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Institutions and industry-level employment creation: an empirical analysis of the US metro-level data

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Abstract

A growing strand of literature relates pro-market institutions to business and overall employment creation. However, the effects of pro-market institutions on industry-specific employment creation still need to be better understood. Employment creation in some industries may be more sensitive to pro-market institutions. Moreover, if these industries employ a large proportion of the population, the role of local-level institutions becomes more critical for boosting employment creation across industries. Therefore, we disentangle the effects of local-level pro-market institutions on employment creation across nine major industries by using 5-year balanced panel data of 374 US metropolitan areas from 1972 to 2017. Our fixed-effects results indicate that pro-market institutions boost employment creation only in the manufacturing, retail, and construction sectors. Furthermore, our findings reveal that local public policies can benefit or harm local employment creation, depending on the concentration of industries in the area.

Introduction

Employment creation attracts a lot of attention from economists and politicians. Both justify that their particular policies will create more jobs in the economy, rationalizing the effect of their prescribed 'rules of the game' on employment creation. Therefore, these 'rules of the game' or institutions play an important role in employment creation (Baumol, 1996). Although employment creation has been associated with institutions at the aggregate level (Barnatchez and Lester, 2017; Bennett, 2021a; Bologna Pavlik, 2015; Garrett and Rhine, 2011; Heller and Stephenson, 2014, 2021b), the literature lacks an analysis of employment creation and institutions at the industry level. This paper fills this gap and investigates the effects of local-level institutions on employment creation across nine major industries in the US metropolitan statistical areas (MSAs).

It is important to understand employment determinants at the local industry level for several reasons. First, employment varies significantly across sectors. For example, in 2017, the farm sector employed only 1.5% of the total labour force, while the non-farm sector employed almost 98.5%. At the industry level, the service sector hired about 45% of the total labour force, followed by retail trade (10%), finance, insurance, and real estate (10%), and manufacturing (7%). On the other hand, agriculture services employed only 0.5%, mining 1%, and wholesale trade 3.5% of the total labour force.[1] Second, these industries are clustered disproportionately across

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[1]Please refer to Appendix Table A5 for a detailed industry composition. We calculated these numbers using the 2017 Bureau of Economic Analysis data.

regions.[2] Third, some industries may be more sensitive to institutional quality than others. Fourth, if specific industries employ a large proportion of the population, then the role of institutional quality is even more important for policymakers to boost industry-specific employment. Therefore, it is important to understand the area-specific and industry-specific employment determinants to make local policies that boost local employment.

Through the local industry-level analysis, we evaluate the relationship between institutional quality and its effect on specific industries to understand the institutional environment most conducive to industry-specific employment creation. Therefore, in this study, we disentangle the effect of pro-market institutional quality on employment creation across nine major industries at the MSA level. Our contribution lies in being the first to analyse a multi-variate regression model of institutional quality and employment creation at the local industry level.

Pro-market institutions constitute economic and legal systems allocating economic resources through market forces supported by well-defined and enforced private property rights. Pro-market institutions reduce entry barriers and transaction costs and facilitate the creation of new firms and jobs (Bennett, 2021a). We link the local-level pro-market institutional quality to employment creation by each major industry across the US MSAs. In so doing, we add to the literature that finds that pro-market institutional quality is imperative for employment creation and growth across countries (Feldmann, 2007, 2008, 2009a, 2009b) and across US states (Garrett and Rhine, 2011; Heller and Stephenson, 2014).[3]

Many studies link pro-market institutions to labour market outcomes using cross-country data. For example, Feldmann (2007, 2008, 2009a, 2009b) relates pro-market institutions to several labour market conditions. Feldmann (2007) links pro-market institutions to lower unemployment levels in 87 countries. In addition, Feldmann (2008, 2009a, 2009b) finds that anti-competitive business regulations and strict labour market regulations (e.g. hiring and firing rules) increase unemployment across countries. Similarly, Cebula et al. (2015) associate pro-market institutions with lower levels of unemployment rate across Organisation for Economic Co-operation and Development (OECD) countries. Recently, Arif and Dawson (2023) explored the relationship between pro-market institutions and labour market outcomes across the US MSAs.

In particular, our paper expands on the economic literature that explores the effect of local-level institutions on business and employment creation at the MSA level (Bennett, 2021a; Bologna Pavlik, 2015, 2021b). Bologna Pavlik (2015) explores the direct and indirect effects of institutional quality on entrepreneurship at the MSA level using spatial analysis. Later, Bennett (2021a, 2021b) expands on Bologna Pavlik (2015) by measuring the effects of institutional quality on several business dynamics, including firm birth rate, firm death rate, job creation, and job destruction in a panel data set. Bennett (2021a, 2021b) explores the effects of institutional quality on *overall* business and employment creation at the MSA level. We expand this literature by exploring the effects of institutional quality on *industry-level* employment creation at the MSA level.

For empirical analysis, we use net employment creation as the dependent variable, calculated from the Bureau of Economic Analysis (BEA) data. This variable shows the net gain in the number of individuals employed in each industry each period. The BEA reports employment composition across MSAs at different levels. At the first level, total employment comprises all jobs, including farm and non-farm sectors. At the second level, we can break down total employment into two main sectors: farm and non-farm. Finally, at an even more granular third level, we can focus specifically on private non-farm jobs and identify nine major industries that employ nearly 85% of the entire labour force, helping us evaluate each industry's employment determinants separately.

We use the MSA-level Economic Freedom Index (MEFI) from Stansel (2019) to indicate pro-market institutional quality. Stansel (2019) developed this index to capture pro-market institutions

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[2]See, for example, the literature on the dynamics of industry agglomeration (Chattergoon and Kerr, 2022; Diodato et al., 2018; Dumais et al., 2002; Ellison and Glaeser, 1997, 1999; Glaeser, 2012; Moretti, 2012; Steijn et al., 2022).

[3]Similarly, Goldschlag and Tabarrok (2018) find that an increase in federal regulations (anti-market institutional quality) does not explain the secular trend of business start-ups.

for the US MSAs based on some of the same definitions and concepts used for the country-level Economic Freedom of the World index (Gwartney *et al.*, 2018; Lawson, 2022) and the Economic Freedom of North America index (Stansel and McMahon, 2018; Stansel and Tuszynski, 2018).[4] The literature on the effects of this local-level MEFI on other economic variables is still under-explored. Nevertheless, the existing research links MEFI to several positive economic outcomes. For example, Bologna *et al.* (2016) and Peach and Petach (2016) link MEFI to income and development. Arif *et al.* (2020) link MEFI to inter-US migration patterns. Wagner and Bologna Pavlik (2020) link MEFI to long-run local patent activity. Similarly, Bennett (2021a, 2021b) relates it to several business dynamics.

We test the empirical relationship between institutional quality and employment creation using five-year interval data from 374 metro areas of the US from 1972 to 2017. We test this relationship using the fixed-effects model at three different levels. At the first level, our fixed-effects results reveal that local-level pro-market institutions boost total employment creation. At the second level, we decompose total employment creation into two sectors: farm and non-farm. At this level, our results reveal that the local-level pro-market institutions boost employment creation in both farm and non-farm sectors.

At the third level, we decompose private non-farm employment into nine major industries that employ almost 85% of the total labour force. Furthermore, the private non-farm sector interacts more with the formal economy, making the role of institutional quality more important for it. At this level, our results reveal that the local-level pro-market institutions only boost employment creation for the manufacturing, retail, and construction sectors, where the manufacturing sector shows the largest effect. Furthermore, the sub-areas of MEFI exhibit varying effects on different industries, highlighting that local policies can positively or negatively impact local employment creation depending on the industry concentration in the area.

The rest of the paper is organized as follows: section 'Data' describes the data; section 'Empirical analysis' presents empirical analysis and results; and section 'Concluding remarks' concludes this paper.

Data

This paper uses balanced panel data from 374 metro areas of the US observed at five-year intervals for the years 1972, 1977,…, and 2017.

Dependent variable

Our primary dependent variable is employment creation, which we calculate using the US BEA employment data. BEA provides industry-specific job counts for local areas, such as counties, MSAs, micropolitan statistical areas, combined statistical areas, and metropolitan divisions, as well as separate statistics for metropolitan and non-metropolitan counties within each state. These estimates rely mainly on data from the US Bureau of Labor Statistics and the Internal Revenue Service, with additional sources and adjustments to maintain consistency with other BEA statistics. We compute the net employment created in each industry within each MSA during the previous period using the BEA data as:

$$\text{Net employment creation}_{d,it} = 100 \times \frac{\text{Employment}_{d,it} - \text{Employment}_{d,it,-1}}{(\text{Employment}_{d,it} + \text{Employment}_{d,it,-1})/2}$$

The denominator, at time t, is the average employment at times t and $t - 1$. This variable attempts to prevent transitory shocks from creating a bias in the relationship between net growth from $t - 1$ to t

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[4]Please note that in some cases, policies may overlap across geographically overlapping jurisdictions (such as states, MSAs, counties, etc.), posing a challenge to develop a distinct index for these policies. For instance, the cross-country economic freedom index assumes that a single jurisdiction has sole control over all policies, including monetary and trade policies. However, this assumption does not hold for the MEFI, which includes state and local policies but excludes national policies. Consequently, the MEFI utilizes slightly different definitional concepts than the cross-country economic freedom index.

and size (Davis *et al.*, 1996). Here, *i* subscript indicates MSA, *t* indicates the time period, and *d* indicates various industries under consideration.

Economic freedom index

We utilize Stansel (2019) MSA-level economic freedom index (MEFI) to measure the extent of pro-market institutions. This index ranges from 0 to 10, with 10 indicating the most-free and 0 representing the least-free MSA. The MEFI comprises three broad areas: government spending, taxes, and labour market freedom. Stansel (2019) assigns each area a score from 0 to 10 and takes the average of three scores to obtain area scores, which are then averaged to obtain the overall MEFI score for each MSA. By weighing individual variables identically, this methodology avoids subjectivity. Since some metro areas cross state boundaries, the index combines local- and state-level data to accurately capture the extent of pro-market institutions. Stansel (2019) uses population-weighted state figures to facilitate valid comparisons in metro areas encompassing more than one state. Due to fiscal data limitations, the MEFI data are only available every five years (years ending in '2' and '7').[5]

Control variables

To account for variations in economic opportunities across MSAs, we use GDP per capita and its growth rate as control variables. Additionally, we control for the population and its growth rate. Including GDP per capita and population size helps adjust for the agglomeration effect, which suggests that expanding job opportunities may be easy in prosperous and densely populated areas. However, employment creation may become more challenging in areas experiencing high GDP per capita and population growth rates due to diminishing returns and increased competition. The data for the GDP are taken from the Internal Revenue Service. The data for the population and its growth rate are taken from the National Bureau of Economic Research (NBER). Table 1 contains summary statistics for these variables.

Empirical analysis

Model specification

To capture the effect of institutional quality on industry-level employment, we follow Bennett (2021a) and estimate the below regression specification separately for each industry:

$$\text{Net employment creation}_{d,it} = \beta_0 + \beta_1 \, MEFI_{it} + X_{it}^{'} \beta_2 + \beta_i + \beta_t + \varepsilon_{it}. \tag{1}$$

We have one variable of interest on the right-hand side of equation (1), $MEFI_{it}$, showing the level of institutional quality in the MSA at time *t*. We standardized the dependent and our main explanatory variables to get β coefficients, showing the standard deviation change in the dependent variable due to a one-standard deviation change in MEFI.

X_{it} is a vector of control variables and includes GDP per capita, GDP per-capita growth rate, population, and population growth rate of each MSA. The above equation also includes MSA-fixed and time-fixed effects to control for time and MSA-specific characteristics. Finally, ϵ_{it} is an error term that captures the effects of omitted variables and noise.

Hypotheses

Our interest is in the coefficient of institutional quality in equation (1), β_1. Since both our dependent and main independent variables are standardized, β_1 shows a one-standard deviation change in

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[5]Please see Stansel (2019) for a detailed discussion of the methodology of this index.

Table 1. Descriptive statistics

Variables	(1) N Dependent	(2) Mean Variables	(3) SD	(4) Min	(5) Max
Total employment	3,448.00	1.73	2.55	−12.24	28.45
Non-farm	3,448.00	1.84	2.64	−12.27	28.85
Farm	3,448.00	−0.93	5.70	−33.77	51.55
Private non-farm	3,448.00	2.09	2.97	−14.06	22.39
Services	3,356.00	3.56	30.62	−200.00	200.00
Retail trade	3,446.00	1.77	6.49	−151.46	200.00
Finance	3,441.00	2.32	9.76	−200.00	200.00
Manufacturing	3,446.00	0.19	11.46	−200.00	200.00
Construction	3,435.00	2.00	16.75	−200.00	200.00
Transport	3,238.00	1.72	34.76	−200.00	200.00
Wholesale	3,411.00	1.23	24.53	−200.00	200.00
Mining	3,203.00	4.92	52.66	−200.00	200.00
Agriculture	3,153.00	3.47	49.32	−200.00	200.00
Wages	3,448.00	1.56	2.84	−15.88	29.81
Proprietors	3,448.00	2.58	3.94	−20.91	23.36
Non-farm proprietors	3,448.00	3.08	4.34	−21.27	24.08
Farm proprietors	3,448.00	−0.80	4.95	−33.71	53.35
Main explanatory variables					
MEFI overall	3,462.00	6.46	0.86	3.43	8.81
MEFI GS	3,462.00	6.96	1.22	1.05	9.63
MEFI tax	3,462.00	6.02	0.84	1.69	9.26
MEFI labour market	3,462.00	6.40	1.73	1.91	9.82
Controls variables					
ln(GDP pc.)	3,462.00	9.82	0.75	7.76	11.61
GDP growth	3,462.00	5.12	3.15	−14.15	25.91
ln(Pop.)	3,462.00	12.43	0.98	9.65	16.81
Pop. growth	3,462.00	0.01	0.02	−0.07	0.17
Number of MSAs	374	374	374	374	374

employment creation due to one-standard deviation change in institutional quality. Specifically, we are testing the following hypotheses related to β_1.

Hypothesis 1: Pro-market institutions create more employment across industries, i.e. $\beta_1 > 0$.

Hypothesis 2: The practical and statistical significance of pro-market institutions on employment creation varies across industries.

Main results

Correlation matrix

We start by examining simple correlations between our dependent and independent variables, as shown in Table 2. The correlation coefficient between MEFI and total employment is 0.17, indicating a statistically significant but weak relationship. Further analysis reveals that the non-farm sector shows a positive correlation, while the farm sector shows a negative correlation with pro-market institutions. In terms of industry-level analysis, service and construction industries show the strongest correlation (0.23) with pro-market institutions. Except for the agriculture industry, which shows a statistically insignificant negative correlation coefficient of 0.02, all other industries show a positive correlation. These findings suggest that each industry may have a unique relationship with pro-market institutions. The remainder of the paper will explore these relationships through regression modelling.

MEFI and farm versus non-farm employment creation

Next, we test the above hypothesis for total, farm, and non-farm employment creation by estimating equation (1) using ordinary least squares and present the results in Table 3. Column 1 shows the effect of pro-market institutions on total employment creation. Our model explains about 96% of the variation in total employment creation across metro areas. Moreover, the β coefficient of pro-market institutions is consistent with our hypothesis. Furthermore, the results show that a one-standard deviation increase in pro-market institutions increases total job creation by about 0.03 standard deviation. Therefore, we conclude that more pro-market institutions imply more employment creation.

Next, we split total job creation into two parts; non-farm job creation, column 2, and farm job creation, column 3.[6] For non-farm job creation, column 2, our model explains about 96% of the variation. Moreover, MEFI shows a positive and statistically significant coefficient value of 0.03, showing that a one-standard deviation increase in pro-market institutions increases non-farm job creation by about 0.03 standard deviation. Column 3 presents results for farm employment creation, where our model explains only 31% of the variation. Nevertheless, the coefficient value of pro-market institutions is positive and statistically significant. The coefficient value of 0.05 shows that a one-standard deviation increase in pro-market institutions increases farm job creation by about 0.05 standard deviation.

In summary, our results indicate that pro-market institutions lead to more employment opportunities in both the farm and non-farm sectors, emphasizing the crucial role of pro-market institutions in promoting job creation.

MEFI and industry-level employment creation

Our previous results show that pro-market institutions help create more non-farm employment. Further, non-farm employment accounts for almost 98.5% of the total employment in the US. Therefore, we explore non-farm employment creation for each specific industry and present the results in Table 4. Column 1 shows the total private non-farm employment creation, and columns 2–10 disassemble total private non-farm employment into nine major sectors.

Column 1 presents the results of total private non-farm employment creation.[7] This model explains about 95% of the variation in total private non-farm employment creation. Similar to the results in Table 3, MEFI has a positive and statistically significant effect on total private non-farm employment. The effect of pro-market institutions on total private non-farm employment creation is shown by the β coefficient value of about 0.02. This value reveals that a one-standard deviation increase in pro-market institutions increases total private non-farm employment by about 0.02 standard deviation. Again, we conclude that pro-market institutions help create more jobs in the private non-farm sector.

Columns 2–10 present the effect of pro-market institutions on each industry at the MSA level. Here, we have arranged the results in descending order based on the importance of each industry.

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[6]Please note that non-farm employment creation includes government and government enterprises.

[7]Here, total private non-farm employment excludes employment in government and government enterprises.

Table 2. Correlation matrix

	MEFI overall	MEFI GS	MEFI tax	MEFI labour market	Total employment	Non-farm	Farm	Private non-farm	Services	Retail trade	Finance	Manufacturing	Construction	Transport	Wholesale	Mining	Agriculture
MEFI overall	1.00																
MEFI GS	0.65***	1.00															
MEFI tax	0.61***	0.41***	1.00														
MEFI labour market	0.74***	0.06***	0.14***	1.00													
Total employment	0.17***	- 0.06***	−0.07***	0.33***	1.00												
Non-farm	0.17***	- 0.06***	−0.07***	0.34***	1.00***	1.00											
Farm	−0.08***	−0.04*	−0.04*	−0.07***	0.53***	0.52***	1.00										
Private non-farm	0.17***	- 0.07***	−0.08***	0.34***	0.99***	0.99***	0.52***	1.00									
Services	0.23***	−0.14***	−0.09***	0.48***	0.96***	0.96***	0.42***	0.97***	1.00								
Retail trade	0.12***	−0.02	−0.08***	0.23***	0.97***	0.97***	0.55***	0.97***	0.91***	1.00							
Finance	0.20***	−0.06***	−0.06**	0.37***	0.97***	0.98***	0.49***	0.98***	0.96***	0.94***	1.00						
Manufacturing	0.01	0.04*	−0.12***	0.05**	0.82***	0.81***	0.56***	0.83***	0.71***	0.83***	0.74***	1.00					
Construction	0.23***	−0.02	−0.05**	0.38***	0.97***	0.97***	0.50***	0.97***	0.94***	0.94***	0.96***	0.76***	1.00				
Transport	0.08***	−0.04*	−0.06**	0.17***	0.88***	0.88***	0.50***	0.89***	0.82***	0.90***	0.86***	0.77***	0.86***	1.00			
Wholesale	0.11***	−0.03	−0.06***	0.21***	0.93***	0.92***	0.57***	0.94***	0.88***	0.94***	0.90***	0.83***	0.90***	0.91***	1.00		
Mining	0.17***	−0.04*	0.14***	0.21***	0.54***	0.54***	0.26***	0.54***	0.53***	0.53***	0.55***	0.34***	0.56***	0.57***	0.54***	1.00	
Agriculture	−0.02	−0.16***	−0.06***	0.11***	0.58***	0.57***	0.55***	0.56***	0.52***	0.64***	0.56***	0.44***	0.58***	0.58***	0.59***	0.38***	1.00

*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$.

Table 3. The effect of institutions on total, farm, and non-farm employment

Variables	(1) Total	(2) Non-farm	(3) Farm
MEFI	0.025***	0.024***	0.050**
	(0.005)	(0.005)	(0.025)
ln(GDP pc.)	0.381***	0.371***	−0.202
	(0.034)	(0.031)	(0.140)
GDP growth	0.000	0.000	0.003
	(0.001)	(0.000)	(0.002)
ln(Pop.)	0.684***	0.689***	0.301***
	(0.026)	(0.025)	(0.061)
Pop. growth	−0.375**	−0.262*	−3.061***
	(0.146)	(0.141)	(0.665)
Obs.	3,448	3,448	3,448
R^2	0.959	0.962	0.311
MSA FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes

Notes: ***$P < 0.01$, **$P < 0.05$, *$P < 0.1$. Robust standard errors are in parentheses. Ordinary least squares estimates.

For example, the service sector (column 1) accounts for about 45% of total jobs in the US, followed by the retail trade sector (column 2) with about 10%, mining (column 9) with about 1%, and agriculture (column 10) with about 0.5%.[8]

Notably, all industries' coefficient values indicate a positive relationship between pro-market institutions and employment creation. However, only the retail, finance, manufacturing, construction, and wholesale sectors have β coefficient values that are statistically significant. The manufacturing sector demonstrates the most significant effect, with a β coefficient value of 0.06. This indicates that a one-standard deviation increase in pro-market institutions leads to a 0.06 standard deviation increase in manufacturing employment. On the other hand, the wholesale and finance sectors demonstrate weaker statistical and practical significance.

In terms of control variables, the coefficient values are consistent and robust. GDP and population have positive and largely statistically significant values, suggesting that the agglomeration effect may make it easier to expand employment opportunities in economically prosperous and heavily populated areas. On the other hand, GDP per capita and population growth rates have negative and statistically significant values, indicating that creating employment may become more difficult in areas with high GDP per capita and population growth rates due to diminishing returns and heightened competition.

To summarize our results, we have found that pro-market institutions positively affect employment creation, particularly in the manufacturing, retail, and construction sectors. In addition, our results indicate that pro-market institutions are vital for job growth across various industries at the MSA level, and the effect varies depending on the industry. These findings support the hypotheses we put forward earlier.

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[8]The small sample size in certain sectors may lead to randomness and measurement errors. We could combine smaller sectors using a larger cut-off. However, these small sectors may possess unique characteristics that require separate analysis. Using an arbitrary cut-off would merge sectors that may interest specific readers. Therefore, we use the standard BLS classifications to maintain consistency with other studies.

Table 4. The effect of institutions on private non-farm employment creation

Variables	(1) Total	(2) Serv.	(3) Retail	(4) Finance	(5) Manu.	(6) Const.	(7) Trans.	(8) Whole sale	(9) Mining	(10) Agri.
MEFI	0.022***	0.006	0.026***	0.015*	0.060***	0.053***	0.019	0.025*	0.007	0.040
	(0.006)	(0.008)	(0.008)	(0.009)	(0.013)	(0.009)	(0.019)	(0.013)	(0.024)	(0.028)
ln(GDP pc.)	0.345***	0.215***	0.152	0.424***	0.056	0.524***	0.244**	0.326***	0.192	−0.247
	(0.036)	(0.045)	(0.098)	(0.069)	(0.094)	(0.065)	(0.098)	(0.085)	(0.175)	(0.169)
GDP growth	0.000	−0.001	0.000	−0.003***	0.006***	0.003*	0.003	0.001	0.001	0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)
ln(Pop.)	0.724***	0.552***	0.661***	0.586***	0.695***	0.686***	0.746***	0.604***	0.609***	0.350***
	(0.026)	(0.027)	(0.031)	(0.033)	(0.048)	(0.032)	(0.063)	(0.041)	(0.072)	(0.074)
Pop. growth	−0.145	−0.382**	−0.252*	0.072	−0.557	2.950***	−0.226	−0.953**	−0.296	−1.221**
	(0.185)	(0.171)	(0.149)	(0.209)	(0.418)	(0.316)	(0.384)	(0.421)	(0.729)	(0.575)
Obs.	3,448	3,324	3,446	3,440	3,442	3,425	3,200	3,394	3,126	3,068
R^2	0.954	0.926	0.813	0.904	0.495	0.824	0.274	0.421	0.244	0.550
MSA FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: ***$P < 0.01$, **$P < 0.05$, *$P < 0.1$. Robust standard errors are in parentheses. Ordinary least squares estimates.

MEFI and wage versus proprietors employment creation

Further, we can also split total employment into two sectors: wage and salaries and proprietors. The BEA categorizes the workers employed by the wage and salaries sector if they are paid total remuneration in cash and kind. On the other hand, the proprietors comprise the sector with the current production income of sole proprietorships, partnerships, and tax-exempt cooperatives. In 2017, wage and salary employment accounted for about 78%, and proprietors' employment accounted for about 22% of total employment in the US. Furthermore, proprietors' employment can be divided into non-farm, accounting for about 21%, and farm, accounting for about 1% of the total employment. The results of these specifications are presented in Table 5.

Column 1 shows the effect of MEFI on job creation for wage and salary employment. This specification explains about 95% of the variation in wage and salary employment job creation. In addition, MEFI shows a positive and statistically significant coefficient value of about 0.03, showing that a one-standard deviation increase in MEFI increases wage and salary employment by about 0.03 standard deviation. This effect is almost similar to the effect of the MEFI on private non-farm employment creation in Table 4, column 1, and our hypothesis.

Column 2 presents the effect of MEFI on job creation for total proprietors' employment. This specification explains about 92% of the variation in job creation in proprietors' employment. The MEFI shows a positive but statistically insignificant coefficient value of about 0.01, showing that the effect of MEFI on total proprietors' employment is practically and statistically insignificant.

Columns 3–4 split proprietors' job creation into two sectors: non-farm and farm proprietors. These specifications explain about 95 and 21% of the variation in job creation in each sector, respectively. Although both columns 3–4 show positive coefficient values, the coefficient is statistically significant at 10% only for the farm sector in column 4, showing that a one-standard deviation increase in MEFI increases farm proprietors' employment creation by about 0.05 standard deviation.

The above results show that pro-market institutions help create more jobs in the wage and salary sector, a finding consistent with our hypothesis. However, the proprietors' sector shows a weak practical and statistical relationship with pro-market institutions. Again, our findings demonstrate that pro-market institutions have unequal impacts on different sectors of the economy.

MEFI sub-areas results

Above, we split total job creation into several industries to explore the effect of pro-market institutions on each specific industry. Similarly, we can split pro-market institutions into three areas to explore whether each area has a diverse effect on each industry. These three sub-areas include government spending, tax, and labour market freedom. The government spending component of MEFI reports higher values in the case of lower government consumption expenditures, government transfers, subsidies, and lower insurance and retirement payments. On the other hand, the taxation component of MEFI contains higher values in the case of lower income and payroll tax revenue, sales tax revenue, property tax revenue, and other tax revenue. Finally, the labour market freedom component includes minimum wage, government employment, and labour union density. Identical to the overall MEFI, higher values of these underlying components are associated with more pro-market institutions.

Government spending areas and non-farm versus farm employment creation

Similar to Table 3, we start this sub-area analysis by looking at the effects of each sub-area on total, non-farm, and farm employment creation in Table 6. Columns 1–3 present the effect of government spending area on total, non-farm, and farm employment creation, respectively. These specifications explain 96, 96, and 38% of the variation in job creation in each sector, respectively. The government spending area component shows positive coefficient values for total and non-farm employment creation, later being statistically significant. However, farm employment shows a negative and statistically significant coefficient value. These results reveal that the government spending freedom area may not significantly affect total employment creation. In addition, a one-standard deviation increase in

Table 5. The effect of institutions on wage and salary and proprietors employment creation

Variables	Wage and salary (1)	Proprietors		
		(2) Proprietors total	(3) Non-farm	(4) Farm
MEFI	0.026***	0.011	0.009	0.051*
	(0.005)	(0.009)	(0.007)	(0.027)
ln(GDP pc.)	0.385***	0.274***	0.296***	0.042
	(0.036)	(0.073)	(0.057)	(0.155)
GDP growth	0.000	−0.002**	−0.003***	0.002
	(0.001)	(0.001)	(0.001)	(0.002)
ln(Pop.)	0.662***	0.710***	0.678***	0.305***
	(0.026)	(0.035)	(0.029)	(0.067)
Pop. growth	−0.220	−0.902***	−0.468**	−3.055***
	(0.148)	(0.226)	(0.206)	(0.694)
Obs.	3,448	3,448	3,448	3,448
R^2	0.947	0.923	0.949	0.211
MSA FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

Notes: ***$P < 0.01$, **$P < 0.05$, *$P < 0.1$. Robust standard errors are in parentheses. Ordinary least squares estimates.

government spending freedom increases non-farm employment by about 0.01 standard deviation. On the other hand, it decreases farm employment by about 0.09 standard deviation.

These results suggest that greater government spending freedom has a mixed impact on employment creation. The positive coefficient values for MEFI for non-farm employment indicate that pro-market institutions increase employment in this sector. On the other hand, the negative and statistically significant coefficient value for the farm sector suggests that government spending freedom may hurt farm employment creation. This result could be attributed to the heavy reliance of the farm sector on government subsidies and support. As a result, reducing government expenditures on such programs may harm employment creation in the farm sector. These results underscore the significance of government spending for regions that heavily depend on the farm sector. Decreasing government spending in these areas could negatively impact farm employment. Therefore, policymakers must carefully evaluate the potential impact of government spending freedom on different sectors of the economy and take appropriate measures to mitigate any negative consequences.

Tax areas and non-farm versus farm employment creation
Columns 4–6 present the effect of tax area freedom on total, non-farm, and farm employment creation, respectively. These models explain 96, 95, and 37% of the variation in job creation in each sector, respectively. Here, the tax area MEFI shows negative but statistically insignificant coefficient values for total and non-farm sectors. However, it shows a negative and statistically significant coefficient value for the farm sector. The results show that a one-standard deviation increase in tax area freedom decreases farm employment by about 0.05 standard deviation.

These results indicate that the tax area MEFI does not have a significant impact on employment creation in the total or non-farm sectors, suggesting that lowering income, sales, or property taxes may not lead to job creation in these sectors. However, if the area relies heavily on farm employment,

Table 6. The effect of institutions sub-areas on employment creation

Variables	Total (1)	Non-farm (2)	Farm (3)	Total (4)	Non-farm (5)	Farm (6)	Total (7)	Non-farm (8)	Farm (9)
MEFI GS	0.006	0.011***	−0.091***						
	(0.004)	(0.004)	(0.018)						
MEFI tax				−0.004	−0.002	−0.050***			
				(0.002)	(0.002)	(0.016)			
MEFI labour market							0.045***	0.051***	−0.128***
							(0.005)	(0.005)	(0.026)
ln(GDP pc.)	0.377***	0.387***	−0.919***	0.375***	0.388***	−0.986***	0.348***	0.356***	−0.859***
	(0.018)	(0.019)	(0.121)	(0.019)	(0.019)	(0.121)	(0.018)	(0.018)	(0.122)
GDP growth	0.002	0.001	0.028***	0.002	0.001	0.026***	0.002	0.001	0.027***
	(0.001)	(0.001)	(0.008)	(0.001)	(0.001)	(0.008)	(0.001)	(0.001)	(0.008)
ln(Pop.)	0.789***	0.780***	0.672***	0.789***	0.779***	0.674***	0.786***	0.775***	0.683***
	(0.003)	(0.003)	(0.017)	(0.003)	(0.003)	(0.017)	(0.003)	(0.003)	(0.017)
Pop. growth	−0.209	−0.343**	0.847	−0.116	−0.221	0.547	−0.585***	−0.728***	1.201
	(0.159)	(0.163)	(1.090)	(0.164)	(0.169)	(1.081)	(0.158)	(0.164)	(1.132)
Obs.	3,448	3,448	3,448	3,448	3,448	3,448	3,448	3,448	3,448
R^2	0.957	0.955	0.375	0.957	0.954	0.371	0.957	0.956	0.373
MSA FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: ***$P < 0.01$, **$P < 0.05$, *$P < 0.1$. Robust standard errors are in parentheses. Ordinary least squares estimates.

lowering taxes may even hurt job creation in the farm sector. Therefore, policymakers should consider the specific economic conditions of their area before implementing any tax policies aimed at boosting local employment.

Labour market areas and non-farm versus farm employment creation

Finally, columns 7–9 present the effect of labour market MEFI on total, non-farm, and farm employment creation, respectively. These models explain 96, 96, and 37% of the variation in job creation in each sector, respectively. Intuitively, more labour market freedom should create more jobs in each sector. However, the labour market MEFI shows positive and statistically significant coefficient values for total and non-farm employment in columns 7 and 8, indicating that a one-standard deviation increase in labour market area freedom increases total and non-farm employment by about 0.05 standard deviation. On the other hand, the labour market MEFI shows a negative and statistically significant coefficient value for farm employment in column 9, indicating that a one-standard deviation increase in labour market area freedom decreases farm employment by about 0.13 standard deviation.

These results indicate that local area labour market freedom may create or destroy jobs depending on the sector. For example, if an area relies on non-farm employment, more labour market freedom creates more jobs. On the other hand, if the area relies on the farm sector, it may destroy jobs. Thus, policymakers should consider area-specific economic conditions before making labour market policies to boost local employment.

Based on these results, policymakers must carefully consider the local economic condition before making policies to mitigate negative consequences and boost local employment. Depending on the sector, local policies may create or destroy jobs.

MEFI sub-areas and industry-level employment creation

The previous section provides how three sub-areas of institutions affect total, non-farm, and farm employment creation. However, these three sub-areas may have heterogeneous effects on each industry. Therefore, we explore the impact of three sub-areas of institutions on each specific industry in Tables 7–9.

Table 7 presents the effect of government spending area on several industries. Column 1 presents the results of total private non-farm employment creation, and columns 2–10 present the effect on each major industry. Column 1 shows that pro-market institutions have a positive and statistically significant effect on total private non-farm employment, shown by the β coefficient value of about 0.01. This reveals that a one-standard deviation increase in pro-market institutions in government spending increases total private non-farm employment creation by about 0.01 standard deviation. Again, we conclude that more pro-market institutions in government spending help create more private non-farm jobs.

Columns 2–10 present the effect of government spending freedom on each industry separately. Interestingly, only the finance, manufacturing, and construction industries (columns 4–6) had positive and statistically significant β coefficients. Among them, the construction sector showed the largest positive effect with a β coefficient of 0.04, indicating that a one-standard deviation increase in government spending freedom in that area results in a 0.04 standard deviation increase in construction employment. However, the agriculture sector had a negative and statistically significant coefficient value of 0.21, indicating that a one-standard deviation increase in government spending freedom decreases agriculture employment by about 0.22 standard deviation.

It is important to note that a higher value of MEFI government spending indicates lower government consumption expenditures in government transfers, subsidies, and insurance and retirement payments. Therefore, reducing local government spending in these areas could result in job growth in the finance, manufacturing, and construction industries but may reduce employment in the agriculture sector.

Table 8 illustrates how the tax area freedom affects individual industries. In column 1, the MEFI tax area has a negative and statistically significant effect on total private non-farm employment. However,

Table 7. The effect of government spending on industry employment creation

Variables	(1) Total	(2) Serv.	(3) Retail	(4) Finance	(5) Manu.	(6) Const.	(7) Trans.	(8) Whole sale	(9) Mining	(10) Agri.
MEFI GS	0.012***	0.005	0.003	0.022***	0.037***	0.044***	−0.011	0.006	0.001	−0.214***
	(0.004)	(0.004)	(0.005)	(0.005)	(0.009)	(0.005)	(0.007)	(0.006)	(0.015)	(0.015)
ln(GDP pc.)	0.414***	0.508***	0.250***	0.712***	−0.129**	0.348***	0.160***	0.302***	0.151	0.179*
	(0.021)	(0.023)	(0.040)	(0.026)	(0.062)	(0.032)	(0.046)	(0.042)	(0.106)	(0.093)
GDP growth	0.002	−0.004**	−0.000	−0.007***	0.019***	0.003	0.003	0.005	−0.013*	0.005
	(0.002)	(0.002)	(0.002)	(0.002)	(0.004)	(0.002)	(0.003)	(0.003)	(0.007)	(0.006)
ln(Pop.)	0.782***	0.681***	0.776***	0.742***	0.712***	0.746***	0.767***	0.773***	0.460***	0.575***
	(0.003)	(0.003)	(0.004)	(0.004)	(0.008)	(0.004)	(0.007)	(0.006)	(0.016)	(0.013)
Pop. growth	−1.064***	−0.014	−0.304	2.015***	−9.145***	4.457***	−1.221***	−2.716***	1.823*	11.514***
	(0.245)	(0.238)	(0.266)	(0.320)	(0.594)	(0.335)	(0.369)	(0.498)	(1.048)	(0.842)
Obs.	3,448	3,324	3,446	3,440	3,442	3,425	3,200	3,394	3,126	3,068
R^2	0.947	0.944	0.930	0.927	0.730	0.918	0.798	0.834	0.298	0.562
MSA FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: ***$P < 0.01$, **$P < 0.05$, *$P < 0.1$. Robust standard errors are in parentheses. Ordinary least squares estimates.

Table 8. The effect of taxes on industry employment creation

Variables	(1) Total	(2) Serv.	(3) Retail	(4) Finance	(5) Manu.	(6) Const.	(7) Trans.	(8) Whole sale	(9) Mining	(10) Agri.
MEFI tax	−0.009***	−0.009***	−0.010**	0.006*	−0.049***	0.019***	0.010	0.015***	0.155***	−0.033***
	(0.003)	(0.003)	(0.004)	(0.004)	(0.009)	(0.004)	(0.006)	(0.006)	(0.015)	(0.012)
ln(GDP pc.)	0.409***	0.501***	0.243***	0.722***	−0.161**	0.374***	0.165***	0.316***	0.284***	0.101
	(0.022)	(0.024)	(0.039)	(0.027)	(0.063)	(0.033)	(0.047)	(0.043)	(0.104)	(0.096)
GDP growth	0.002	−0.004**	0.000	−0.006***	0.019***	0.004	0.003	0.005	−0.012*	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.005)	(0.003)	(0.003)	(0.003)	(0.007)	(0.007)
ln(Pop.)	0.782***	0.681***	0.776***	0.742***	0.712***	0.745***	0.768***	0.773***	0.459***	0.579***
	(0.003)	(0.003)	(0.004)	(0.004)	(0.009)	(0.004)	(0.007)	(0.006)	(0.015)	(0.013)
Pop. growth	−0.847***	0.134	−0.161	2.151***	−8.240***	4.660***	−1.418***	−2.831***	0.063	9.845***
	(0.249)	(0.240)	(0.254)	(0.326)	(0.580)	(0.351)	(0.363)	(0.507)	(1.038)	(0.824)
Obs.	3,448	3,324	3,446	3,440	3,442	3,425	3,200	3,394	3,126	3,068
R^2	0.947	0.944	0.931	0.927	0.731	0.916	0.798	0.834	0.325	0.516
MSA FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: ***$P < 0.01$, **$P < 0.05$, *$P < 0.1$. Robust standard errors are in parentheses. Ordinary least squares estimates.

the β coefficient value of 0.009 is small and has little practical significance. When we look at the coefficient values for each industry, we see that the effects are different. Service, retail, manufacturing, and agriculture industries have negative and statistically significant coefficient values. Among them, only manufacturing and agriculture have β coefficient values with some practical significance. On the other hand, finance, construction, wholesale, and mining industries have positive and statistically significant coefficients. Mining has the highest coefficient value of 0.16, while the others have no or little practical significance.

Based on these results, reducing taxes could increase employment in some industries but harm employment in others. However, the effects are mostly insignificant, except for a positive effect on mining and a negative effect on agriculture.

Table 9 examines the impact of labour market MEFI on employment in various industries. The labour market MEFI has a positive and statistically significant effect on most sectors, except for agriculture which has a negative and statistically significant coefficient value. The construction sector has the largest positive effect, with a coefficient of 0.12. On the other hand, agriculture has a negative coefficient value of 0.16.

These results suggest that more pro-market institutions could increase employment in most industries, except in agriculture. More labour market freedom may benefit areas more concentrated in non-agricultural industries. However, more labour market freedom may have adverse effects if an area relies heavily on agriculture for employment.

Robustness tests

To ensure the robustness of our results, we tested several alternative specifications.[9] First, some readers may argue that our results could be biased due to collider bias, where employment creation and MEFI may independently influence GDP growth.

Therefore, to address this concern, we excluded GDP growth from specifications previously reported in Tables 3–5. Additionally, some readers may argue that the MEFI's variation is primarily cross-sectional rather than over time, which could bias the estimated effects when using fixed effects. To address this issue, we estimated the specifications previously reported in Table 4 by excluding different combinations of control variables, fixed effects, and time effects. Appendix Tables A1–A4 present the results of these alternative specifications, replicating the baseline results with different exclusions.

Appendix Tables A1–A3 exclude GDP growth from specifications in Tables 3–5. Compared to the estimated effects in Table 3, the results in Table A1 showed that the estimated effect decreased for total employment by about 50%. The non-farm sector showed an estimated effect about 30% smaller than the baseline. On the other hand, the farm sector showed an 86% larger effect, changing from positive to negative.

Appendix Table A2 replicates Table 4 by estimating industry-specific effects after dropping GDP growth. The estimated effects for services and transportation remained unchanged and statistically insignificant. The total and whole sectors show smaller estimated effects (by 45 and 20%, respectively), while finance and construction show an increase (by 87 and 11%, respectively). Some estimated effects changed their statistical significance, with retail and manufacturing becoming statistically insignificant while mining and agriculture becoming significant, later changing from positive to negative.

Appendix Table A3 reports the effects of excluding GDP growth from the regression specifications previously reported in Table 5. The estimated effects decrease for the wage and salary sector by 62% and by 20% for the farm sector. However, the estimated effects for proprietors' total and non-farm became statistically significant, which are statistically insignificant in Table 5.

Lastly, Appendix Table A4 shows the MEFI coefficients and their corresponding standard errors for eight alternative specifications excluding different combinations of control variables, fixed effects, and

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[9]We thank two anonymous referees for suggesting these additional robustness checks. The corresponding results for these alternative regression specifications are in the Appendix. Interested readers may request a copy of the Appendix from the author.

Table 9. The effect of labour market freedom on industry employment creation

Variables	(1) Total	(2) Serv.	(3) Retail	(4) Finance	(5) Manu.	(6) Const.	(7) Trans.	(8) Whole sale	(9) Mining	(10) Agri.
MEFI labour market	0.040***	0.023***	0.022***	0.065***	0.007	0.121***	0.008	0.047***	0.099***	−0.164***
	(0.007)	(0.006)	(0.007)	(0.007)	(0.015)	(0.007)	(0.013)	(0.012)	(0.026)	(0.025)
ln(GDP pc.)	0.391***	0.493***	0.237***	0.674***	−0.124*	0.276***	0.153***	0.272***	0.087	0.233**
	(0.021)	(0.023)	(0.040)	(0.026)	(0.063)	(0.032)	(0.047)	(0.042)	(0.105)	(0.092)
GDP growth	0.002	−0.004**	−0.000	−0.006***	0.019***	0.004	0.003	0.005	−0.013*	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.005)	(0.002)	(0.003)	(0.003)	(0.007)	(0.007)
ln(Pop.)	0.779***	0.679***	0.774***	0.737***	0.711***	0.736***	0.767***	0.769***	0.452***	0.592***
	(0.003)	(0.003)	(0.004)	(0.004)	(0.009)	(0.004)	(0.007)	(0.007)	(0.016)	(0.013)
Pop. growth	−1.328***	−0.183	−0.481*	1.596***	−8.856***	3.721***	−1.389***	−3.109***	0.886	11.024***
	(0.260)	(0.249)	(0.280)	(0.320)	(0.628)	(0.338)	(0.380)	(0.516)	(1.080)	(0.880)
Obs.	3,448	3,324	3,446	3,440	3,442	3,425	3,200	3,394	3,126	3,068
R^2	0.947	0.945	0.931	0.928	0.728	0.921	0.798	0.835	0.302	0.524
MSA FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

time effects. Again, most of the estimated effects are consistent with the baseline specifications. However, our results reveal that several variables initially found statistically insignificant became significant when we excluded control variables and time-fixed effects from the regression specifications in rows 6 and 8. These results emphasize the importance of incorporating time-fixed effects and other covariates in the regression model to minimize the potential for omitted variable bias and obtain accurate and reliable results.

In conclusion, these robustness tests indicate that our main results remain largely consistent.

Concluding remarks

Several studies link institutions to international, national, or sub-national employment creation. We expand this literature and explore the relationship between institutions and employment creation at the US metropolitan area level for nine major industries. The industry-specific analysis of employment creation is motivated by three factors. First, some industries may be more engaged with the formal economy; thus, those industries may be more sensitive to institutions. Second, some regions may be more concentrated in certain industries. Third, these industries may employ a large proportion of the local population. All these factors make the role of local-level institutions critical for boosting local employment.

Therefore, in this paper, we explore the role of local-level policies in boosting employment across nine major industries. First, we test whether a pro-market institutional environment is more conducive to employment creation. Second, we test whether the effect of pro-market institutions varies by industry. We combine five-year interval data from 374 metro areas of the US from 1972 to 2017 to explore these relationships. According to our results, pro-market institutions have a positive effect on overall employment creation. Moreover, this effect is more pronounced for the non-farm than the farm sector. At the industry level, our results reveal that pro-market institutions promote employment only within the manufacturing, retail, and construction sectors.

We conclude that an institutional environment based on market forces supported by well-defined and enforced property rights mainly boosts employment creation across industries. Moreover, market-based institutions show heterogeneous effects on each industry. Therefore, our analysis provides a more nuanced understanding of the relationship between institutions and employment creation. Furthermore, our research reveals that local policies that remove market distortions encourage job creation in specific industries. To illustrate, suppose the manufacturing sector is the primary source of local employment. In this case, implementing policies that reduce government spending may be more beneficial than prioritizing labour market freedom. Conversely, if agriculture services are the main source of local employment, reducing government spending or taxes or increasing labour market freedom could negatively affect local employment opportunities. These findings highlight the importance of analysing employment dynamics in each industry separately at the local level.

Our focus on the local-level market-preserving institutions provides better insights than a sample of disparate countries. However, several limitations of our paper need further research, including the small number of people in some sectors. For example, the farm sector employs only about 1.25% of employees, which equates to an average of about 3,700 people in each MSA (average size = 458k). Similarly, on average, the agricultural services sector employs about 1,300 people per MSA. Given the small numbers, randomness and measurement error could make the employment data unreliable. Thus, it may be worthwhile for future researchers to build on this issue.

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Appendix

Table A1. Alternative specifications without GDP growth: farm *versus* non-farm sectors

Variables	(1) Total	(2) Non-farm	(3) Farm
MEFI	0.012***	0.017***	−0.093***
	(0.003)	(0.004)	(0.017)
ln(GDP pc.)	0.378***	0.386***	−0.871***
	(0.018)	(0.019)	(0.121)
ln(Pop.)	0.788***	0.778***	0.676***
	(0.003)	(0.003)	(0.017)
Pop. growth	−0.350**	−0.496***	1.134
	(0.161)	(0.166)	(1.095)
Obs.	3,448	3,448	3,448
R^2	0.957	0.955	0.372
MSA FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes

Notes: ***$P < 0.01$, **$P < 0.05$, *$P < 0.1$. Robust standard errors are in parentheses. Ordinary least squares estimates.

Table A2. Alternative specifications without GDP growth: total private non-farm across industries

Variables	(1) Total	(2) Serv.	(3) Retail	(4) Finance	(5) Manu.	(6) Const.	(7) Trans.	(8) Whole sale	(9) Mining	(10) Agri.
MEFI	0.012***	0.005	0.004	0.028***	0.003	0.059***	0.000	0.020***	0.080***	−0.157***
	(0.004)	(0.004)	(0.005)	(0.005)	(0.009)	(0.005)	(0.007)	(0.007)	(0.016)	(0.016)
ln(GDP pc.)	0.416***	0.502***	0.250***	0.699***	−0.088	0.346***	0.163***	0.305***	0.109	0.172*
	(0.021)	(0.023)	(0.039)	(0.026)	(0.063)	(0.031)	(0.046)	(0.042)	(0.104)	(0.093)
ln(Pop.)	0.781***	0.681***	0.776***	0.741***	0.710***	0.743***	0.767***	0.771***	0.457***	0.586***
	(0.003)	(0.003)	(0.004)	(0.004)	(0.009)	(0.004)	(0.007)	(0.006)	(0.015)	(0.013)
Pop. growth	−1.143***	−0.002	−0.322	1.855***	−8.982***	4.006***	−1.341***	−2.986***	0.750	11.718***
	(0.253)	(0.249)	(0.274)	(0.328)	(0.604)	(0.332)	(0.369)	(0.505)	(1.066)	(0.876)
Obs.	3,448	3,324	3,446	3,440	3,442	3,425	3,200	3,394	3,126	3,068
R^2	0.947	0.944	0.930	0.927	0.726	0.919	0.798	0.834	0.303	0.539
MSA FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: ***$P < 0.01$, **$P < 0.05$, *$P < 0.1$. Robust standard errors are in parentheses. Ordinary least squares estimates.

Table A3. Alternative specifications without GDP growth: wage and salary and proprietors sectors

Variables	Wage and salary (1)	Proprietors		
		(2) Proprietors total	(3) Non-farm	(4) Farm
MEFI	0.010**	0.020***	0.014***	0.041**
	(0.004)	(0.004)	(0.004)	(0.016)
ln(GDP pc.)	0.346***	0.491***	0.552***	−1.250***
	(0.020)	(0.025)	(0.024)	(0.121)
ln(Pop.)	0.780***	0.795***	0.762***	0.657***
	(0.003)	(0.004)	(0.004)	(0.018)
Pop. growth	−0.892***	2.330***	2.734***	−5.739***
	(0.188)	(0.354)	(0.343)	(1.048)
Obs.	3,448	3,448	3,448	3,448
R^2	0.948	0.939	0.945	0.336
MSA FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

Notes: ***$P < 0.01$, **$P < 0.05$, *$P < 0.1$. Robust standard errors are in parentheses. Ordinary least squares estimates.

Table A4. Robustness test with alternative specifications: private non-farm employment creation

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Reg	X	FE	Time	Tot	Serv.	Retail	Fin.	Manu.	Const.	Trans.	Whole	Mining	Agri.
1	Yes	Yes	Yes	0.022***	0.006	0.026***	0.015*	0.060***	0.053***	0.019	0.025*	0.007	0.040
				(0.006)	(0.008)	(0.008)	(0.009)	(0.013)	(0.009)	(0.019)	(0.013)	(0.024)	(0.028)
2	Yes	Yes	No	0.039***	−0.008	0.109***	−0.008	0.114***	0.086***	0.083***	0.076***	0.007	0.253***
				(0.006)	(0.007)	(0.009)	(0.008)	(0.012)	(0.010)	(0.018)	(0.013)	(0.022)	(0.031)
3	Yes	No	Yes	0.020***	0.002	0.021***	0.017**	0.049***	0.056***	0.007	0.020*	0.020	−0.010
				(0.006)	(0.007)	(0.007)	(0.008)	(0.012)	(0.007)	(0.012)	(0.011)	(0.021)	(0.025)
4	Yes	No	No	0.036***	−0.005	0.076***	0.000	0.096***	0.079***	0.039***	0.060***	0.017	0.102***
				(0.005)	(0.006)	(0.007)	(0.007)	(0.011)	(0.008)	(0.013)	(0.011)	(0.020)	(0.031)
5	No	Yes	Yes	0.026**	0.001	0.019	0.026**	0.049***	0.091***	0.021	0.025*	0.002	0.013
				(0.013)	(0.010)	(0.012)	(0.012)	(0.017)	(0.014)	(0.020)	(0.015)	(0.025)	(0.027)
6	No	Yes	No	0.332***	0.497***	0.179***	0.334***	−0.008	0.351***	0.082***	0.161***	0.107***	0.098***
				(0.013)	(0.013)	(0.012)	(0.013)	(0.015)	(0.013)	(0.017)	(0.013)	(0.021)	(0.021)
7	No	No	Yes	0.027**	0.002	0.020*	0.027**	0.047***	0.092***	0.023	0.026*	0.016	0.001
				(0.013)	(0.010)	(0.012)	(0.012)	(0.017)	(0.014)	(0.019)	(0.014)	(0.023)	(0.025)
8	No	No	No	0.327***	0.479***	0.177***	0.329***	−0.009	0.346***	0.080***	0.159***	0.110***	0.080***
				(0.013)	(0.012)	(0.011)	(0.012)	(0.015)	(0.013)	(0.016)	(0.013)	(0.021)	(0.019)

Notes: ***$P < 0.01$, **$P < 0.05$, *$P < 0.1$. Robust standard errors are in parentheses. Ordinary least squares estimates. This table presents MEFI coefficient values and their corresponding standard errors across eight alternative specifications. We have excluded other coefficient values and statistical measures to ensure brevity. The first row represents our benchmark regressions in Table 4 for reference purposes. The following rows show the MEFI coefficients when excluding different combinations of control variables, fixed effects, and time effects. Column 1 lists the specifications, and column 2 indicates whether other control variables are included. Column 3 shows whether MSA-fixed effects are included. Column 4 displays whether time-fixed effects are included. Columns 5–14 report MEFI industry-specific coefficients and their standard errors.

Table A5. US employment composition (number of jobs – in millions)

		MSA	US	Category share (%)
	Total employment	153.38	178.98	100.0
a	Farm employment	1.25	2.62	1.5
b	Non-farm employment	152.12	176.36	98.5
b1	**Private non-farm employment**	132.17	152.25	85.1
b11	Services	66.82	79.97	44.7
b12	Retail trade	15.30	18.07	10.1
b13	Finance, insurance, and real estate	15.80	17.56	9.8
b14	Manufacturing	9.98	12.60	7.0
b15	Construction	7.42	8.93	5.0
b16	Transportation and public utilities	4.59	6.44	3.6
b17	Wholesale trade	5.39	6.24	3.5
b18	Mining	0.92	1.55	0.9
b19	Agricultural services, forestry, and fishing	0.43	0.89	0.5
b2	**Government and government enterprises**	19.96	24.10	13.5
b22	Federal civilian	2.52	2.88	1.6
b23	Military	1.78	2.06	1.1
b24	State and local	15.65	19.17	10.7
b241	State government	4.00	5.30	3.0
b242	Local government	10.68	13.87	7.8
x	Proprietor employment	32.83	39.36	22.0
x1	Non-farm proprietor employment	32.05	37.52	21.0
x2	Farm proprietor employment	0.78	1.84	1.0
y	Wage and salary employment	120.55	139.62	78.0

Notes: Author's calculations based on the Bureau of Economic Analysis data.

Table A6. The components of the US metro-area economic freedom index

Area 1. Gov't spending
1A. General consumption expenditures as a percentage of personal income
1B. Transfers and subsidies as a percentage of personal income
1C. Insurance and retirement payments as a percentage of personal income
Area 2. Taxation
2A. Income and payroll tax revenue as a percentage of personal income
2B. Sales tax revenue as a percentage of personal income
2C. Revenue from property tax and other taxes as a percentage of personal income
Area 3. Labour market freedom
3A. Minimum wage (full-time income as a percentage of per capita personal income)
3B. Government employment as a percentage of total employment
3C. Private union density (private union members as a percentage of total employment)