Do Accountants Increase Economic Activity?

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Abstract

We investigate whether and how accountants affect economic activity using data from over 1.1 million establishments spanning 2001 to 2022. Employing Bartik's (1991) method to tackle endogeneity, we find counties with increased accounting employment have higher Gross Domestic Product (GDP), employment, business activity, and wages. These findings are related to increased establishment entry and job creation. Accountants incrementally contribute to economic growth compared to total employment or business employment. Our findings underscore the vital role of accountants in shaping economic well-being. Additionally, we document several stylized facts about accounting labor markets, including rising accountant employment alongside declining wages.

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Do Accountants Increase Economic Activity?

1. Introduction

We examine whether and how accountants affect economic activity. Ball (2023) suggests that the use of accounting across various countries for centuries indicates its inherent benefit to aggregate welfare. However, the literature offers only indirect insights into the role of accounting in shaping aggregate welfare, with limited direct evidence (Ball, 2023). While extensive literature documents the firm-level effects of accounting, it is difficult to infer the aggregate consequences of accounting from firm-level studies that focus primarily on public companies and can't fully capture the spillover effects of accounting information. We provide direct evidence highlighting accountants' impact on aggregate economic growth and development by analyzing data covering both public and private firms.

We conjecture that accountants increase economic activity for several reasons. First, accountants compile, summarize, analyze, and interpret financial data to present a coherent picture of a firm's financial position and performance. As the number of accountants increases, so does the availability of such accounting information. The availability of accounting information creates an environment conducive to well-informed investment decisions and resource reallocation (Biddle et al., 2009). As informed investment decisions are expected to lead to more economic activity, job creation also rises, improving employment rates and fostering business growth.

Second, when firms have accounting information, they can better estimate and share their financial position and performance. This enables capital providers to assess the potential risks of different business ventures, thereby lowering the cost of capital and increasing investment in the economy (Leuz, 2007). Third, accounting information allows firm owners to monitor managers, mitigating agency costs that hamper economic activity (Watts and Zimmerman, 1986).

Accountants also enhance governance and risk management by creating better internal control systems, leading to improved operational decisions (e.g., Ge, Koester, McVay, 2017). Finally, accounting information can act as a public good for workers, customers, and governments, aiding their decisions.

However, accounting information may not affect economic activity. It could merely redistribute profits among economic agents, without improving aggregate welfare (Hirshleifer, 1971). To illustrate, suppose equity investors collect private information that does not affect firms' investment decisions. If some equity investors possess these accounting insights while others do not, the knowledgeable ones could gain higher returns. However, this gain comes from taking profits from the less informed, not from enhancing aggregate welfare. This rationale extends beyond equity investments; it applies to any business decision where accounting enables profit generation without boosting investment efficiency. Accounting could enable certain companies to earn more profits, at the expense of other companies, without enhancing aggregate welfare. Further, accounting measurements could induce a short-term or narrow focus, encourage earnings manipulations, and contribute to procyclicality, potentially decreasing aggregate welfare (e.g., Kanodia and Sapra, 2016). Therefore, the impact of accountants on aggregate welfare is unclear.

To examine the research question, we use novel data from the Bureau of Labor Statistics (BLS) on occupations. The BLS collects information on 830 occupations from 1.1 million establishments in the United States and provides information by Metropolitan Statistical Area (MSA). As of 2022, about 1% of American workers are accountants, earning an average wage of around $87,000, higher than the national average salary of $62,000.[1] Around 25% of accountants

[1] Accountants' role is defined as "Examine, analyze, and interpret accounting records to prepare financial statements, give advice, or audit and evaluate statements prepared by others. Install or advise on systems of recording costs or other financial and budgetary data." (Occupational Employment and Wage Statistics, BLS, provide exact citation). This definition does not cover accountants in executive roles, tax preparers, bookkeeping clerks, or auditing clerks.

work in accounting firms, and other common sectors include finance, professional services, and government.

A key challenge in examining the research question is that accounting employment is endogenously related to economic activity. In particular, the factors that increase accounting employment will also affect GDP, employment, wages, and business activity. To address this concern, we use the widely accepted Bartik instrument approach to identify exogenous variation in employment growth rates (Bartik, 1991; Breuer, 2022; Goldsmith-Pinkham, 2022). Like the standard difference-in-differences approach, Bartik exploits the fact that changes in national employment demand in a specific industry have a more pronounced impact on counties that are more exposed to that industry. The Bartik instrument, therefore, uses changes in national labor demand as an instrument to shock local employment. The Bartik instrument, estimated for each county, is the sum across industries of the interaction between the *initial* fraction of the county employees who belong in a given industry and the national employment growth of that industry. Because all the variation in the Bartik instrument stems from the national level, it is exogenous to the local conditions that threaten identification.[2]

We estimate the Bartik instrument for the accounting occupation, using county-industry accounting employment and national industry accounting employment growth. We provide evidence consistent with the instrument satisfying the relevance condition and exclusion restriction.[3] Using the Bartik approach, we find that accounting employment growth is positively related to GDP. Specifically, a 1% increase in accounting employment growth increases GDP by 0.2%. Additionally, we find that a 1% increase in accounting employment growth increases

[2] Section 4 discusses the identifying conditions and limitations of the Bartik (1991) instrument.
[3] In Bartik instruments, the exclusion restriction is effectively the assumption of parallel trends in difference-in-differences (Section 4 provides more details).

employment by 0.21% and the number of establishments in a given county by 0.22%. These findings suggest that having more accountants positively affects local economic activity. Importantly, the effects of accountants are incremental to those of overall employment or business employment, as incorporated by an overall Bartik instrument and a business-occupation Bartik instrument. These findings further suggest that accountants contribute incrementally to economic growth beyond average employment.

We next examine the ways accountants affect economic growth and find several factors. First, counties with more accountants create more jobs without a corresponding increase in job losses, leading to a significant net gain in employment. Second, accountants are associated with higher rates of starting and closing businesses, with new business openings occurring about twice as often as closures. Moreover, job creation increases in companies of all ages, but notably more in younger firms (aged 1-5 years) than older ones (over 11 years). Finally, our analysis of publicly listed firms shows that having more accountants in an industry improves investment efficiency within those firms. These findings emphasize the vital role of accountants in fostering economic growth, expanding job opportunities, and improving investment efficiency.

We find that accounting employment growth raises workers' average wages, albeit primarily benefiting those in the upper half of the income distribution. An increase in accountants leads to decreases in wages for income earners at the 10^{th} and 25^{th} percentile, has no discernible effect at the median, and boosts wages at the 75^{th} percentile and 90^{th} percentile. Thus, accounting employment improves income prospects for high-income earners.

Next, we analyze the evolving trends in accounting labor markets over time. We observe a consistent increase in the proportion of accountants within the US economy. However, recent years have seen a notable decline in their wages. These trends are evident across all levels of occupations within accounting firms, encompassing partners, managers, and senior managers. In addition, this decline has been particularly influenced by a rise in the number of accountants employed in non-accounting firm industries.

Our study has several limitations. First, we acknowledge that the mere presence of accountants does not necessarily imply high-quality accounting information. Second, due to data constraints, we focus on specific measures of macroeconomic activity. While our findings offer valuable insights within these boundaries, they may only capture part of the spectrum of effects. Finally, we address endogeneity concerns to the best of our ability. Our inferences are suggestive, not definitive.

Despite these caveats, our paper makes at least two distinct contributions. First, we provide empirical evidence regarding the interplay between the accounting profession and economic activity. By demonstrating the effect of accountants on general labor markets and the broader macroeconomy, we underscore the importance of maintaining a robust accounting labor market, despite its relatively small size.

Second, we shed light on several key trends in accounting labor markets. These insights inform legislators seeking to maximize economic growth and welfare. They are also relevant for regulatory bodies such as the PCAOB and AICPA as they address concerns surrounding a perceived shortage of accountants. Finally, these trends inform universities and potential students seeking to enter the accounting profession.

2. Related Literature

An extensive literature examines the costs and benefits of accounting at the firm level. These studies offer insights into various ways that increases in the number of accountants in a region might impact aggregate welfare. This literature identifies at least two primary ways in which accountants are beneficial to firms.

First, accounting enhances internal investment efficiency. In particular, accounting not only equips managers with the necessary information for decision-making (Biddle et al., 2009; Bae et al., 2007), but it also plays a role in incentivizing and monitoring executives (Holthausen and Leftwich, 1983; Watts and Zimmerman, 1983). As investments become more efficient, overall output is expected to increase. Moreover, with more productive investments, the optimal level of investment rises, leading to potential increases in total employment and wages, particularly if capital and labor are complementary.

Second, significant literature explores how accounting practices impact firms' access to capital. Accounting information plays a crucial role in reducing firms' cost of capital through two main channels: providing investors with more information and decreasing information disparities between managers and investors, as well as among investors themselves (Lambert et al., 2012; Armstrong et al., 2011). As the cost of capital decreases, more projects become economically viable with positive net present value (NPV), leading to an increase in investments. Further, accounting information can facilitate the acquisition of additional capital (Bharath et al., 2008; Chang et al., 2009). Finally, for small business owners who may lack understanding in securing capital, accountants can play a vital role in educating them on effective methods for raising funds.

However, accounting also has potential costs for the aggregate economy. For instance, if there are information asymmetries between managers and investors, and investors care about short-term stock prices, accounting information can exacerbate managers' incentives to behave myopically (Stein, 1989; Kanodia and Sapra, 2016). This can hurt economic activity as real earnings management decreases investment. Additionally, to the extent that accounting reveals proprietary information, it may disincentivize firms from making investments that are only viable if they can be kept secret (Ali. et al., 2014; Lang and Sul, 2014; Berger and Hann, 2007).

Furthermore, several studies have suggested that accounting practices, especially fair value accounting, exacerbate macroeconomic procyclicality by forcing firms to write-down assets during economic downturns (Novoa et al., 2009; Xie, 2016). Finally, accounting information could merely shift profits among different economic agents without improving overall welfare (Hirshleifer, 1971). For example, if some investors have access to accounting insights while others don't, those who are informed could earn more, but at the expense of the less informed, without benefiting the aggregate economy. This applies to investments and business decisions where accounting enables profit generation without necessarily enhancing investment efficiency. Consequently, certain companies might earn more profits, taking from others, without improving aggregate welfare.

Despite the extensive research on the costs and benefits of accounting, it remains unclear how these effects collectively influence overall economic growth. Even if one subscribes to the viewpoint presented in Ball (2023) that the longstanding presence of accounting suggests its inherent benefit, it is still uncertain to what extent it is beneficial and whether these benefits are solely advantageous for specific firm owners or extend to the broader economy.

3. Data

We collect information about the accounting job market using data from two primary sources: the Occupational Employment and Wage Statistics (OEWS) program and the Bureau of

Labor Statistics Quarterly Census of Employment and Wages (QCEW). The OEWS program samples data from around 1.1 million establishments through state unemployment insurance programs, providing wage and employment data. OEWS analyzes specific professions, offering insights into 832 occupational codes that represent employees' primary jobs.[4] For example, accountants are identified by the code 13-2011, and chief executives by 11-1011.[5]

We utilize two primary datasets obtained from OEWS. First, OEWS provides national descriptive information on individuals' professions categorized by the NAICS code. For example, OEWS can identify the number of accountants who work in NAICS code 52 (Finance or Insurance). Within this data, OEWS presents the total number of full or part-time employees and provides descriptive statistics (mean and 10th, 25th, 50th, 75th, and 90th percentile) on total compensation.[6] This information is crucial as it enables us to distinguish accountants in accounting firms (NAICS 5412) from those in other industries.

Second, OEWS offers consolidated occupational data categorized by Metropolitan Statistical Area (MSA). An MSA refers to a geographic area encompassing a major urban center and usually comprising several counties. Presently, there are 387 MSAs in the United States.[7]

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[4] If an employee is engaged in more than one profession, they are assigned to the profession that requires the highest level of skill. For more information on occupational coding, see: https://www.bls.gov/soc/

[5] OEWS's given technical definition of an accountant is: "Examine, analyze, and interpret accounting records to prepare financial statements, give advice, or audit and evaluate statements prepared by others. Install or advise on systems of recording costs or other financial and budgetary data. Excludes "Tax Examiners and Collectors, and Revenue Agents" (13-2081)." For more information, see: https://www.bls.gov/oes/current/occupation_definitions_m2022.xlsx

[6] "The OEWS survey defines employment as the number of workers who can be classified as full- or part-time employees, including workers on paid vacations or other types of paid leave; workers on unpaid short-term absences; salaried officers, executives, and staff members of incorporated firms; employees temporarily assigned to other units; and employees for whom the reporting unit is their permanent duty station, regardless of whether that unit prepares their paycheck. The survey does not include the self-employed, owners and partners in unincorporated firms, household workers, or unpaid family workers." Additionally, "Wages for the OEWS survey are straight-time, gross pay, exclusive of premium pay. Base rate; cost-of-living allowances; guaranteed pay; hazardous-duty pay; incentive pay, including commissions and production bonuses; and tips are included. Excluded are overtime pay, severance pay, shift differentials, nonproduction bonuses, employer cost for supplementary benefits, and tuition reimbursements." For more information, see https://www.bls.gov/oes/current/oes_tec.htm

[7] For more information on MSAs, see https://www.census.gov/programs-surveys/metro-micro/about.html

Within each MSA, we can ascertain employment and salary details based on occupational codes both individually and in the aggregate. NAICS information is, however, unavailable at the MSA level.

QCEW, on the other hand, offers data on employment and wages categorized by county, industry, and year. This means that for every county in the United States, we can determine the number of employees within each industry. We merge this information with national OEWS data on accounting employment growth to estimate the growth of accounting employment for each county-industry combination.

Additionally, we gather real GDP data at the county and MSA level from the Bureau of Economic Analysis (BEA) CAGDP1 file. Information on establishments and employment dynamics is obtained from the Census Business Dynamics Statistics (BDS) database. By combining this with OEWS wage data, we can analyze the impact of accounting labor markets on GDP, employment and establishment dynamics, and wages.

4. Empirical Design

A key challenge in investigating our research question is that accounting labor markets are endogenously related to the macroeconomy. The same factors that increase firms' demand for accountants also affect aggregate production and employment; therefore, one cannot simply regress a county's aggregate production on its number of accountants. Labor economics has long recognized this type of endogeneity in employment and has developed techniques to address it. One such well-accepted technique is a Bartik (1991) instrument.

The Bartik instrument has been thoroughly analyzed (Bartik, 1991; Breuer, 2022; Goldsmith-Pinkham, 2022) and used extensively to address endogeneity. The classic Bartik seeks to determine how employment growth affects wage growth. To do so, Bartik (1991) first decomposes county-year employment growth ($X_{c,t}$) into county-year-industry employment shares ($w_{i,t,c}$) and county-year-industry employment growth $\left(e_{i,t,c}\right)$, so that $X_{c,t} = \sum_i w_{i,t,c} * e_{i,t,c}$, which is tautologically true. In other words, a county with employment growth of 10% could represent this in terms of its two industries: Industry A with 60% of employees and 12% growth, and B with 40% of employees and 7% growth. Bartik (1991) then creates the Bartik instrument ($Z_{c,t}$) by fixing the industry shares in a specific time period ($\widetilde{w_{i,c}}$) and using national industry-specific employment growth ($\bar{e}_{i,t}$), so that $Z_{c,t} \equiv \sum_i \widetilde{w_{i,c}} * \bar{e}_{i,t}$.

$Z_{c,t}$ will be related to county-year employment growth $X_{c,t}$ because $\widetilde{w_{i,c}}$ measures a county's exposure to industry i, and $\bar{e}_{i,t}$ measures how much employment growth in industry i changed in year t. The logic is that if industry A has high employment growth and industry B has low employment growth, counties with a large share of employees in industry A will naturally have more employment growth than counties with a large share of industry B.

The advantage of using $Z_{c,t}$ over $X_{c,t}$ is that $Z_{c,t}$ will not change simply because local conditions change. For example, even if a business makes an investment in a county, increasing both $X_{c,t}$ and GDP in a given county-year, $Z_{c,t}$ would be entirely unaffected. Furthermore, by fixing the share of a given industry, the Bartik instrument reduces concerns that changes in aggregate outcomes may be driven by changes in industry composition (i.e., switching from low-accountant to high-accountant industries).

As with all instruments, the Bartik instrument must satisfy the relevance condition and exclusion restriction. Most Bartik instruments satisfy the relevance condition in that $Z_{c,t}$ is constructed to be related to $X_{c,t}$. The more stringent condition is the exclusion restriction, i.e., that the Bartik instrument only affects the outcome through the Bartik's effect on county-level employment growth. Prior literature has documented that because $\widetilde{w_{\iota,c}}$ measures a county's exposure to a particular industry, a Bartik's exclusion restriction is likely met if the Bartik exhibits parallel trends, like in a difference-in-differences (Breuer, 2022; Goldsmith-Pinkham, 2022).[8]

In our setting, we construct a Bartik instrument using accounting employment. Specifically, we construct our Bartik as:

$$Acct.Emp.Bartik_{c,t} \equiv \sum_i ShareAccountant_{i,c} * Accountant\ Employment\ Growth_{i,t}, \quad (1)$$

where $ShareAccountant_{i,c}$ is defined as the fraction of accountants in a county-industry in 2003. That is, $ShareAccountant_{i,c}$ is the number of accountants in the county-industry in 2003 deflated by the total number of accountants in the county in 2003. This estimate is from 2003 and is constant for the rest of the sample period. Keeping this share constant reduces endogeneity concerns, although dramatic changes could introduce measurement noise. We calculate the number of accountants in each county-industry by multiplying the number of employees in that specific county-industry in 2003 by the proportion of employees who are accountants within that industry nationally in the year 2003.[9] $Accountant\ Employment\ Growth_{i,t}$ is the percent increase in the number of accountants in a given industry from 2003 to year *t*.

Relating this measure to the equation described in the preceding paragraphs, $ShareAccountant_{i,c}$ is our equivalent to $\widetilde{w_{\iota,c}}$, while $Accountant\ Employment\ Growth_{i,t}$ is our equivalent to $\bar{e}_{i,t}$. The primary distinction between our measure and the original Bartik is that the original Bartik examined total employment growth, while we are only interested in the employment growth of accountants.

[8] The exclusion restriction can also be satisfied if there are many shocks that are as good as random, even if parallel trends is not satisfied.

[9] We assume that the proportion of accountants in the industry nationally is a fair representation of the proportion of accountants in that industry locally. We provide validation for this assumption in Section 5.6 using MSA-level data.

Once we have identified our instrument, $Bartik_{c,t}$, our empirical strategy uses a two-way fixed effects design.[10] Specifically, we estimate the following specification:

$$Y_{c,t} = \beta_1 * Acct.Emp.Bartik_{c,t} + \gamma_c + \delta_t, \qquad (2)$$

where $Y_{c,t}$ is a macroeconomic outcome variable, β_1 is our coefficient of interest, and γ_c and δ_t represent county and state-year fixed effects, respectively. Additionally, to make our results robust to small counties and interpretable for economic magnitudes, we weight all regressions by their 2003 GDP.

If $Acct.Emp.Bartik$ meets the relevance condition and exclusion restriction, the regression is well identified. To examine whether the $Acct.Emp.Bartik$ fulfills these criteria, we perform two sets of analysis. First, we investigate whether the relevance condition is satisfied. Given that the actual reported number of accountants can only be observed at the MSA-year level, and not the county-year level, we construct MSA-year level Bartik ($Acct.Emp.Bartik_{m,t}$) and run the following regression:

$$Accountant\ Employment\ Growth_{m,t} = \omega_1 * Acct.Emp.Bartik_{m,t} + \gamma_m + \delta_t, \qquad (3)$$

where $Accountant\ Employment\ Growth_{m,t}$ is the percent growth in accounting employment in an MSA-year, ω_1 is our coefficient of interest, and γ_m and δ_t represent MSA and year fixed effects.[11] If ω_1 is significant and positive, the relevance condition is satisfied.

[10] As is common in this literature, we use the reduced form Bartik instrument rather than the two stage least squares results. Additionally, even if we wished to use the two stage least squares result, accounting employment growth is not available at the county-year level.

[11] While we could theoretically conduct all our tests at the MSA-year level, we choose to use county-years for a few reasons. First, rural areas are largely excluded from MSAs but not from counties, meaning there is significant data loss when using MSAs. Second, by increasing the number of observations, to the extent that counties are not correlated within state, we have greater statistical power when using counties rather than MSAs. Finally, because MSAs often overlap multiple states, one cannot use state-year fixed effects or clusters, meaning that our ability to control for common shocks and correlated errors is more limited when using MSAs.

Second, to support the exclusion restriction, we look for evidence of parallel trends by repeating equation (2) using leads and lags for $Bartik_{c,t}$, as in the following regression.

$$Y_{c,t} = \sum_{-n}^{n} \beta_t * Acct.Emp.Bartik_{c,t} + \gamma_c + \delta_t \qquad (4)$$

In order for parallel trends to be satisfied, β_t coefficients on $Bartik_{c,t}$ must not affect $Y_{c,t}$ prior to when accounting employment changed, meaning there must not be any trend in the coefficient on leads of $Acct.Emp.Bartik_{c,t}$. The coefficients on lags of $Acct.Emp.Bartik_{c,t}$ indicate how long the effects of changes in accounting employment growth last after accounting employment growth returns to baseline.

A potential concern with the research design is that changes in accounting labor demand are not exogenous. For example, if capital becomes more productive, and accountants and capital complement each other, then increases in capital productivity may increase both output and accounting labor demand. In other words, it is possible that even though national accounting employment growth is exogenous to local conditions, it is endogenous to other national factors that may also affect local employment and GDP.

We take two steps to control this possibility. First, to control for shocks that generally impact national labor demand, we construct $Total\ Emp.Bartik$, a Bartik instrument constructed similarly to $Acct.Emp.Bartik$, but for all occupations. Once included, the coefficient on $Acct.Emp.Bartik$ becomes interpretable as the effect of increasing accounting demand while holding overall labor demand constant. Said differently, our results are interpretable as the incremental effect of accountants on economic activities compared to total employment. Similarly, to control for the possibility that our results could be driven by changes in labor demand for business or white-collar workers, we also construct $Business\ Emp.Bartik$ for all business occupations.[12] These findings can also be interpreted as the incremental effects of accountants on economic activities compared to overall business employment.

Second, to control for shocks to other potential factors of production, we use a model to guide our selection of control variables. Specifically, we consider a production function of the following form. $Y = A * f(K, L, B, I) = A * K^k L^l B^b I^i$, where A is total factor productivity, K is total capital, L is total labor, B is the total number of accountants, I is the number of intermediate goods, and $k, l, b,$ and i are capital, labor, accountant, and intermediate good productivity. The key problem articulated above is as follows. If we denote the profit maximizing level of a given factor X^*, then $\frac{\partial B^*}{\partial k} > 0$ because capital and the number of accountants are complements. Unfortunately, however, $\frac{\partial Y}{\partial k} > 0$, meaning that as capital becomes more productive, production will increase. Thus, while the production increase would be correlated with the number of accountants, it is driven by an increase in capital and its productivity.

To account for this possibility, we need to explicitly account for each factor of production and its productivity. Specifically, we need to control for total factor productivity (A), total amount of capital (K), labor (L), and intermediate goods (I), and the productivity of capital (k), labor (l), and intermediate goods (i). Once these variables are controlled for, endogenous increases in the number of accountants (B) can only be driven by increases in their productivity (b).

To empirically implement this, for each industry-year, we collect each of these variables from the BLS Office of Productivity and Technology (OPT) file. The intermediate goods included in OPT are energy, materials, and services. Therefore, we include as controls the total value of capital, labor, energy, materials, and services. Additionally, we include controls for the BLS's

[12] To create *Business Emp. Bartik,* we use all employees in OCC Code 13-0000. This is the main occupation code under which accountants are classified (accountants are code 13-2011).

measure of productivity of each of these variables.[13] Finally, we include the BLS's measure of total factor productivity (TFP). The BLS indexes each of these variables to 2017, meaning like our Bartik measure, changes in the values of the BLS measures are interpretable as the percentage change in their value relative to a base year. Like $Tot.Emp.Bartik$, we allocate these controls to counties by taking a weighted average across the number of employees in a county-industry in 2003. Specifically, for a given control, $Control_{c,t} = \sum_i \frac{Employees_{i,c} * Control_{i,t}}{\sum_i Employees_{i,c}}$ where $i, c,$ and t denote county, industry, and year respectively.

5. Accountants and Economic Activity

5.1 Accountants and Macroeconomy

Our primary analysis focuses on using county-year-level data. Summary descriptive statistics for the county-year-level are provided in Table 1 Panel A. These statistics reveal that the average *Acct. Emp. Bartik* stands at 20.9%, approximately four times greater than *Total Emp. Bartik* at 5.7%, but smaller than *Business Emp. Bartik* at 33%. This suggests that the demand for accounting labor has increased relative to overall labor demand over time, but has not kept up with business more broadly. The average GDP per county is $4.5 billion, with employment averaging 34 thousand people. Notably, the data exhibits significant skewness, largely influenced by large counties, with most macroeconomic variables showing average values considerably higher than the median.

Unsurprisingly, macroeconomic variables exhibit significant autocorrelations. For instance, the number of employees in New York in 2003 is highly correlated with the number in

[13] For a detailed description of how the BLS calculates each of these variables, see the BLS Handbook of Methods for measuring productivity at https://www.bls.gov/opub/hom/msp/calculation.htm

2004. To remove the persistent component, we employ county and year-fixed effects. Table 1, Panel B (Panel C), presents descriptive statistics (correlations) after the fixed effects.[14] Panel C demonstrates that *Acct. Emp. Bartik* and *Total Emp. Bartik* are correlated at 41%, indicating a strong correlation while capturing distinct variation. This is even stronger between *Acct. Emp Bartik* and *Business Emp. Bartik,* which are correlated at 76%. *Acct. Emp. Bartik* positively correlates with employment, establishments, and GDP.

Our primary analysis, estimating equation (2), is presented in Table 2. Panel A documents the results for GDP, Panel B for employment, and Panel C for establishments. Across all specifications, the coefficient $\beta_1$is consistently positive and significant. We consider our main specification to be including controls, fixed effects, and *Total Emp. Bartik* as a control (Column 6 across the panels). We use *Total Emp. Bartik* as a control throughout the rest of the paper because it alleviates concerns about other national labor conditions driving the observed result. Given the positive correlation between the two Bartik instruments, it creates a more stringent model. The results are then interpretable as the incremental effect of adding 1% more accountants while keeping the total number of employees in the economy constant.. As shown in Column 6, the coefficient for GDP is 0.203 (Panel A, t-statistic 4.0), for employment is 0.208 (Panel B, t-statistic 3.3), and for establishments is 0.217 (Panel C, t-statistic 4.5). Since β_1 represents an elasticity, it implies that a 1% increase in the number of accountants in a county leads to a 0.2% increase in GDP. These results are unchanged even when controlling for *Business Emp. Bartik,* suggesting that the results are driven by change in demand for accountants and not by changes in demand for business professionals or white-collar workers more broadly that are correlated with changes in demand for accountants.

[14] Within fixed effect variables are constructed by regressing each variable on county and year fixed effects and taking the residuals. For this reason, by construction, the variables in Table 1 Panel B are mean 0.

5.2 Accountants and Business Dynamics

To gain deeper insight into the factors behind the rise in employment and establishments, we re-estimate equation (2) using job creation (destruction) and establishment entry (exit) as dependent variables. The results are presented in Table 3. We find that the increase in employment reported in Table 2 is primarily due to a surge in job creation (coefficient 0.329, t-statistic 4.8), with no corresponding increase in job destruction (coefficient 0.022, t-statistic 0.2). This resulted in a significant net increase in the number of jobs created (coefficient 9.629, t-statistic 3.6). Regarding establishments, both entry (coefficient 0.468, t-statistic 6.2) and exit (coefficient 0.223, t-statistic 2.8) increased, but the entry rate increased approximately twice as much as the exit rate.

Table 4 re-estimates these relationships based on establishment age. We find that while job creation increased across establishments of all ages, there is a significantly greater increase among young firms aged 1-5 years (coefficient 0.848, t-statistic 7.9) compared to older firms aged over 11 years (coefficient 0.326, t-statistic 4.3). This suggests that to the extent accountants contribute to economic growth, their impact is particularly pronounced among younger businesses.

5.3 Accountants and Wages

Next, to examine the impact of accountants on wages, we shift our analysis to the MSA level. As mentioned earlier, the Occupational Employment Statistics (OEWS) offers descriptive statistics on wages by percentile for various occupations at the MSA level. We re-estimate all our measures at the MSA level.

Table 5 presents the results that investigate the relationship between accountants and wages. Findings suggest that accountants contribute to an overall increase in the average wage (coefficient 0.085, t-statistic 1.9). However, these findings mask the heterogeneous effects of accountants on wages across different percentiles. The analysis suggests that increases in the demand for accountants lead to a decrease in wages at the 10th percentile (coefficient -0.312, t-statistic -4.4) and 25th percentile (coefficient -0.2, t-statistic -2.8), have no discernible effect at the median, and boost wages at the 75th percentile (coefficient 0.129, t-statistic 2.6) and 90th percentile (coefficient 0.215, t-statistic 4.1).

The notion that increasing demand for accountants could lead to lower wages for low-wage workers may seem counterintuitive. One potential explanation is as follows: Accounting information tends to complement both capital and labor. As firms access more accounting information, they become more efficient in utilizing their resources, including capital and labor. Consequently, they may utilize more of these resources than they would have without such information. However, within the realm of labor, firms often employ both high-skilled and low-skilled workers, and these two groups can sometimes serve as substitutes for each other.

For instance, consider a scenario where a company needs to complete a routine task. It could hire a highly skilled machine engineer or outsource the task to low-wage workers in another country. While accounting information generally makes both high-skilled and low-skilled workers more efficient, its impact may differ between these groups. Suppose accounting information helps the company invest in machinery operated by highly skilled workers. In that case, the company might hire fewer low-skilled workers, as it can be replaced by highly skilled workers operating machines. These low-skilled workers would then search for different low-skilled jobs, increasing the supply and lowering wages. While this explanation isn't definitive, it aligns with the trends observed in Table 5, where accountants increase wages for high-skilled workers while potentially decreasing them for low-skilled workers.

5.4 Accountants and Investment Efficiency

Accounting information can impact the macroeconomy through various channels, with one of the primary mechanisms being enhanced investment efficiency. With access to accounting information, firms can make informed investment decisions. The responsiveness of future investment to changes in Tobin's Q has long served as a gauge of investment efficiency (Hayashi, 1982; Edmans et al., 2017). This test is performed by regressing $\frac{CAPX_{t+1}}{Total\ Assets_t} = \beta_0 + \beta_1 * \frac{Market\ Value\ Equity_t}{Book\ Value\ Equity_t}$. The coefficient $\beta_1$reflects the efficiency of a firm's investments. We ask whether accounting information enhances β_1. To accomplish this, we gauge the extent of accounting information within a particular industry-year by computing the percentage of individuals within that industry who work as accountants. For this analysis, the accountant data are sourced from OEWS, while all other data are obtained from Compustat. Specifically, investment and Tobin's Q are estimated at the firm-year level, whereas the number of accountants is estimated at the industry-year level. In essence, we conduct the following regression at the firm-year level:

$$Invest_{i,t+1} = \beta_0 + \beta_1 * Q_{i,t} + \beta_2 * Q_{i,t} * \%\ Accountants + IndustryYearFE + FirmFE \quad (5)$$

where $Q_{i,t}$=$\frac{Market\ Value\ Equity_{i,t}}{Book\ Value\ Equity_{i,t}}$, $Invest_{i,t+1} = \frac{CAPX_{i,T+1}}{Total\ Assets_{i,T}}$, and $\%\ Accountants$ is the fraction of employees who are accountants in a given-industry year.

The coefficient of interest is β_2,which signifies how accountants are associated with the sensitivity of investment to Tobin's Q. That is, β_2 indicates how changes in the number of accountants within a particular industry relates to investment efficiency. Table 6 presents the results. We find a positive and significant β_2 coefficient, suggesting that investment efficiency increased in industries where the proportion of accountants has risen. It's important to note that this relationship isn't causal because changes in the percentage of accountants aren't exogenous.

However, this finding does provide associative evidence suggesting that investment is more responsive to increases in Tobin's Q in industry-years with a higher proportion of employees who are accountants.

5.5 Parallel Trends and Exclusion Restriction

We next look for evidence of parallel trends by estimating equation (4). As discussed previously, we include leads and lags of $Acct.Emp.Bartik$ to test whether there is a trend in the relation between $Acct.Emp.Bartik$ and our dependent variables.[15] Each coefficient is interpretable as the effect of accounting employment growth controlling for the effects of accounting employment growth in other periods.[16]For example, using GDP as the dependent variable, a coefficient on $Acct.Emp.Bartik_{t-1}$would indicate the elasticity between accounting employment growth and GDP in period *T+1* if all accountants were hired in period *T,* but fired at the end of the period. In contrast, a significant coefficient on $Acct.Emp.Bartik_{t+1}$would indicate that GDP in period T is affecting accounting employment in period T+1, which is a violation of the exclusion restriction.

As can be seen in Table 7, across specifications, the pre-period is insignificant, and the results do not appear to be caused by any pre-trend. Furthermore, the effect seems to primarily appear 1 period after the accountants are hired and last for at least two periods. Together these results suggest that parallel trends are not violated and that our Bartik instrument likely satisfies the exclusion restriction.

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[15] We also include controls for $Total\ Emp.Bartik$ with similar leads and lags to $Acct.Emp.Bartik$; however, because of the sheer number of control variables that would need leads and lags we do not include alternate production factor controls.

[16] In untabulated robustness tests, we examine a wide number of leads and lags. There is a tradeoff between showing more leads and lags and 1) the number of observations, and 2) the stability of estimation. Using up to 7 leads and lags, it is clear across specifications that our results are not caused by a pre-trend in coefficients and that the effects last between 0-2 periods after treatment.

5.6 Relevance Condition

To examine the final condition for a valid Bartik instrument, we next explore the relevance condition. Under the relevance condition, a change in industries' national employment growth interacted with local industry shares, should be correlated with the employment growth at the local level. Specifically, ω_1 from equation (3) should be statistically significant. We estimate equation (3) at the MSA level in Table 8.[17] We find that across specifications, our results are positive and significant, suggesting that the $Acct.Emp.Bartik$ satisfies the relevance condition.

6 Labor Market Dynamics

Having documented significant macroeconomic benefits of accounting employment, we next explore the evolution of accounting labor markets over the past two decades. To begin, we analyze the industry composition of accountants. In Figure 1, we present the distribution of accountants across different industries. The data reveals that approximately 25% of accountants are employed in accounting firms, while the remaining are spread across various other sectors. The largest fractions are found in professional services, finance, and government.

Furthermore, Table 9 presents wage and employment statistics for various occupations. As of 2022, accountants constitute approximately 1% of the US economy and earn approximately 30% more ($86,740) compared to the national average wage ($61,900). However, this figure is notably lower than that of their counterparts in finance ($97,111) and management roles ($166,050), although it surpasses the earnings of tax preparers ($55,840) and collectors ($64,410). Moreover, accountants employed in accounting firms tend to receive higher wages ($91,140) compared to those working in other industries ($85,336).

[17] Although we would like to estimate this equation at the county level, we cannot because the dependent variable is only available at the MSA level.

Next, we examine trends in accounting wages and employment over time. However, conducting this analysis poses a challenge because wages and employment in almost all occupations tend to increase consistently. To address this challenge, we devise two measures: relative wages and relative employment. Relative employment represents the proportion of US employees engaged in a particular occupation, whereas relative wages indicate the average wage of an occupation divided by the average wage of all US employees. While the concept of relative employment is clear-cut, relative wages can be understood as quantifying the opportunity cost associated with working in a specific occupation.

In Figure 3, we document the trends in relative employment for accountants. Panel A indicates that both accountants and finance professionals are increasing over time. Specifically, the relative employment of accountants has risen by 30% since 2001. Panel B reveals that until 2013, this growth was predominantly fueled by an expansion of accountants in accounting firms. However, since 2019, there has been a steady increase in the relative employment of accountants in other industries.

Figure 4 delves into the trends in accountants' relative wages. We observe that all accounting professionals have faced declines in relative wages over the past five years. This decline is especially pronounced among accountants in accounting firms, with their relative wages dropping by nearly 15% since 2002. Moreover, they have not experienced a relative wage increase since 2005. Furthermore, although all finance professionals seem to be affected by this downward trend, non-accountants appear to have undergone a substantial relative wage increase from 2010 to 2014 (see Panel A of Figure 4).

In Figure 5 we examine the trends in wages across different occupations within accounting firms. Our analysis reveals that all professions, including chief executives such as partners, have witnessed declines in their relative wages in recent years. However, unlike chief executives and accountants, financial managers (i.e., managers and senior managers) experienced a similar increase in their relative wages like non-accounting finance professionals did from 2010 to 2014. In simpler terms, the relative wage of financial managers in accounting firms remains roughly unchanged today compared to the early 2000s.

7 Conclusion

Our analysis provides empirical evidence documenting the significant impact of accountants on aggregate economic growth and development. By examining survey data covering both public and private firms, we provide evidence that accountants contribute positively to GDP, employment, establishment growth, and average wages. Our findings underscore the importance of a robust accounting profession in fostering economic prosperity and job creation. Additionally, our study highlights evolving trends in the accounting labor market, offering insights relevant to policymakers, regulatory bodies, and educational institutions. Overall, while the precise implications of accounting on social welfare remain subject to further investigation, our research provides valuable insights into the broader macroeconomic effects of the accounting profession.

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Appendix A: Variable Definitions

Name	Description
Acct. Emp. Bartik	The estimated exogenous percentage change in the number of accountants in each county-year (MSA-year) since 2003 (2005). These estimates are derived using the formula described in Section 4.
Total Emp. Bartik	The estimated exogenous percentage change in the total number of employees in each county-year (MSA-year) since 2003 (2005). These estimates are derived using the formula described in Section 4.
Business Emp. Bartik	The estimated exogenous percentage change in the total number of business employees in a given county-year (MSA-year) since 2003 (2005). These estimates are derived using the formula described in Section 4
Accountant Employment Growth	The percentage change in the number of accountants in each MSA-year since 2005. Data from OEWS.
GDP	Natural log of one plus the real GDP (2012 chained dollars) of a county-year according to the BEA CAGDP1 File. For information on how GDP is calculated, see https://www.bea.gov/system/files/2020-02/county-GDP-article.pdf
Establishments	The natural log of one plus the number of establishments in a county year, according to BDS. BDS states, "An establishment is a fixed physical location where economic activity occurs."
Employment	The natural log of one plus the average employment in a county-year. Data is from BDS. An employee is defined as, "full– and part–time employees. Includes employees on paid sick leave, holidays, and vacations. Does not include proprietors and partners of unincorporated businesses.”
Average Wage	The natural log of one plus the average annual wage rate per employee for a county-year. Data is from OEWS. According to OEWS, "wages for the OEWS survey are straight-time, gross pay, exclusive of premium pay. Base rate, cost-of-living allowances, guaranteed pay, hazardous-duty pay, incentive pay, including commissions and production bonuses, and tips are included. Excluded are overtime pay, severance pay, shift differentials, nonproduction bonuses, employer cost for supplementary benefits, and tuition reimbursements."
Wage PXX	The natural log of one plus the XX percentile wage rate per employee for a given county-year. Data is from OEWS. According to OEWS, "wages for the OEWS survey are straight-time, gross pay, exclusive of premium pay. Base rate, cost-of-living allowances, guaranteed pay, hazardous-duty pay, incentive pay, including commissions and production bonuses, and tips are included. Excluded are overtime pay, severance pay, shift differentials, nonproduction bonuses, employer cost for supplementary benefits, and tuition reimbursements."

Jobs Created	The natural log of the number of jobs created in each county-year. Data is from BDS.
Jobs Destroyed	The natural log of the number of jobs destroyed in each county-year. Data is from BDS.
Net Jobs Created	The inverse hyperbolic sine of the number of jobs created minus the number of jobs destroyed in each county-year. Data is from BDS.
Establishment Entry	The natural log of the number of establishments created in each county-year. Data is from BDS.
Establishment Exit	The natural log of the number of establishments who exited in each county-year. Data is from BDS.

Figure 1: Accountants: Industry Distribution

The figure illustrates the distribution of accountants by industry in 2022, categorized based on two-digit NAICS codes from the Occupational Employment and Wage Statistics (OEWS). Accounting firms are distinguished by the four-digit NAICS code 5412, while Non-Accounting Professional Services encompass all firms falling under the two-digit NAICS code 54, excluding those classified as 5412. Industries with minimal accountant representation are omitted from the display.

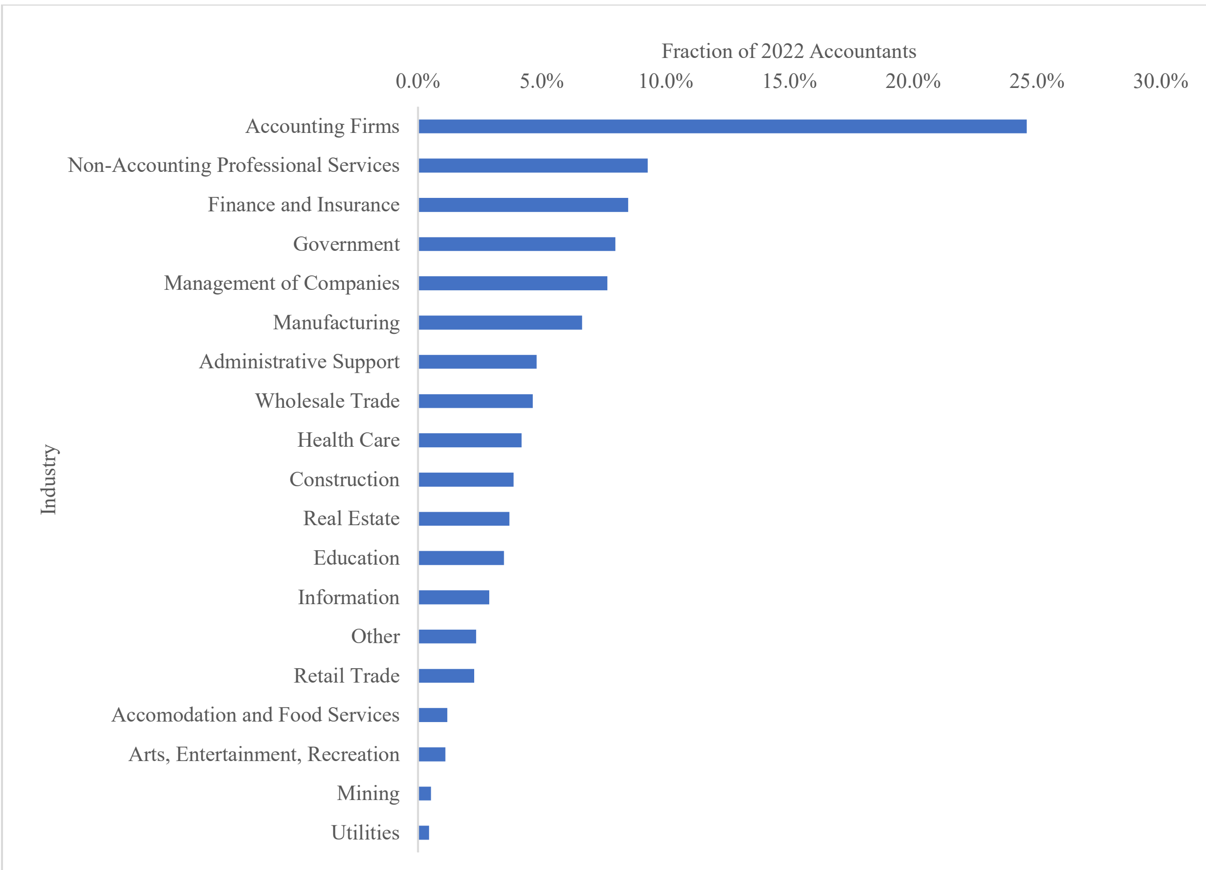
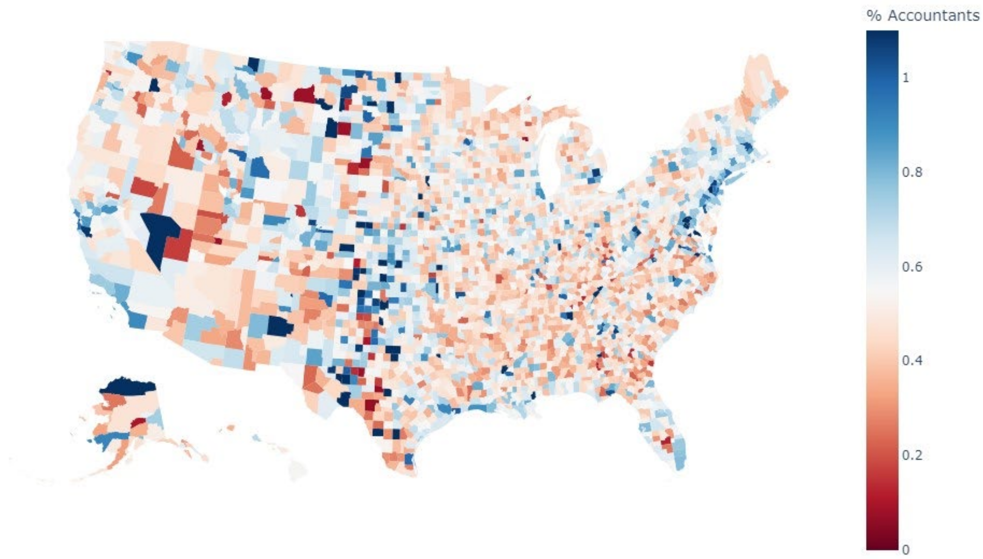


Figure 2: Dynamics of Accountants: Initial Distribution and Growth Trends Over Time

This figure presents choropleth maps illustrating the initial location of accountants and their growth over time. Panel A showcases the geographical distribution of *% Accountants*, which represents the fraction of employees in a county in 2003 estimated to be accountants. Panel B displays the geographical distribution of *Accounting Growth*, which is the percentage change in the estimated number of accountants from 2003 to 2021.

Panel A: Fraction of Employees Who are Accountants in 2003



Panel B: Growth in Accounting Employment 2003-2021

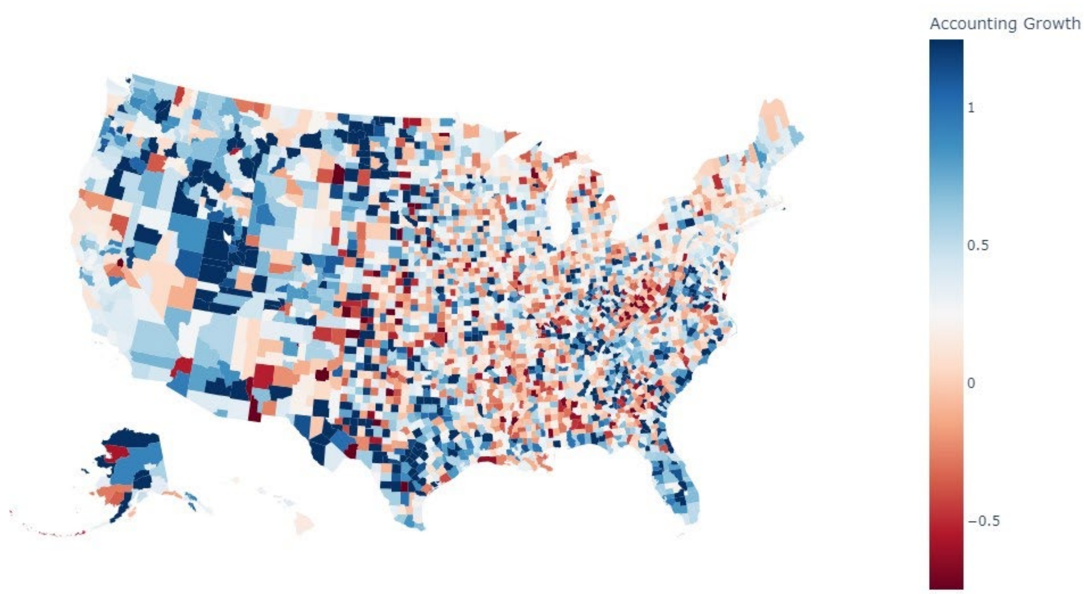
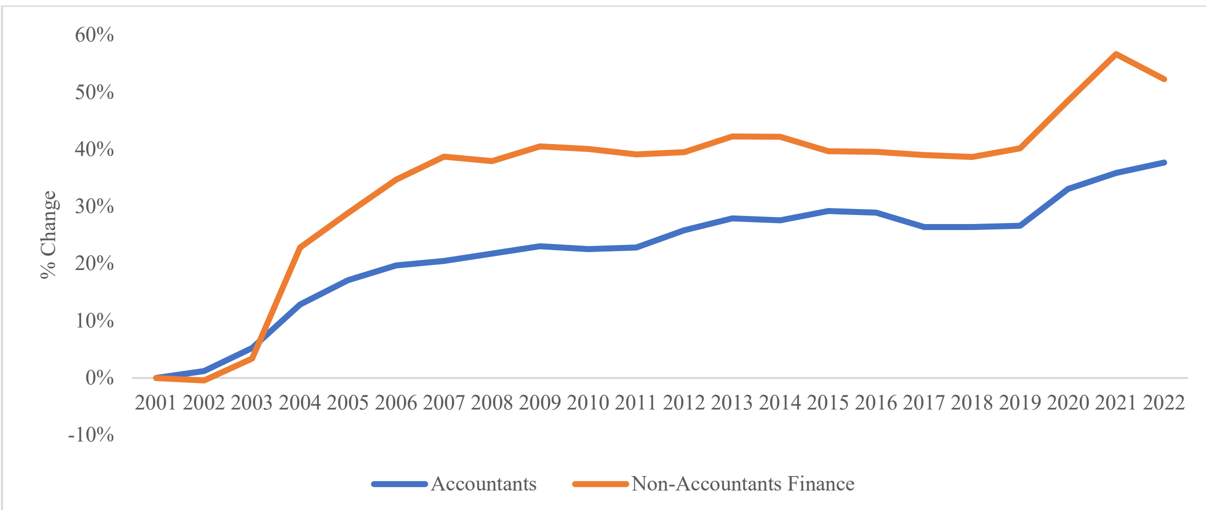


Figure 3: Accountant Employment Trends

The figure illustrates employment trends for accountants from 2001 to 2022. Panel A depicts the percentage change in the number of US employees working as accountants, with 2001 serving as the base year for these calculations. Data are sourced from the Occupational Employment and Wage Statistics (OEWS). Additionally, Panel A shows the percentage change in non-accountant positions within the finance sector over the same period. Panel B showcases the percentage change in the proportion of US employees working as accountants, distinguishing between those employed in accounting firms and those in non-accounting firms. For Panel B, 2002 is utilized as the base year for calculations. An employee is classified as working for an accounting firm if the firm's four-digit NAICS code is 5412.

Panel A: Percentage change in the proportion of US employees working as accountants.



Panel B: Percentage change in the proportion of US employees working as accountants in accounting and non-accounting firms.

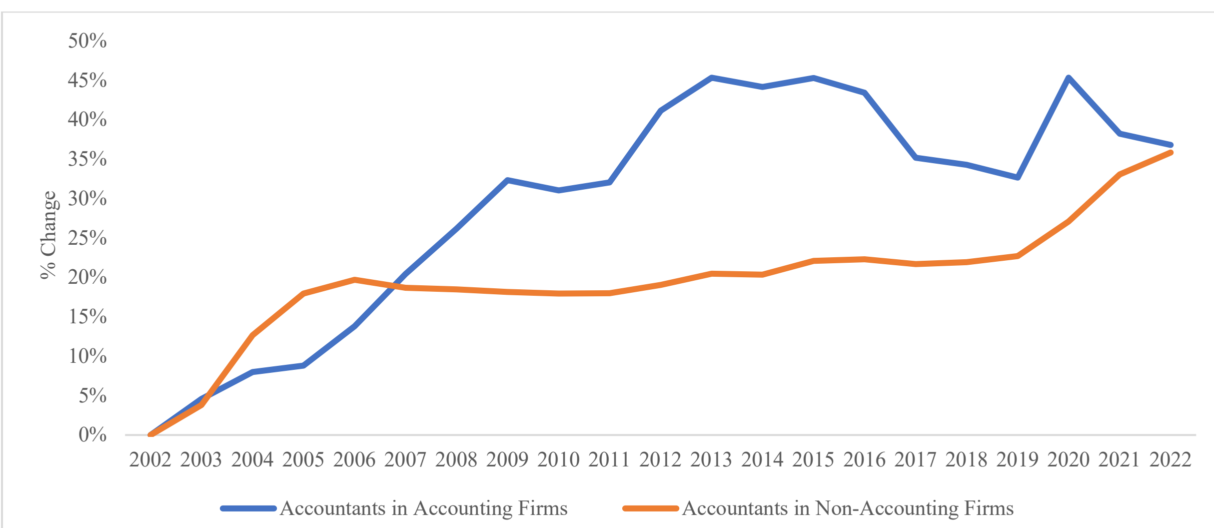
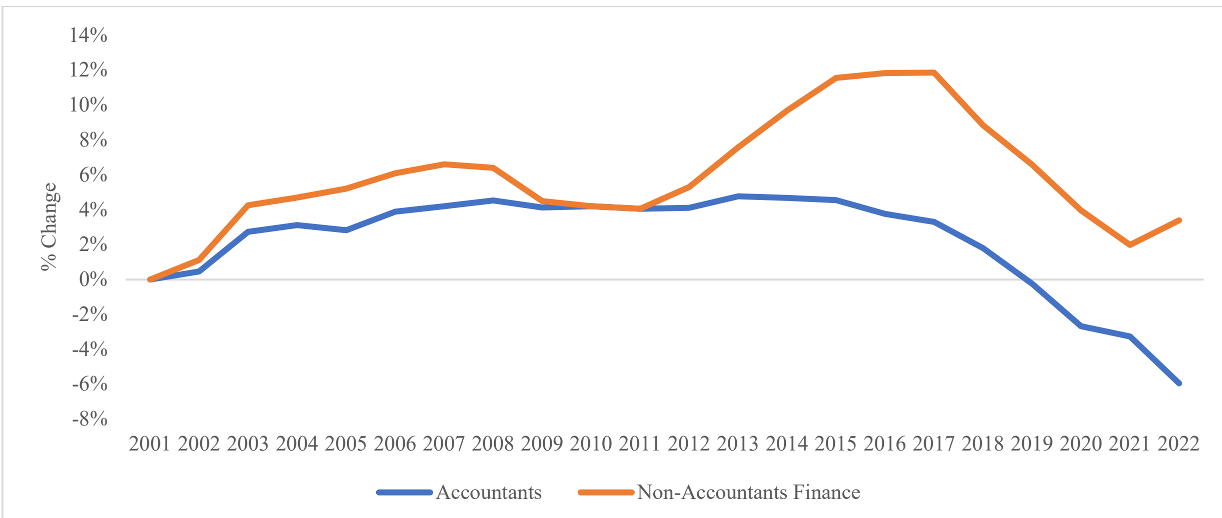


Figure 4: Accountant Wage Trends

The figure illustrates wage trends for accountants from 2001 to 2022. Panel A displays the percentage change in the average annual wage for accountants relative to the overall US average yearly wage, using 2001 as the base year for calculations. The data are sourced from the Occupational Employment and Wage Statistics (OEWS). Panel A also includes the percentage change in average wages for non-accountant roles in the finance sector compared to the overall US average annual wage. Panel B presents the percentage change in the average annual wage for accountants in accounting firms versus those not in non-accounting firms, relative to the overall US average yearly wage. For Panel B, 2002 is used as the base year for calculations. An employee is classified as working for an accounting firm if the firm's four-digit NAICS code is 5412.

Panel A: Percentage change in average wage for accountants relative to overall US average yearly wage.



Panel B: Percentage change in the average annual wage for accountants in accounting firms versus those not in non-accounting firms.

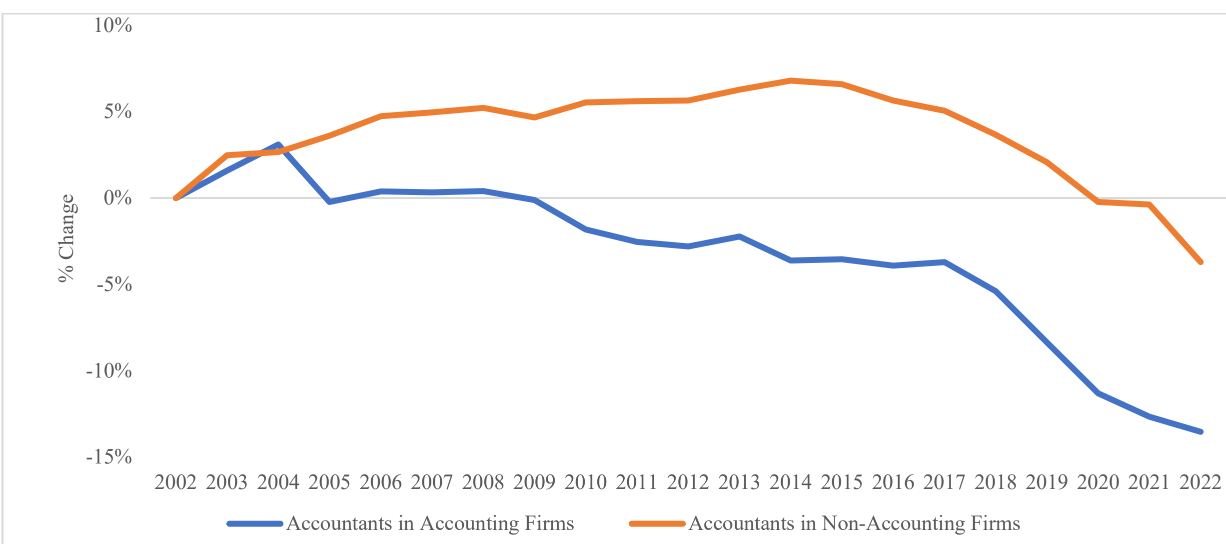


Figure 5: Wages Dynamics within Accounting Firms

The figure illustrates the percentage change in wages for chief executives, financial managers, and accountants within accounting firms. Wages are compared to the overall US annual wage per worker, using 2002 as the base year. Data are sourced from the Occupational Employment and Wage Statistics (OEWS). Employees are classified using specific occupational codes: Chief executives by code 11-1011, financial managers by code 11-3031, and accountants by code 13-2011. An accounting firm is identified by a four-digit NAICS code of 5412.

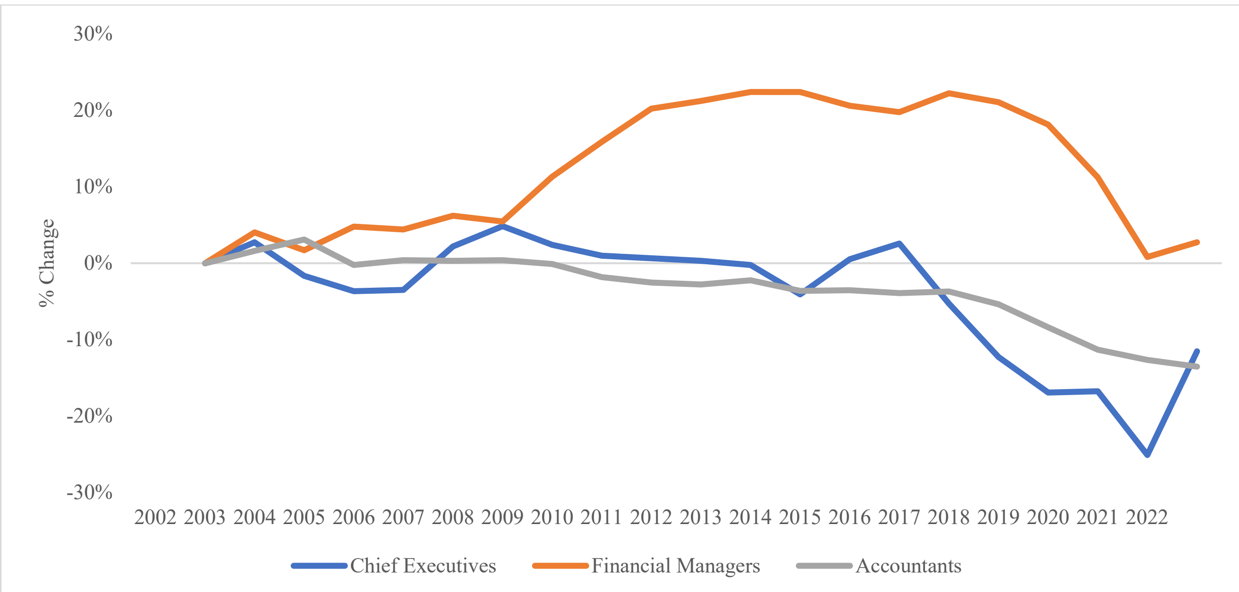


Table 1: Descriptive Statistics

The table presents descriptive statistics and a correlation matrix of key variables of interest for county-year data from 2003 to 2020. Panel A offers descriptive statistics of these variables. Panel B displays the descriptive statistics of the residuals of each variable after regression on county and year-fixed effects. Panel C presents the correlation matrix of these residuals, with Pearson correlations listed below the diagonal and Spearman correlations listed above. Appendix A provides detailed variable definitions for reference.

Panel A: Descriptive Statistics

	N	Mean	SD	Q1	Q2	Q3
Acct. Emp. Bartik	57,961	20.9%	13.3%	12.0%	20.3%	29.0%
Total Emp. Bartik	57,961	5.7%	7.2%	0.8%	4.6%	9.6%
Business Emp. Bartik	57,961	33.0%	24.0%	16.5%	25.5%	47.0%
GDP (Billions)	57,961	$4.46	$11.84	$0.35	$0.90	$2.61
Establishments	57,957	1,958	4,479	210	505	1,388
Employment	57,957	33,907	87,585	2,210	6,556	20,395
Jobs Created	57,957	5,143	20,255	265	780	2,503
Jobs Destroyed	57,956	4,918	19,603	266	776	2,442
Net Jobs Created	57,956	225	4,737	-121	16	240
Establishment Entry	57,251	230	862	18	44	127
Establishment Exit	57,294	216	795	19	45	124

Panel B: Descriptive Statistics of Residuals

	N	Mean	SD	Q1	Q2	Q3
Acct. Emp. Bartik	57,961	0.0%	6.9%	-3.9%	-0.6%	3.2%
Total Emp. Bartik	57,961	0.0%	2.9%	-1.3%	0.0%	1.1%
Business Emp. Bartik	57,961	0.0%	7.5%	-4.1%	-0.6%	3.8%
GDP	57,961	0.00	0.16	-0.06	0.00	0.06
Establishments	57,957	0.00	0.07	-0.04	0.00	0.04
Employment	57,957	0.00	0.11	-0.05	0.00	0.05
Jobs Created	57,957	0.00	0.28	-0.15	-0.01	0.14
Jobs Destroyed	57,956	0.00	0.29	-0.16	-0.01	0.14
Net Jobs Created	57,956	0.00	6.37	-5.02	0.74	4.17
Establishment Entry	57,251	0.00	0.21	-0.11	0.00	0.12
Establishment Exit	57,294	0.00	0.21	-0.11	0.00	0.11

Panel C: Correlation Matrix of Residuals

	Variable	1	2	3	4	5	6	7	8	9	10	11
1	Acct. Emp. Bartik	1	0.37	0.80	0.10	0.40	0.29	0.15	0.06	0.16	0.21	0.15
2	Total Emp. Bartik	0.41	1	0.46	0.08	0.18	0.17	0.07	0.06	0.00	0.10	0.07
3	Business Emp. Bartik	0.76	0.52	1	0.12	0.40	0.31	0.15	0.08	0.12	0.20	0.14
4	GDP	0.04	0.11	0.08	1	0.40	0.45	0.21	0.14	0.02	0.20	0.13
5	Establishments	0.34	0.15	0.33	0.37	1	0.65	0.32	0.21	0.11	0.49	0.21
6	Employment	0.24	0.17	0.25	0.42	0.64	1	0.49	0.13	0.20	0.30	0.15
7	Jobs Created	0.12	0.07	0.12	0.20	0.32	0.52	1	0.02	0.47	0.36	0.07
8	Jobs Destroyed	0.06	0.07	0.07	0.16	0.21	0.13	0.02	1	-0.51	0.11	0.34
9	Net Jobs Created	0.09	-0.02	0.06	0.01	0.08	0.18	0.45	-0.50	1	0.13	-0.17
10	Establishment Entry	0.18	0.10	0.17	0.19	0.49	0.29	0.36	0.11	0.13	1	0.14
11	Establishment Exit	0.14	0.07	0.14	0.13	0.20	0.15	0.07	0.34	-0.18	0.13	1

Table 2: Accountants and Economic Activity

The table displays the relationship between the Bartik instrument and economic activity at the county-year level spanning from 2003 to 2020. *Acct. Emp. Bartik* (*Total Emp. Bartik/Bus. Emp. Bartik*) represents the estimated exogenous growth in accountant (total/business) employment for a given county-year since 2003, as defined in equation (1). *GDP* denotes the natural log of real GDP for the county-year, while *Employment* and *Establishments* indicate the natural log of the annual average employment and establishments, respectively. All dependent variables are one-year ahead. Panel A, Panel B, and Panel C present the results for GDP, employment, and establishments, respectively. The term *Controls* indicates whether a regression includes the set of production factor and productivity controls outlined in Section 4. All regressions incorporate county fixed effects and are clustered by state. Additionally, regressions account for year and state-year fixed effects as specified. Weighting is applied based on 2003 GDP. Detailed variable definitions are provided in Appendix A

Panel A: Accountants and GDP

Dep. Var				**GDP**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Acct. Emp. Bartik	**0.259***** **(5.159)**			**0.239***** **(4.088)**	**0.335***** **(3.264)**	**0.203***** **(3.982)**	**0.214**** **(2.309)**
Total Emp. Bartik		0.404*** (3.453)		0.115 (0.922)		0.221* (1.721)	
Bus. Emp. Bartik			0.178*** (3.398)		-0.081 (-0.763)		0.021 (0.200)
County FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	No	No	No	No	Yes	Yes
Observations	54,904	54,904	54,904	54,904	54,904	54,904	54,904
R-Squared	0.998	0.998	0.998	0.998	0.998	0.998	0.998
Within R-Squared	0.0151	0.00541	0.00858	0.0154	0.0156	0.0295	0.0288

Panel B: Accountants and Employment

Dep. Var	Employment						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Acct. Emp. Bartik	**0.322*****			**0.266*****	**0.232*****	**0.208*****	**0.146***
	(5.667)			**(3.649)**	**(2.762)**	**(3.276)**	**(1.985)**
Total Emp. Bartik		0.633***		0.312**		0.118	
		(5.703)		(2.076)		(0.905)	
Bus. Emp. Bartik			0.275***		0.096		0.087
			(5.193)		(1.428)		(1.266)
County FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	No	No	No	No	Yes	Yes
Observations	54,900	54,900	54,900	54,900	54,900	54,900	54,900
R-Squared	0.999	0.999	0.999	0.999	0.999	0.999	0.999
Within R-Squared	0.0456	0.0262	0.0403	0.0505	0.0469	0.0728	0.0734

Panel C: Accountants and Establishments

Dep. Var	Establishments						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Acct. Emp. Bartik	**0.272*****			**0.272*****	**0.292*****	**0.222*****	**0.202*****
	(5.860)			**(5.320)**	**(5.074)**	**(5.154)**	**(4.641)**
Total Emp. Bartik		0.330***		0.001		-0.052	
		(3.033)		(0.016)		(-0.853)	
Bus. Emp. Bartik			0.204***		-0.022		0.014
			(4.718)		(-0.474)		(0.341)
County FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	No	No	No	No	Yes	Yes
Observations	54,900	54,900	54,900	54,900	54,900	54,900	54,900
R-Squared	0.999	0.999	0.999	0.999	0.999	0.999	0.999
Within R-Squared	0.0730	0.0159	0.0497	0.0730	0.0732	0.0961	0.0959

Table 3: Accountants and Business Dynamics

The table displays the relationship between the Bartik instrument and various indicators of business dynamics at the county-year level from 2003 to 2020. *Acct. Emp. Bartik* represents the estimated exogenous growth in accountant employment for a given county-year since 2003, as outlined in equation (1). *Jobs Created (Destroyed)* refers to the natural log of one plus the number of jobs created (destroyed) in a county-year. *Net Jobs Created* is the inverse hyperbolic sine of the difference between the number of jobs created and destroyed. *Establishment Entry (Exit)* is the natural log of the number of establishments created (destroyed) in a county-year. All dependent variables are one-year ahead. All regressions control for *Total Emp. Bartik.* The regressions incorporate controls for the production factor and productivity, as discussed in Section 4. Regressions also include county and state-year fixed effects and are clustered by state. Weighting is applied based on the 2003 GDP. Detailed variable definitions can be found in Appendix A.

Dep. Var	**Jobs Created$_{t+1}$**	**Jobs Destroyed$_{t+1}$**	**Net Jobs Created$_{t+1}$**	**Establishment Entry$_{t+1}$**	**Establishment Exit$_{t+1}$**
	(1)	(2)	(3)	(4)	(5)
Acct. Emp. Bartik$_t$	**0.329***** **(4.844)**	**0.022** **(0.219)**	**9.629***** **(3.551)**	**0.468***** **(6.183)**	**0.223***** **(2.783)**
County FE	Yes	Yes	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Observations	54,900	54,899	54,899	54,227	54,264
R-Squared	0.994	0.993	0.603	0.997	0.996
Within R-Squared	0.0190	0.0140	0.00908	0.0581	0.0355

Table 4: Accountants and Business Dynamics by Establishment Age

The table displays the relationship between the Bartik instrument and various indicators of business dynamics by establishment age. The unit of observation is county-year between 2003-2020. *Acct. Emp. Bartik* represents the estimated exogenous growth in accountant employment for a given county-year since 2003, as outlined in equation (1). *Jobs Created (Destroyed)* refers to the natural log of one plus the number of jobs created (destroyed) in a county-year. *Net Jobs Created* is the inverse hyperbolic sine of the difference between the number of jobs created and destroyed. All dependent variables are one-year ahead. All regressions control for *Total Emp. Bartik.* The regressions incorporate controls for the production factor and productivity, as discussed in Section 4. Regressions also include county and state-year fixed effects and are clustered by state. Weighting is applied based on the 2003 GDP. Detailed variable definitions can be found in Appendix A.

Dep. Var	**Jobs Created$_{t+1}$**	**Jobs Destroyed$_{t+1}$**	**Net Jobs Created$_{t+1}$**
Establishment Age	(1)	(2)	(3)
1-5 Years Old	0.848***	0.531***	4.756***
	(7.875)	(4.108)	(4.126)
6-10 Years Old	0.506***	0.165	3.739***
	(6.354)	(1.295)	(4.967)
11+ Years Old	0.326***	0.062	3.938***
	(4.272)	(0.608)	(3.303)
County FE	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes

Table 5: Accountants and Wage Distribution

The table presents the relationship between accountants and wages within the broader economy. *Acct. Emp. Bartik* denotes the estimated exogenous growth in accountant (total) employment for a given MSA-year since 2005, as defined in equation (1). *Average Wage* represents the average annual wage of all employees within a specific MSA-year, while *Wage PXX* signifies the annual wage of workers at a particular percentile within the MSA-year's distribution. All dependent variables are one-year ahead. All regressions control for *Total Emp. Bartik.* The regressions incorporate controls for production factors and productivity, as discussed in Section 4. Regressions also encompass MSA and year fixed effects and are clustered by MSA. Additionally, regressions are weighted based on 2005 employment levels. Detailed variable definitions are provided in Appendix A.

Dep. Var	**Average Wage$_{t+1}$**	**Wage P10$_{t+1}$**	**Wage P25$_{t+1}$**	**Wage P50$_{t+1}$**	**Wage P75$_{t+1}$**	**Wage P90$_{t+1}$**
	(1)	(2)	(3)	(4)	(5)	(6)
Acct. Emp. Bartik$_t$	**0.085***	**-0.312*****	**-0.200*****	**0.056**	**0.129*****	**0.215*****
	(1.881)	**(-4.359)**	**(-2.779)**	**(1.250)**	**(2.638)**	**(4.067)**
MSA FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,289	5,289	5,289	5,289	5,289	5,289
R-Squared	0.987	0.935	0.973	0.981	0.982	0.982
Within R-Squared	0.0464	0.111	0.0671	0.0428	0.0465	0.0466

Table 6: Accountants and Investment Efficiency

This table examines the relationship between changes in accounting employment and investment Q sensitivity. The sample consists of firm-years spanning from 2003 to 2021. The dependent variable is the ratio of one year ahead capital expenditures ($CAPX_{t+1}$) to current assets (AT_t) times 100. *Tobin's Q* (Q) is calculated as the equity market value divided by the equity book value for each firm-year. *% Accountants* represents the proportion of employees in a given industry-year who are accountants. Regressions include firm, year, and industry-year fixed effects where indicated. Regressions are clustered by firm.

Dep. Var		**$CAPX_{t+1}/AT_t$**	
	(1)	(2)	(3)
Q_t	0.069***	0.048***	0.051***
	(4.778)	(3.698)	(4.649)
% $Accountants_t$	0.656***	-0.673***	
	(7.867)	(-5.302)	
% $Accountants_t$*Q_t	**0.025****	**0.058*****	**0.034*****
	(2.070)	**(5.160)**	**(3.829)**
Firm FE	No	Yes	Yes
Year FE	No	Yes	No
Industry-Year FE	No	No	Yes
Observations	113,024	110,993	110,926
R-Squared	0.013	0.617	0.665

Table 7: Accountants and Economic Activity: Parallel Trends

The table presents the results of the parallel trends test examining the relationship between the Bartik instrument and macroeconomic activity. The analysis is conducted at the county-year level, covering the period from 2005 to 2018. *Acct. Emp. Bartik* represents the estimated exogenous growth in total accountant employment for each county-year since 2003, as specified in equation (1). Subscripts indicate the temporal position of *Acct. Emp. Bartik* relative to the dependent variable. Coefficients on *Total Emp. Bartik* are aligned with Acct. Emp. Bartik in time but are not shown. *Establishments* and *Employment* refer to the natural log of the number of establishments and employees, respectively, within each county-year. The regressions incorporate county and state-year fixed effects and are clustered by state. Additionally, regressions are weighted by 2003 GDP. Detailed variable definitions can be found in Appendix A.

Dep. Var	**GDP_t**	**$Employment_t$**	**$Establishments_t$**
	(1)	(2)	(3)
Acct. Emp $Bartik_{T+3}$	0.068	-0.063	-0.001
	(1.379)	(-1.233)	(-0.035)
Acct. Emp $Bartik_{T+2}$	-0.042	0.005	0.013
	(-0.867)	(0.160)	(0.662)
Acct. Emp $Bartik_{T+1}$	-0.016	-0.024	0.006
	(-0.653)	(-1.002)	(0.311)
Acct. Emp $Bartik_{T}$	0.021	-0.024	0.028
	(0.553)	(-0.776)	(1.570)
Acct. Emp $Bartik_{T-1}$	0.073***	0.009	0.039***
	(2.951)	(0.331)	(2.769)
Acct. Emp $Bartik_{T-2}$	0.124***	0.134***	0.087***
	(5.031)	(6.426)	(4.233)
Acct. Emp $Bartik_{T-3}$	0.039	0.186***	0.113***
	(1.083)	(3.898)	(4.365)
County FE	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes
Observations	39,638	39,664	39,664
R-Squared	0.998	0.999	1.000
Within R-Squared	0.0193	0.0715	0.105

Table 8: Bartik and Accountant Employment Growth

The table displays the relationship between the Bartik instrument and the growth of accountant employment. The unit of analysis is MSA-year data spanning from 2005 to 2021. *Acct. Emp. Bartik* represents the estimated exogenous growth in total accountant employment for a given MSA-year since 2003, as defined in equation (1). *Accountant Employment Growth* indicates the actual growth in accountant employment for each MSA-year since 2005. All regressions control for *Total Emp. Bartik.* Where indicated, regressions include controls for the set of production factor and productivity controls discussed in Section 4. Regressions include MSA and year fixed effects and are clustered by MSA. The regression in column (2) is weighted by 2005 employment. All variables are defined in Appendix A.

Dep. Var	**Accountant Employment Growth$_t$**			
	(1)	(2)	(3)	(4)
Acct. Emp. Bartik$_t$	**1.122*** **	**1.594*** **	**1.207*** **	**1.558*** **
	(4.261)	**(3.187)**	**(4.576)**	**(3.474)**
MSA FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Controls	No	No	Yes	Yes
Weight	None	2005 Employment	None	2005 Employment
Observations	5,615	5,615	5,615	5,615
R-Squared	0.680	0.703	0.685	0.710
Within R-Squared	0.0182	0.0284	0.0344	0.0538

Table 9: Employment and Wage Data for 2022

The table provides employment and wage data for different occupations in the year 2022, sourced from the Occupational Employment and Wage Statistics (OEWS). "Wages" represent the annual average earnings of employees, while "employment" indicates the count of individuals classified as full-time or part-time workers in each occupation. Detailed variable definitions can be found in Appendix A.

Occupation	2022 Average Wage	2022 Employment
All Jobs	$61,900	147,886,000
Accountants	$86,740	1,402,420
Non-Accountants Finance	$97,111	1,614,490
Financial Managers	$166,050	740,780
Tax Preparers	$55,840	82,370
Tax Collectors	$64,410	50,610
Accountants in Accounting Firms	$91,140	339,290
Accountants in Non-Accounting Firms	$85,336	1,063,130