics*, *23*(7), 1381-1397.

Asteriou, D., & Hall, S. (2007). *Applied Econometrics, A Modern Approach*. New York: Palgrave MacMillan.

Atinc, G., Simmering, M., & Kroll, M. (2012). Control variable use and reporting in macro and micro management research. *Organization Research Methods, 15(1)*, 57-74.

Bails, D., & Peppers, L. (1993). Business Fluctuations: Forecasting Techniques and Applications. Prentice-Hall, Inc.

Barth, E., Bryson, A., & Dale-Olsen, H. (2017). *Union density, productivity and wages*. (No. 11111). Institute of Labor Economics (IZA).

Braunerhjelm, P. (2010). *Entrepreneurship, Innovation and Economic Growth-past experience, current knowledge and policy implications*. (No. 224). CESIS, KTH Royal Institute of Technology.

Bureau of Economic Analysis (2019). Gross domestic product by industry: First quarter of 2019. News Release BEA 19- 33.

Campbell, N., Fayman, A., & Heriot, K. (2011). Growth in the number of firms and the economic freedom index in a dynamic model of the US states. *Journal of Economics and Economic Education Research, 12*(2), 51-64.

Campbell, N., Heriot, K. C., Jauregui, A., & Mitchell, D. T. (2012). Which state policies lead to US firm exits? Analysis with the economic freedom index. *Journal of Small Business Management, 50*(1), 87-104.

Campbell, N., Mitchell, D. T., & Rogers, T. M. (2013). Multiple measures of US entrepreneurial activity and classical liberal institutions. *Journal of Entrepreneurship and Public Policy, 2*(1), 4-20.

Campbell, N., & Rogers, T. M. (2007). Economic freedom and net business formation. *Cato Journal, 27*(1), 23-36.

Campbell, N., Rogers, T. M., & Heriot, K. C. (2007). The Economic Freedom Index as a determinant of firm births and firm deaths. *Southwest Business & Economics Journal, 16*(2007), 37-50.

Castaño, M. S., Méndez, M. T., & Galindo, M. Á. (2015). The effect of social, cultural, and economic factors on entrepreneurship. *Journal of Business Research, 68*(7), 1496-1500.

Cerrato, M., & Sarantis, N. (2002). *The cross sectional dependence puzzle*. London Guildhall University.

Claver-Cortés, E., Molina-Azorín, J., & Pereira-Moliner, J. (2006). Strategic groups in the hospitality industry: Intergroup and intragroup performance differences in Alicante, Spain. Tourism Management, 27, 1101-1116.

Croes, R., Ridderstaat, J., & Rivera, M. (2018). Asymmetric business cycle effects and tourism demand cycles. Journal of Travel Research, 57(4), 419-436.
Crum, M. (2011). *Three essays on the influence of formal institutions on entrepreneurship.* University of Louisville. Retrieved from https://ir.library.louisville.edu.
Crum, M., & Gohmann, S. F. (2016). The impact of taxes and regulations on firm births and deaths in state border counties. *Journal of Entrepreneurship and Public Policy, 5*(1), 25-37.
Cumming, D. and Li, D., 2013. Public policy, entrepreneurship, and venture capital in the United States. Journal of Corporate Finance, 23, pp.345-367.
Fulop, G., & Gyomai, G. (2012). *Transition of the OECD CLI system to a GDP-based business cycle target*. Retrieved from http://www.oecd. org/std/leading-indicators/49985449. pdf.
Garrett, T. A., & Wall, H. J. (2005). *Passive Policies for Entrepreneurs*. St. Louis, MO: Federal Reserve Bank of St. Louis.
Gaynor, P., & Kirkpatrick, R. (1994). Introduction to time-series modelling and forecasting in business and economics. New York: McGraw-Hill, Inc.
Goeldner, C., Brent Ritchie, J. (2012). Tourism, principles, practices, philosophies. New Jersey: John Wiley & Sons.
Ghani, N. (2016). The Impact of Minimum Wage on Small Businesses, Workers, and Employment in the United States. *International Journal of Humanities and Social Science, 6*(10), 1-5.
Granger, C. (1969). Investigating causal relations by econometric models and cross-spectral methods. Econometrics, 37, 424-438.
Gujarati, D., & Porter, D. (2009). *Basic Econometrics*. New York: McGraw-Hill.
Gwartney, J., & Lawson, R. (1996). *Economic freedom of the world 1975-1995.* Vancouver, B.C.: Fraser Institute.
Hall, J. C., Nikolaev, B., Pulito, J. M., & VanMetre, B. J. (2013). The Effect of Personal and Economic Freedom on Entrepreneurial Activity: Evidence from a New State Level Freedom Index. American Journal of Entrepreneurship, 6(1).
Hall, J. C., & Sobel, R. S. (2008). Institutions, Entrepreneurship, and Regional Differences in Economic Growth. *Southern Journal of Entrepreneurship, 1*(1), 70-96.
Hoechle, D. (2007). Robust standard errors for panel regressions with cross-sectional dependence. *Stata Journal, 7*(3), 281.
Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of Econometrics, 115*(1), 53-74.
Johnson, C. H. (2013). *The cost of creation. Do income taxes influence small retail entrepreneurship?* (Master of Public Policy), Georgetown University, Washington, DC.
Karabegovic, A., F. McMahon, and G. Mitchell (2005). Economic Freedom of North America: 2005 Annual Report. Vancouver, BC: Fraser Institute.
Kim, H., & Kim, B. G. (2015). Economic impacts of the hotel industry: an input-output analysis. Tourism Review, 70(2), 132-149.
Kreft, S. F., & Sobel, R. S. (2005). Public policy, entrepreneurship, and economic freedom. *Cato Journal, 25*(3), 595-616.
Kwok, C. C., & Tadesse, S. (2006). National culture and financial systems. *Journal of International Business Studies, 37*(2), 227-247.

LaVecchia, O., & Mitchell, S. (2016). *How rising commercial rents are threatening independent businesses, and what cities are doing about it*. Retrieved from https://ilsr.org/affordable-space/

Levin, A., Lin, C., & Chu, C. (2002). Unit root tests in panel data: asymptotic and "nite-sample properties. *Journal of Econometrics, 108*, 1–24.

Lind, J., & Mehlum, H. (2010). With or without? The appropriate test for a U-shaped relationship. Oxford Bulletin of Economics and Statistics, 72(1), 109-118.

Makridakis, S., Wheelwright, S., & Hyndman, R. (1998). Forecasting Methods and Applications. John Wiley & Sons, Inc.

Mankiw, N. G. (2018). *Principles of macroeconomics*: Cengage Learning.

Manley, M. (1988). Before you sign that lease. *Harvard Business Review, 66*(3), 140-156.

McBride, W. (2012). *What is the Evidence on Taxes and Growth?*. (No. 207). Tax Foundation.

Mendoza, E. G., Razin, A., & Tesar, L. L. (1994). Effective tax rates in macroeconomics: Cross-country estimates of tax rates on factor incomes and consumption. *Journal of Monetary Economics, 34*(3), 297-323.

Mill, R. (2010). Managing productivity in the hospitality industry. Global Text Project.

Minnesota Taxpayers Association (2004). *50-State Property Tax Comparison Study*. Saint Paul, MN: Minnesota Taxpayers Association. Retrieved from http://mntax.org/research/property.php.

Murphy, R. H. (2016). Economic freedom of North America at state borders. *Journal of Institutional Economics, 12*(4), 885-893.

North, D. C. (1987). Institutions, transaction costs and economic growth. *Economic Inquiry, 25*(3), 419-428.

North, D. C. (1990). A transaction cost theory of politics. *Journal of theoretical politics, 2*(4), 355-367.

Nyström, K. (2008). The institutions of economic freedom and entrepreneurship: evidence from panel data. *Public Choice, 136*(3-4), 269-282.

Office of Management and Budget (2017). North American Industry Classification System (NAICS) United States 2017, U.S. Bureau of Census.

Olds, G. (2014). *Entrepreneurship and the Social Safety Net.* Brown University.

Page, S. (2019). Tourism management. Oxon: Routledge.

Pesaran, M. H. (2004). General diagnostic tests for cross section dependence in panels. (No. 1229). Center for Economic Studies and Ifo Institute (CESifo).

Pesaran, M. H. (2015). *Time series and panel data econometrics*. New York, NY: Oxford University Press.

Pizam, A., & Shani, A. (2009). The nature of the hospitality industry: Present and future managers' perspectives. Anatolia: An International Journal of Tourism and Hospitality Research, 20(1), 134-150.

Powell, B., & Weber, R. (2013). Economic freedom and entrepreneurship: A panel study of the United States. *American Journal of Entrepreneurship, 6*(1), 67-87.

Renshaw, G. (2009). *Maths for economics*. New York, NY: Oxford University Press.

Reynolds, P. D., Miller, B., & Maki, W. R. (1995). Explaining regional variation in business births and deaths: US 1976–88. *Small Business Economics, 7*(5), 389-407.

Ridderstaat, J., & Okumus, B. (2019). Hidden restaurant sanitation inspection results: A weekday and monthly examination of reported data. International Journal of Hospitality Management, 79, 110-122.

Ritsilä, J., & Tervo, H. (2002). Effects of unemployment on new firm formation: Micro-level panel data evidence from Finland. *Small Business Economics, 19*(1), 31-40.
Rodrik, D., Subramanian, A., & Trebbi, F. (2004). Institutions rule: The primacy of institutions over geography and integration in economic development. Journal of Economic Growth, 9, 131–165.
Roxas, B., & Chadee, D. (2013). Effects of formal institutions on the performance of the tourism sector in the Philippines: The mediating role of entrepreneurial orientation. *Tourism Management, 37*, 1-12.
Singal, M. (2015). How is the hospitality and tourism industry different? An empirical test of some structural characteristics. International Journal of Hospitality Management, 47, 116-119.
Smith, S. L. (2010). *Practical tourism research*. Boston, MA: Cabi.
Stansel, D., & Tuszynski, M. (2017). Sub-national economic freedom: A review and analysis of the literature. Journal of Regional Analysis and Policy, 48(1), 61-71.
Veal, A. (2006). *Research methods for leisure and tourism: A practical guide*. England: Pearson Education Limited.
Verbeek, M. (2012). *A guide to modern econometrics.* West Sussex: John Wiley & Sons, Ltd.
Wagener, S., Gogievski, M., & Rijsdijk (2010). Businessman or host? Individual differences between entrepreneurs and small business owners in the hospitality industry. The Service Industries Journal. 30(9). 1513-1527.
Wennekers, S., & Thurik, R. (1999). Linking entrepreneurship and economic growth. *Small business economics, 13*(1), 27-56.
Wiseman, T. (2013). US shadow economies: a state-level study. Constitutional Political Economy, 24(4), 310-335.
World Trade Organization (2006). *World trade report 2006*. World Trade Organization.
Yin, R. K. (2009). *Case study research: Design and methods (applied social research methods)*. London and Singapore: Sage.

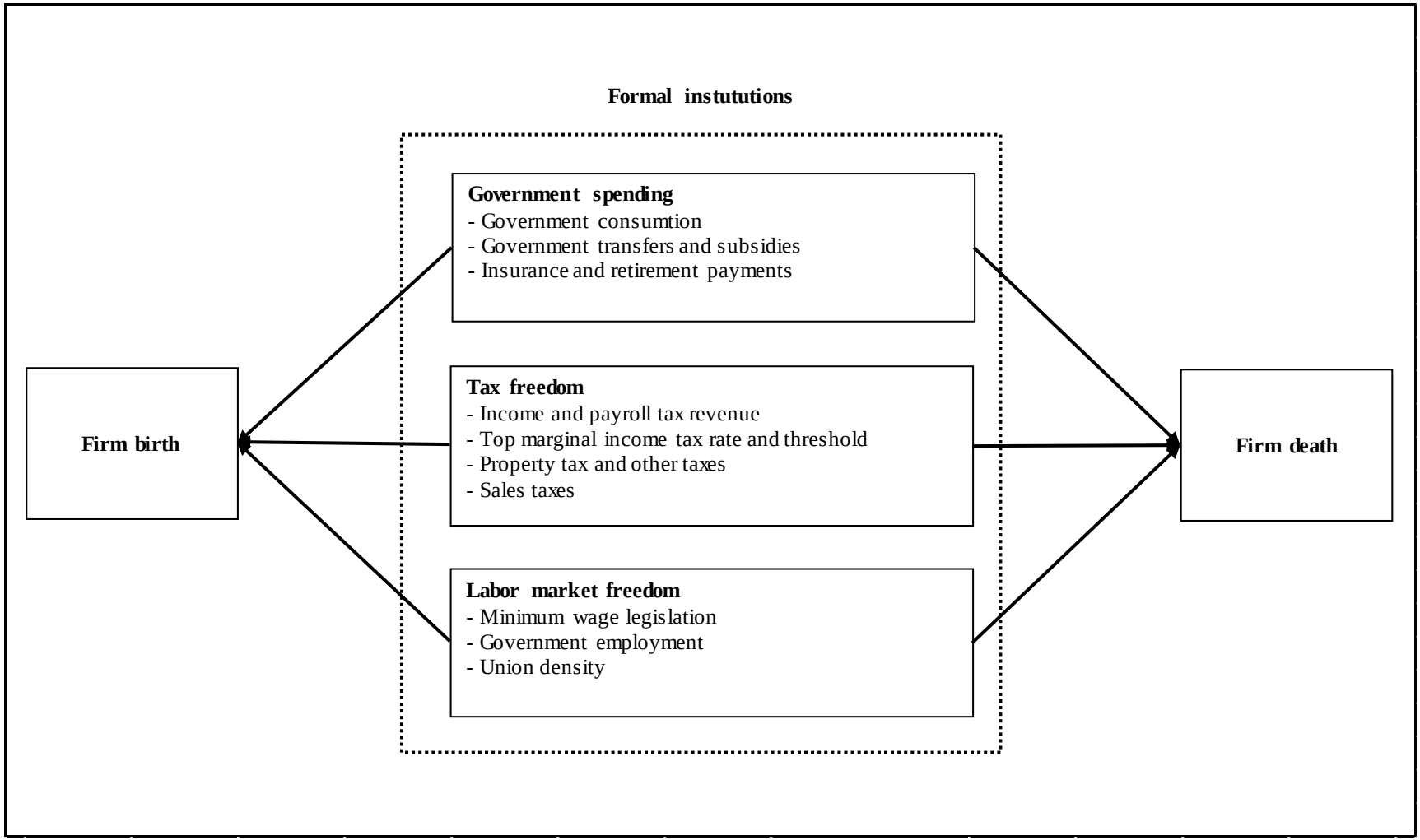

Figure 1. Proposed Model

Table 1: Definitions of variables

Variable	Definitions	Data Source
Dependent variable		
Firm birth	Percentage of firm birth ((Establishment births/Initial year establishments)*100)	SUSB
Firm death	Percentage of firm death ((Establishment deaths/Initial year establishments)*100)	SUSB
The formal institutional variables		
General government consumption	General consumption expenditures by the government as a Percentage of Income	EFNA
Transfers and subsidies	Transfers and subsidies as a percentage of income	EFNA
Insurance and retirement payments	Insurance and retirement payments as a percentage of income	EFNA
Income and payroll tax revenue	Income and payroll tax revenue as a percentage of income	EFNA
Top marginal income tax rate	Top marginal income tax rate and the income threshold at which it applies	EFNA
Property tax and other taxes	Property tax and wther taxes as a percentage of income	EFNA
Sales taxes	Sales taxes as a percentage of income	EFNA
Minimum wage legislation	Minimum wage legislation	EFNA
Government employment	Government employment as a percentage of total state/provincial employment	EFNA
Union density	Union density	EFNA
Control Variables		
Population change	Population percentage change from preceding year	US Census
Real per capita GDP	Per capita real GDP, percentage change from preceding year	BEA
Unemployment	Unemployment	BLS

Note: SUSB (Statistics of US Businesses), EFNA (Economic Freedom of North America), BEA (Bureau of Economic Analysis), BLS (Bureau of Labor Statistics)

Table 2: Test for cross-sectional dependence

	Hospitality and tourism industry	Other industries
	CD test statistic	CD test statistic
Firm birth	109.94 ***	122.19 ***
Firm death	91.95 ***	100.8 ***
General government consumption	80.86 ***	80.86 ***
Transfers and subsidies	9.17 ***	9.17 ***
Insurance and retirement payments	113.19 ***	113.19 ***
Income and payroll tax revenue	64.43 ***	64.43 ***
Top marginal income tax rate	0.02	0.02
Property tax and other taxes	28.75 ***	28.75 ***
Sales taxes	13.73 ***	13.73 ***
Minimum wage legislation	66.08 ***	66.08 ***
Government employment	66.11 ***	66.11 ***
Union density	45.6 ***	45.6 ***
Population change	22.86 ***	22.86 ***
Real per capita GDP	56.13 ***	56.13 ***
Unemployment	121.93 ***	121.93 ***

Note: For the CD test: Under the null hypothesis of cross-section independence, CD ~ N(0,1). P-values close to zero indicate data are correlated across panel groups. *, **, and *** indicate significance at, respectively, 10%, 5%, and 1%.

Table 3: Unit root test

	Hospitality industry					Other industry				
	LLC		IPS		Integration	LLC		IPS		Integration
	Level	First difference	Level	First difference		Level	First difference	Level	First difference	
Firm birth	-7.5601 ***	-27.2713 ***	-5.5715 ***	-22.5112 ***	I(0) or I(1)	-6.6204 ***	-25.8088 ***	-4.3181 ***	-19.7083 ***	I(0) or I(1)
Firm death	-9.8332 ***	-30.9509 ***	-8.1035 ***	-24.1306 ***	I(0) or I(1)	-8.5617 ***	-19.4946 ***	-4.7824 ***	-14.8257 ***	I(0) or I(1)
General government consumption	-6.0884 ***	-14.7450 ***	-2.8883 ***	-11.7810 ***	I(0) or I(1)	-6.0884 ***	-14.7450 ***	-2.8883 ***	-11.7810 ***	I(0) or I(1)
Transfers and subsidies	-6.3095 ***	-17.7191 ***	-2.3399 ***	-13.4790 ***	I(0) or I(1)	-6.3095 ***	-17.7191 ***	-2.3399 ***	-13.4790 ***	I(0) or I(1)
Insurance and retirement payments	-6.5391 ***	-14.0790 ***	-3.8760 ***	-10.4096 ***	I(0) or I(1)	-6.5391 ***	-14.0790 ***	-3.8760 ***	-10.4096 ***	I(0) or I(1)
Income and payroll tax revenue	-3.9316 ***	-19.3703 ***	-1.6203 *	-14.8161 ***	I(0) or I(1)	-3.9316 ***	-19.3703 ***	-1.6203 **	-14.8161 ***	I(0) or I(1)
Property tax and other taxes	-3.2694 ***	-13.0169 ***	-1.5083 *	-10.3698 ***	I(0) or I(1)	-3.2694 ***	-13.0169 ***	-1.5083 *	-10.3698 ***	I(0) or I(1)
Sales taxes	-2.8909 ***	-15.2378 ***	-1.1880	-11.9075 ***	I(0) or I(1)	-2.8909 ***	-15.2378 ***	-1.1880	-11.9075 ***	I(0) or I(1)
Minimum wage legislation	-4.6083 ***	-13.8546 ***	-1.5411 *	-9.6979 ***	I(0) or I(1)	-4.6083 ***	-13.8546 ***	-1.5411 *	-9.6979 ***	I(0) or I(1)
Government employment	-1.4970 *	-14.9983 ***	1.3796	-10.5895 ***	I(0) or I(1)	-1.4970 *	-14.9983 ***	1.3796	-10.5895 ***	I(0) or I(1)
Union density	-5.2215 ***	-21.9285 ***	-1.8557 **	-18.1738 ***	I(0) or I(1)	-5.2215 ***	-21.9285 ***	-1.8557 **	-18.1738 ***	I(0) or I(1)
Population change	-8.0311 ***	-14.0600 ***	-4.4280 ***	-10.7398 ***	I(0) or I(1)	-8.0311 ***	-14.0600 ***	-4.4280 ***	-10.7398 ***	I(0) or I(1)
Real per capita GDP	-12.8147 ***	-27.3951 ***	-9.1092 ***	-22.2416 ***	I(0) or I(1)	-12.8147 ***	-27.3951 ***	-9.1092 ***	-22.2416 ***	I(0) or I(1)
Unemployment	-6.0975 ***	-12.6640 ***	-3.1380 ***	-9.3017 ***	I(0) or I(1)	-6.0975 ***	-12.6640 ***	-3.1380 ***	-9.3017 ***	I(0) or I(1)

Note: *, **, and *** indicate significance at, respectively, 10%, 5%, and 1%.

Table 4: Gls regression output and coefficient similarity testing

	Hospitality and tourism industry		Other industries		Firm birth coefficient similarity test		Firm death coefficient similarity test	
	Firm birth	Firm death	Firm birth	Firm death	F-test	Conclusion	F-test	Conclusion
General government consumption	0.1912	-0.1069	-0.1542	-0.1965 *	5.46 **	Coeff. Hos. ≠ Coeff. Oth.	5.45 **	Coeff. Hos. ≠ Coeff. Oth.
Transfers and subsidies	-0.0880	-0.0323	-0.0425	-0.0243	2.43	Coeff. Hos. = Coeff. Oth.	1.22	Coeff. Hos. = Coeff. Oth.
Insurance and retirement payments	-0.1014	-0.3429 ***	0.2648 ***	0.2308 ***	6.71 ***	Coeff. Hos. ≠ Coeff. Oth.	20.16 ***	Coeff. Hos. ≠ Coeff. Oth.
Income and payroll tax revenue	0.2887 ***	0.1452 ***	0.0394	0.0558	19.84 ***	Coeff. Hos. ≠ Coeff. Oth.	9.82 ***	Coeff. Hos. ≠ Coeff. Oth.
Income and payroll tax revenue (squared)			-0.0754					
Property tax and other taxes	0.4359 ***	0.4066 ***	0.0841	0.1041	21.05 ***	Coeff. Hos. ≠ Coeff. Oth.	8.31 ***	Coeff. Hos. ≠ Coeff. Oth.
Sales taxes	0.3889 ***	0.1789 ***	0.1360 **	0.1456 ***	11.44 ***	Coeff. Hos. ≠ Coeff. Oth.	5.49 **	Coeff. Hos. ≠ Coeff. Oth.
Sales taxes (squared)	-0.7365 ***	-0.1107	-0.2993 **		1.47	Coeff. Hos. = Coeff. Oth.		
Minimum wage legislation	-0.4518 ***	0.1325	-0.1579	-0.0636	13.34 ***	Coeff. Hos. ≠ Coeff. Oth.	1.65	Coeff. Hos. = Coeff. Oth.
Minimum wage legsilation (squared)	0.2738	0.1848	0.2994 *		0.80	Coeff. Hos. = Coeff. Oth.		
Government employment	-0.1288	0.2201 ***	-0.0378	-0.0073	0.87	Coeff. Hos. = Coeff. Oth.	8.25 ***	Coeff. Hos. ≠ Coeff. Oth.
Government employment (squared)		1.4049 ***						
Union density	-0.2568 ***	0.1172 *	-0.1304 *	-0.1035	15.27 ***	Coeff. Hos. ≠ Coeff. Oth.	0.59	Coeff. Hos. = Coeff. Oth.
Population change	0.8798 ***	-0.0098	1.1083 ***	1.1162 ***	19.66 ***	Coeff. Hos. ≠ Coeff. Oth.	73.26 ***	Coeff. Hos. ≠ Coeff. Oth.
Real per capita GDP	-0.0258	-0.0403 ***	0.0191	0.0243	6.55 **	Coeff. Hos. ≠ Coeff. Oth.	3.74 *	Coeff. Hos. ≠ Coeff. Oth.
Unemployment	-0.0996 *	-0.0222	-0.3460 ***	-0.3385 ***	10.75 ***	Coeff. Hos. ≠ Coeff. Oth.	66.71 ***	Coeff. Hos. ≠ Coeff. Oth.
Intercept	10.2233 ***	8.8204 ***	11.0760 ***	10.7280 ***	0.11	Coeff. Hos. = Coeff. Oth.	12.14 ***	Coeff. Hos. ≠ Coeff. Oth.
N =	800	800	800	800				
F-statistic	183.69 (p=0.0000)	178.06 (p=0.0000)	299.61 (p=0.0000)	299.41 (p=0.0000)				

Note: ***, **, and * indicate significance at, respectively, 1%, 5%, and 10%.