Industrial Policy and Local Manufacturing*

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August 3, 2026

Abstract

Industrial policy typically aims to develop large-scale formal manufacturing. This paper shows that its effects extend to small-scale, often informal, manufacturing. Using firm-level data from Ethiopia and a shift-share research design, we estimate the effects of national industrial policy on local manufacturing across the entire firm size distribution. We document positive effects on small-scale manufacturing activity and employment. We provide suggestive evidence that these effects are driven, at least partly, by higher local income and consumer demand, which stimulate activity and employment among small firms serving local markets. We find limited evidence of production linkages between small and large firms.

Keywords: industrial development, firm size distribution, Ethiopia.

JEL Codes: L25, L60, O14, O17, O55, R11.

*We thank Hai Ma for excellent research assistance. We thank Margaret McMillan for her suggestions and for kindly sharing survey data from the 2013 extra module of the Large and Medium Manufacturing industry Survey (LMMS). We also thank Paula Bustos, Ralph De Haas, Doug Gollin, Anton Grahed, Enrico Moretti, Markus Poschke, and participants in the 2023 Firms, Labor Markets, and Development Workshop, the 2024 LACEA-LAMES meeting, the 2025 STEG Annual Conference, the 2026 ASSA meeting, the IGC "Functioning labour markets for structural transformation" Workshop in Addis Ababa, and the "Industrial Policy for Africa" Conference in Nairobi for their comments and suggestions. We gratefully acknowledge financial support from the CEPR/DFID Structural Transformation and Economic Growth initiative (STEG-SRG705), the International Growth Centre (IGC-ETH-24320), and the Social Sciences and Humanities Research Council of Canada (SSHRC-435-2023-0219). Refine.ink was used to check the paper for consistency and clarity.

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1 Introduction

Industrialization has historically been central to economic development. Renewed interest in industrial policy has revived support for targeted interventions in specific sectors, particularly manufacturing. This is especially true in low-income countries, where governments seek to promote structural transformation through the expansion of formal, medium and large firms (Rodrik, 2013; Juhász, Lane and Rodrik, 2024; Fernandes and Reed, 2026). Yet in many recent episodes of industrialization, manufacturing employment growth has been concentrated in small firms. Evidence from Sub-Saharan Africa shows that large manufacturing firms experience productivity growth but generate limited employment gains, while smaller, less productive firms absorb the bulk of employment (Diao et al., 2025; Kruse et al., 2023). This pattern runs counter to standard frictionless models, which predict that labor reallocates toward more productive firms (Hsieh and Klenow, 2009). It also raises a broader question for industrial development and policy: how does industrial policy reshape economic activity across the firm size distribution, including among small and informal firms?

Several mechanisms may cause the effects of industrial policy to extend beyond the firms and sectors it directly targets. By fostering the growth of modern manufacturing, industrial policy can strengthen production linkages with smaller firms, allowing them to join supply chains (Liu, 2019). More generally, it may also affect local labor markets and consumer demand. If local income rises, demand for goods and services produced by smaller firms may increase, stimulating employment and firm creation throughout the local economy (Moretti, 2010; Toews and Vezina, 2022). Industrial policy may also alter competition for workers, inputs, and customers, generating heterogeneous effects across firms of different sizes. Whether industrial policy ultimately concentrates economic activity in larger firms or instead stimulates growth throughout the firm size distribution remains an open empirical question. Answering it is challenging because firms of different sizes are exposed to common local shocks, and available data rarely capture manufacturing activity across the full firm size distribution at a fine geographical level.

In this paper, we address these challenges by combining comprehensive firm-level data from Ethiopia with a shift-share research design that exploits differential exposure of local economies to national industrial policy. We construct a novel measure of local exposure based on the employment composition of each zone prior to the introduction of Ethiopia's industrial policy and subsequent variation in the timing and sectoral targeting of policy interventions. We then examine how exposure to industrial policy affects local manufacturing activity across the firm size distribution, from self-employed and informal firms to medium and large manufacturing establishments.

The Ethiopian context is well-suited to this analysis. Since the early 2000s, Ethiopia has pursued an ambitious industrialization strategy through successive multi-year national development plans.

These progressively extended support from agriculture-linked and export-oriented manufacturing toward import substitution and technological upgrading, combining sectoral priorities with investment incentives, finance, and industrial infrastructure directed primarily at formal medium and large manufacturers. Yet most manufacturing employment growth over the period occurred among small-scale, often informal firms.

Our analysis covers the period 2002 to 2016. We use data from the annual census of medium and large manufacturing firms and representative survey data on small and micro (mostly informal) manufacturing enterprises. Because both datasets identify firms' geographic location and are fully comparable in the years in which they overlap, we observe the entire distribution of the manufacturing sector in Ethiopia and its changes over time and across local markets.

Based on this rich information, we begin by providing three sets of stylized facts. First, in the aggregate, we confirm the striking rise of small-scale manufacturing employment documented in the literature. Second, we show that this pattern also holds locally, across the entire country: the median share of small-scale manufacturing employment over total manufacturing employment across zones—the country's second-level administrative units—rises from from 65% in 2002 to 81% by 2016. Third, we document a positive association between large- and small-scale manufacturing employment across zones over time.

Motivated by this evidence, we estimate the effect of local exposure to national industrial policy on the number of manufacturing firms and jobs across the firm size distribution, distinguishing between small firms (those with fewer than 10 workers, including working owners) and larger firms. We implement a shift-share identification strategy that combines cross-zone variation in industrial employment shares during 1996–2000 with time variation in the sectoral targeting of industrial policy from 2002 onward, as documented in official government plans and policy documents. We find that greater exposure to industrial policy increases the number of both small and large manufacturing firms. It also raises manufacturing employment in both groups, although the estimated effect is statistically significant only for small firms. A 10 percentage point increase in the baseline share of employment in industries targeted by industrial policy increases small-scale manufacturing employment by 11% and informal self-employment by 7%. Although the estimated proportional effects are broadly similar across firm size groups, the larger initial employment base among small manufacturers translates into substantially larger absolute employment gains: at the mean employment levels in our sample, an 11% increase generates roughly 1.4 times as many additional jobs among small firms as among large firms.

Next, we explore some of the potential mechanisms through which industrial policy affects small manufacturing firms. We consider both demand-side channels and production linkages between small and large firms. First, we conduct a heterogeneity analysis by industry, estimating the effects of sector-specific industrial policy exposure on small-scale firm and job creation across

different manufacturing industries. We find, for example, that greater local exposure to industrial policy targeting capital-intensive industries, such as metals, increases small-scale employment in food and textile manufacturing. Such cross-sector spillovers are difficult to reconcile with production linkages and are instead consistent with demand-side channels: the expansion of large-scale manufacturing raises local income and consumer demand, thereby stimulating activity and employment among small firms serving local markets. Second, we examine the role of production linkages using detailed information on the products manufactured and consumed by firms. Specifically, we analyze whether greater production of a given product by small firms is associated with greater use of that product as an intermediate input by large firms within the same local economy. We find little evidence of such a relationship, suggesting that production linkages play at most a limited role in explaining the spillovers generated by industrial policy.

This paper speaks to several strands of literature. First, we contribute to the literature on industrialization in Africa. McMillan and Zeufack (2022) emphasize that the contribution of manufacturing to development depends on the interaction between productive large firms and labor-absorbing small firms. Diao et al. (2025) document stark differences in productivity and employment dynamics across firms of different sizes, showing that employment growth in African manufacturing is often concentrated among smaller firms. Using data from Ethiopia, we show that industrial policy can generate substantial employment gains among small firms, pointing to a potential role for these interventions in the expansion of small-scale manufacturing employment documented in the literature.

We also contribute to the literature on industrial policy itself (Aghion et al., 2015; Criscuolo et al., 2019; Juhász, Lane and Rodrik, 2024; Fernandes and Reed, 2026). Existing evidence from developing countries has primarily focused on its direct effects on targeted sectors and firms, or on the propagation of these effects through production linkages among formal firms (Liu, 2019; Lane, 2025). We focus instead on the broader local effects of industrial policy and provide suggestive evidence that they can materialize through increases in local income and consumer demand.

Finally, we contribute to the literature on informality in developing countries. A large literature documents the coexistence of formal and informal (often one-person) firms and the substantial differences between them in productivity, regulation, and market access (Ulyssea, 2018; Donovan, Lu and Schoellman, 2023; Perra, Sanfilippo and Sundaram, 2024; Amodio, Medina and Morlacco, 2025). While this literature often emphasizes segmentation, we show that industrial policy generates spillovers across the formal-informal divide. Our findings therefore provide new evidence that formal and informal economic activity remain interconnected during the process of industrialization.

2 Industrial policy in Ethiopia

Ethiopia stands out as one of the few African countries to have developed a comprehensive industrial policy and to have pursued it vigorously over the past decades (Gebreeyesus, 2016). Beginning with the Sustainable Development and Poverty Reduction Program (SDPRP, 2002) and more explicitly under the Plan for Accelerated and Sustained Development to End Poverty (PASDEP, 2005), the Ethiopian government adopted a strategy of structural transformation centered on strengthening linkages between agriculture and industry, promoting labor-intensive formal manufacturing, and expanding exports (Oqubay, 2019; Gebrewolde and Rockey, 2023). Priority sectors were identified based on their use of domestic agricultural inputs and their potential for employment creation. These included food and beverages, textiles and garments, leather and leather products, and construction materials (Ministry of Finance and Economic Development, 2002, 2006). A common denominator of these policies was the role of linkages, as the expansion of modern industrial firms was expected to stimulate wider economic activity through demand and supply connections, especially with the agricultural sector (Oqubay, 2015).

Subsequent plans, namely the Growth and Transformation Plans (GTP) I and GTP II, broadened industrial policy from an initial focus on agriculture-linked, labor-intensive sectors toward a wider manufacturing strategy. This shift placed increasing emphasis on export promotion, import substitution, technological upgrading, and selective support to medium- and large-scale industry, while progressively expanding efforts to attract FDI and develop industrial parks—particularly from the mid-2010s onward and under GTP II (Oqubay, 2019). GTP I (2010) introduced support for additional sectors linked to industrial upgrading and import substitution, including capital intensive activities, whereas GTP II (2015) further broadened support to manufacturing activities such as plastics, paper, and light manufacturing, in part in connection with the scaling up of industrial parks.

We use a structured text-coding procedure to code indicators for industries supported by industrial policies, based on official documents, as detailed in Appendix B.[1] Appendix Figure A.1 lists the industries and the corresponding year in which they started being targeted by industrial policy. Importantly, the sector-specific policies underlying our exposure measure were implemented through instruments targeting formal manufacturing firms—such as investment incentives, support for new investment projects and plant expansion, export promotion, and access to industrial land and infrastructure—rather than through interventions that also directly benefited smaller enterprises (Oqubay, 2015). As a result, any effects on small or informal firms are unlikely to reflect

[1]For instance, in GTP I, the designated sectoral priorities are set out under "Medium and Large Scale Manufacturing Industries." The plan's support to micro and small enterprises is treated separately through broader programs for training, credit, and marketing, rather than through the staggered sectoral priorities used to construct our exposure measure.

direct policy support and instead must arise through local economic linkages. Moreover, policy documents did not assign sectoral priorities to specific regions or zones. Consequently, differences in pre-existing local industrial composition determine variation in policy exposure across zones.[2]

3 Data sources and harmonization

We combine two sources of firm-level data. The first is the Large and Medium Manufacturing industry Survey (LMMS). This is a census maintained by the Ethiopian Statistical Service (ESS) and run since 1996. It covers all firms with at least 10 persons engaged and that use electricity in their production process. Firms are required to respond to this census every year; as such, the LMMS covers the universe of large and medium-sized manufacturing firms. For each establishment, it provides rich information on a large number of characteristics, including number of workers and firm's location. Firms also provide details on sales values and quantity produced for the domestic market and internationally for individual products, as well as granular information on raw materials, both domestic and imported, used in production. Firms are classified into 4-digit industries according to the ISIC Rev. 3.1 classification.

The second data source is the Survey of Small-scale Manufacturing Industries (SSIS). This is a survey of firms with fewer than 10 persons engaged, including any working owner, operating in the manufacturing sector regardless of their formal status. We combine all existing waves of the SSIS, covering the years 2002, 2006, 2008, 2010, 2014 and 2016. The survey questionnaire mirrors that of the LMMS, making the two data sources fully comparable in the years in which they were run simultaneously. Throughout the analysis, we apply SSIS sampling weights and interpret estimates as representative of the survey-defined small-scale manufacturing universe in each wave.

Together, and for the years in which they are both available, these two datasets cover the full size distribution of Ethiopian manufacturing firms, from informal self-employed businesses to large formal establishments. We collapse both datasets to the zone-year level and construct a balanced panel covering the six survey years common to both sources. We retain all zones in which at least one manufacturing firm, regardless of size, is observed during the sample period.[3]

We are not the first to analyze LMMS and SSIS data in conjunction—see also Gebreeyesus (2016); Diao et al. (2025). Our contribution lies in harmonizing them at the level of zones (second-level administrative units; see Appendix Figure A.2), which is non-trivial given changes in admin-

[2] An exception is the presence of location-based incentives in early industrial policy frameworks, which provided tax holidays and other benefits to firms locating outside Addis Ababa or in less-developed regions. These measures, however, were not tied to specific sectors and therefore do not constitute sector-region targeting in the sense relevant for our analysis.

[3] Zone-year cells with no observed firms in a given size category are assigned zero firms and zero employment for that category.

istrative boundaries over the sample period.[4] This enables us to characterize the full manufacturing sector across the entire firm size distribution at a fine geographical level, and to study the joint dynamics of manufacturing employment in small and large firms.

4 Stylized facts on Ethiopian manufacturing

We begin by documenting key stylized facts on Ethiopian manufacturing. Appendix Table A.1 reports summary statistics for small and large firms, pooling all observations for six survey years common to both LMMS and SSIS. Overall, we count more than 420,000 small firm observations (weighted), compared with over 10,000 for large firms. A large share of small firms (about 77%) operates informally.[5]

The two groups differ sharply along multiple dimensions. The median number of workers is 3 for small firms and 22 for large firms. Median capital is about 900 USD for small firms and 35,000 USD for large firms, while median wages are approximately 140 USD and 550 USD, respectively. Sales and output, when available, display a similar pattern, pointing to substantial heterogeneity across firm size categories.

Figure 1 illustrates the evolution of employment over time, reporting total manufacturing employment by firm size in the initial and final years of the sample. Two patterns emerge. Most employment is concentrated in firms that are either small or very large, and this polarization persists as total employment expands over time. Appendix Table A.2 uses the same firm size categories as Figure 1 and provides the corresponding shares of total employment, as well as capital, sales, and wage bill in the initial and final years. The employment share of firms with fewer than 10 employees rises from 51% to 64% over the period, in line with the findings of Diao et al. (2025). Their shares of sales and the wage bill also increase, while their share of total capital declines.[6]

Appendix Table A.3 reports the sectoral distribution of small and large firms.[7] Small firms are highly concentrated in a few sectors, particularly food and beverages, which accounts for nearly 60% of all small firms, and furniture and activities not elsewhere classified (e.g., jewelry and candles), which account for a further 18%. Textile and metal manufacturing are also important, each accounting for about 10% of small firms. Large firms are more prevalent in capital-intensive sectors such as non-metallic minerals and chemicals, whereas small firms are more common in

[4] Appendix D provides a detailed description of the zone harmonization procedure.

[5] We define informal firms as those that do not keep books of accounts and have less than 10 employees. This matches the official definition of Ethiopia's Statistical Agency for which informal firms: *do not keep complete books of accounts; are mainly engaged in market-oriented production; do not register the enterprise and its employees; and have a very limited number of persons engaged (less than ten persons) in the enterprise; have no license.*

[6] Missing values affect the calculation of sales, wage bill, and capital shares; see the differences in the number of observations across variables in Appendix Table A.1.

[7] Appendix Table A.4 reports their distribution across regions, the first-level administrative units above zones.

labor-intensive and locally oriented activities. These patterns suggest that, despite operating within the same broad manufacturing landscape, the two groups are not necessarily competing in the same product markets. This is consistent with the fact that the vast majority of small firms' sales are local.[8] In the most recent SSIS waves, more than 93% of firms report selling directly within their premises, while survey evidence from Abebe, McMillan and Serafinelli (2022) indicates that only about 15% of large firms view competition from locally based informal firms as critically important.

Taken together, these patterns point to a segmented firm structure in which small, largely informal firms coexist with a smaller number of larger, more capital-intensive firms. Importantly, Figure 2 shows that this dual structure is also reflected within local markets. It shows how the distribution across zones of employment in large and small firms evolves over time, together with the share of small-scale employment. Both large- and small-firm employment expand in essentially all locations, with the distributions shifting to the right.[9] At the same time, small firms account for a growing share of employment across zones. At the median zone, the share of employment in small-scale firms rises markedly over the period, increasing from 65% in 2002 to 81% by 2016.[10]

This evidence shows that large and small firms coexist even within relatively granular local markets and that both expand over time, with employment in small firms growing more rapidly. This naturally raises the question of whether local economies experiencing faster growth in large manufacturing firms also experience faster employment growth among small firms. Appendix Figure A.4 plots changes in (log) employment for the two firm categories across zones between 2002 and 2016. Zones experiencing stronger growth in large-scale manufacturing also tend to exhibit faster employment growth among small firms. In the next section, we investigate whether this pattern reflects, at least in part, the effects of industrial policy. Specifically, we ask whether and how local exposure to national industrial policy affects manufacturing activity across the firm size distribution.

5 The effect of industrial policy

5.1 Empirical strategy

Our unit of analysis is the zone-year, based on the balanced panel described in Section 3. To measure local exposure to industrial policy, we exploit variation across zones in their initial industrial

[8] This is consistent with the evidence in the literature from similar contexts, where the vast majority of small firms' sales are local (Startz, 2024; Bassi et al., 2022, 2023; Vitali, 2023).

[9] Appendix Figure A.3 shows the distribution of industrial employment across zones at different points in time, from 1996 to 2016. The growth of industrial employment is visible as the distribution shifts towards the right over time, including in most of the key industries.

[10] Appendix Table A.5 shows the same result in numbers.

structure and combine it with the staggered implementation of Ethiopia's industrial policy across sectors. For each zone z and year t, we construct:

$$IPExposure_{zt} = \sum_{j} \frac{N_{jz,1996-00}}{N_{z,1996-00}} \times IP_{jt}, \tag{1}$$

where $N_{jz,1996-00}/N_{z,1996-00}$ is the share of large-scale manufacturing employment in industry j in zone z as obtained from the LMMS and averaged across the years 1996 to 2000, while IP_{jt} is an indicator equal to one if industry j was explicitly targeted by Ethiopia's industrial policy in year t. The exposure measure therefore captures the extent to which each zone is affected by national industrial policy based on its pre-existing industrial composition.[11]

Note that the exposure shares are constructed using employment at medium and large firms, which are both the establishments covered by the LMMS and the primary targets of Ethiopia's industrial policy. Following Borusyak, Hull and Jaravel (2025), this treatment-based approach aligns the exposure shares with the economic margin through which the policy is expected to operate.

For each zone-year, we construct measures of manufacturing activity across the firm size distribution, focusing primarily on the distinction between firms with fewer than 10 workers (including the owner) and those with 10 or more workers. We implement specifications of the form:

$$Y_{zt} = \beta\, IPExposure_{zt} + \theta_z + \delta_t + u_{zt}, \tag{2}$$

where Y_{zt} denotes an outcome measured at the zone-year level and separately for different firm size category and formal status.[12] θ_z are zone fixed effects, which capture and net out all zone-specific time-invariant factors that correlate with exposure and the outcome of interest. δ_t are year fixed effects and allows for common shocks to all zones. The term u_{zt} captures any residual determinants of the outcome, which we allow to be correlated across observations belonging to the same zone by clustering standard errors at that level. The coefficient β measures the reduced-form effect of industrial policy exposure on local economic outcomes.

Because our data combining small and large firms begin in 2002, identification comes from industries that start receiving industrial policy support after that date, namely those targeted under GTP I and GTP II (see Section 2 and Appendix Figure A.1). To address concerns that zones initially specialized in industries targeted in 2002 may have followed different trajectories, we will also estimate specifications that allow zones with greater baseline employment in those industries

[11] Some zones have no large-scale manufacturing employment during the baseline period (1996–2000), implying $N_{z,1996-00} = 0$. We assign these zones zero industrial-policy exposure in all years, reflecting the absence of firms directly targeted by the policy. As a robustness check, we also estimate specifications allowing these zones to follow differential time trends (see Section 5.2.1).

[12] Log outcomes are transformed as $\log(1+Y)$, where Y denotes the corresponding count or employment measure.

to follow differential time trends (see Section 5.2.1).

5.1.1 Identifying assumptions

Our identification strategy exploits the interaction between national changes in sectoral policy targeting and predetermined differences across zones in industrial composition. Its validity rests on the assumption that, absent industrial policy, changes in manufacturing activity across firm categories would have been comparable across zones with different initial employment structures and thus differential exposure to the policy over time.

To assess the validity of this assumption, we begin with visual diagnostics. In Figure 3, we split zones according to their exposure to industrial policy, measured as the average of $IPExposure_{zt}$ over time. We then aggregate manufacturing employment separately across zones with below- and above-median exposure to industrial policy and trace its evolution over time. We do so separately for small and large firms. Several patterns emerge. First, trends in large-scale manufacturing employment are flat and parallel prior to 2002. This is reassuring, as it suggests that exposure does not predict industrial employment trends before the onset of industrial policy.[13] Following the introduction of industrial policy in 2002, the two groups of zones begin to diverge in terms of both large- and smaller-scale employment, with the latter expanding more rapidly after 2010. This is consistent with the descriptive evidence presented earlier. Overall, the figure provides a visual aggregate representation of the reduced-form relationships we aim to identify within a regression framework.

In Appendix Table A.6, we follow the recent shift-share econometric literature and assess pre-trends more systematically (Goldsmith-Pinkham, Sorkin and Swift, 2020; Borusyak, Hull and Jaravel, 2022, 2025). The table reports zone- and industry-level placebo regressions of employment outcomes by firm category on contemporaneous industrial-policy exposure and its five-year lead. Future exposure should not predict current employment outcomes once contemporaneous exposure is controlled for. The estimated lead coefficients are statistically insignificant across all specifications, alleviating concerns that our exposure measure captures pre-existing trends in manufacturing employment, particularly among small firms.[14]

[13] The same pattern emerges when comparing total employment across targeted and untargeted industries. Appendix Figure A.5 shows the evolution of large-scale manufacturing employment across industries targeted and not targeted by industrial policy. Treated industries exhibit a marked acceleration in employment following each industrial policy wave.

[14] The contemporaneous exposure coefficients are positive and statistically significant in all zone-level specifications, with magnitudes very similar to the baseline estimates reported below. At the industry level, the contemporaneous coefficient is statistically significant only for large-firm employment, although the one for small-firm employment is comparable in magnitude. These industry-level regressions rely exclusively on within-industry variation in policy over time, whereas our zone-level approach exploits cross-zone differences in baseline industrial composition. The weaker industry-level results underscore the importance of cross-zone variation for identifying the local effects of industrial policy.

5.2 Results

Table 1 reports the baseline effects of industrial policy exposure estimated using equation (2). Columns (1)–(3) examine the number of manufacturing firms, while columns (4)–(6) consider manufacturing employment. Within each outcome, we report results separately for all firms, firms with at least 10 workers, and firms with fewer than 10 workers.

Industrial policy exposure increases the number of manufacturing firms across the entire firm size distribution. The estimated coefficients are positive for both large and small firms and statistically significant at conventional levels. Quantitatively, a 10 percentage point increase in the baseline share of manufacturing employment in industries targeted by industrial policy increases the number of large manufacturing firms by about 9% and the number of small manufacturing firms by a similar amount. These results indicate that industrial policy stimulated firm creation not only among the firms directly targeted by the policy, but also among smaller enterprises operating in the same local economy.

Columns (4)–(6) report the corresponding estimates for manufacturing employment. Exposure to industrial policy raises employment among both large and small firms. A 10 percentage point increase in the baseline share of manufacturing employment in targeted industries increases employment in small firms by approximately 11%. The corresponding estimate for large firms is of a very similar magnitude, although it is estimated less precisely.

Although the estimated proportional effects are broadly comparable across firm size groups, their economic implications differ because small firms account for a larger share of manufacturing employment. At the mean employment levels reported in Table 1, an 11% increase corresponds to more than 400 additional jobs in small firms, compared with about 300 additional jobs in large firms. This corresponds to 1.4 times as many additional jobs among small firms as among large firms. Taken together, these findings suggest that industrial policy reshaped local manufacturing activity well beyond the firms it directly targeted, thereby contributing to the growth of small-scale manufacturing employment observed in the aggregate.

5.2.1 Robustness

Appendix Table A.7 examines the robustness of these findings. Columns (1)–(2) exclude Addis Ababa, while columns (3)–(4) exclude zones that hosted or subsequently hosted industrial parks, all of which may have followed different industrialization trajectories.[15] The estimated effects of industrial policy exposure on employment remain virtually unchanged, indicating that the baseline results are not driven by these locations.

[15]The information about the location of the parks is from Tafese and Weber (2026). Most of the parks started their activity in the years after our estimation sample period.

In columns (5)–(6), we allow zones without any large-scale manufacturing employment during the baseline period (1996–2000) to follow differential time trends. The estimated coefficients are attenuated, but the effect of industrial policy on small-scale manufacturing employment remains positive and statistically significant at the 10% level.

Because the sample begins in 2002, exposure to the original SDPRP sectors is absorbed by zone fixed effects, and identification comes from the 2010 and 2015 expansions of industrial policy. In columns (7)–(8) of Table A.7, we allow zones initially specialized in the 2002 priority sectors to follow differential time trends. The estimated effects remain virtually unchanged.[16]

Finally, we assess the robustness of our results by focusing on progressively narrower subsamples of small firms. Appendix Figure A.6 first considers all small firms, then distinguishes between formal and informal establishments, and finally isolates the self-employed within each group. The estimated effects are positive throughout. Particularly striking is the evidence for self-employed informal firms—the segment of manufacturing activity furthest removed from the medium- and large-scale firms directly targeted by industrial policy. A 10 percentage point increase in the baseline share of manufacturing employment in targeted industries increases informal self-employment by about 7%. Finding positive employment effects even for this group reinforces our interpretation that industrial policy generated broad local demand spillovers extending well beyond the firms it explicitly targeted.

5.3 Mechanisms

The results above show that the effects of industrial policy extended well beyond the large formal firms it explicitly targeted. We now explore the mechanisms underlying these broader effects. In particular, we ask whether the expansion of small-scale manufacturing reflects direct effects within targeted industries, increases in local consumer demand arising from higher incomes, or production linkages between large and small firms.

5.3.1 Consumer demand

We first examine how exposure to industrial policy targeting specific manufacturing industries affects small-scale manufacturing firms and employment across sectors. To do so, we construct industry-specific measures of exposure to industrial policy by modifying equation (1) to use baseline employment shares for a subgroup of industries rather than summing across all industries.[17]

[16] While the sectors mentioned in SDPRP (2002) were initially targeted for industrial policies, many of these policies were enhanced and reinforced by the first 5-year plan, PASDEP (2005) (see Section 2 and Appendix Table B.1). As a related check, we recode the original SDPRP (2002) sectors as treated only starting in 2005. Results, reported in Appendix Table A.8, remain similar in sign and significance levels.

[17] Specifically, we compute for group of industries g: $IPExposure_{zgt} = \sum_{j \in g} \frac{N_{jz,1996-00}}{N_{z,1996-00}} \times IP_{jt}$.

We focus on industries in which small firms have a substantial presence, as explained in Section 4, and restrict the analysis to industries whose policy status changes during the sample period (see Appendix Figure A.1) and that account for at least 1% of large manufacturing firms (see Appendix Table A.3).[18]

Figure 4 reports the estimated coefficients from equation (2) using the overall exposure measure (panel a) and industry-specific exposure measures (panels b to d). The estimated coefficients should be interpreted in light of the scale of the exposure measures. For example, the 90th percentile of the baseline employment share in the metal industries (27–28) across zones is 0.72%. A coefficient of 10.28 (on jobs at small firms in the food sector) therefore implies that moving from zero exposure to the 90th percentile is associated with an increase of roughly 7.4% in the outcome.[19]

Two key patterns emerge from the figure. First, industrial policy targeting a given industry increases the number of small firms and their aggregate employment in that same industry. These within-industry responses are consistent with industrial policy affecting small firms in targeted sectors either directly or indirectly, for example through production linkages between small and large firms within the same sector.

At the same time, Figure 4 documents substantial cross-industry effects. Most notably, greater exposure to industrial policy targeting the metal industry increases the number of firms and employment among small food and textile firms, while exposure to industrial policy targeting the chemical industry raises the number of small textile firms and their overall employment. Because food and textile producers are unlikely to supply intermediate inputs to metal or chemical manufacturers, these patterns are difficult to reconcile with production linkages alone. Instead, they are consistent with increases in local income generated by expanding manufacturing activity, which raise consumer demand for locally produced goods and stimulate firm and job creation among small firms serving local markets. These findings point to local consumer demand as a possible mechanism through which industrial policy generated employment gains among small manufacturers.

5.3.2 Production linkages

The within-industry responses documented in Figure 4 are also consistent with industrial policy having indirect effects through production linkages between large and small firms. We examine this channel more directly by combining detailed information on firms' industrial activities with input-output relationships across manufacturing sectors.

[18] For this analysis, we aggregate 2-digit manufacturing industries into five broader groups (with ISIC codes): food (15), textiles (17–19), chemicals and rubber (22, 24–25), metals and metal products (27–28), and furniture (36).

[19] Table A.9 shows the baseline employment share distributions for the main industries in the analysis.

Ideally, testing this mechanism would require observing firm-to-firm transactions. While such linkages are not directly observed in our data, we do have detailed information on the main products produced and inputs used by each firm, both large and small. For each product and input, the data include a textual description, as well as information on values and quantities, distinguishing between domestic and exported (imported) outputs (inputs). We use this information to match outputs produced by small firms to inputs used by large firms by constructing a harmonized product classification based on these textual descriptions, focusing on manufactured goods that can plausibly be traded across firms within the industrial sector.[20]

Using this mapping, we examine the relationship between the total output of a given product produced by small firms and the total use of that product as an input by large firms within the same zone and year. Figure A.7 plots this relationship and shows little evidence of correlation, both across and within product categories. This finding is confirmed by Appendix Table A.10, which controls for zone, year, and product fixed effects. Given that large firms may source inputs from outside the local market, this evidence is not conclusive. Nevertheless, it provides little support for the hypothesis that production linkages between large and small firms drive the employment effects documented above.[21]

6 Conclusion

This paper studies how industrial policy affects local manufacturing across the entire firm size distribution. Combining comprehensive firm-level data from Ethiopia with a shift-share research design, we show that policies aimed at expanding large formal manufacturing firms also foster firm creation and increase employment among small manufacturers, including informal self-employed businesses. The results suggest that industrial policy generates broad local spillovers rather than benefiting only the firms it directly targets.

We also explore the mechanisms underlying these effects. We find evidence that industrial policy targeting specific manufacturing industries generates employment gains among small firms in other manufacturing sectors, a pattern consistent with increases in local income and consumer demand. By contrast, we find little evidence that production linkages between large and small firms play a major role.

Our estimates capture local employment spillovers and cannot, by themselves, be used to infer aggregate employment effects. Nevertheless, they suggest that local spillovers from industrial

[20] Appendix C provides details on this procedure.

[21] For completeness, we also consider the reverse channel, whereby outputs of large firms are used as inputs by small firms. This analysis is less compelling, as large firms sell a larger share of their output outside local markets. Nonetheless, Appendix Table A.11 mirrors Table A.10 and similarly finds no evidence of correlation once fixed effects are included.

policy may have contributed to the expansion of Ethiopia's small-scale manufacturing.

Our findings suggest that evaluating industrial policy solely through its effects on the firms it directly supports may provide an incomplete picture of its overall impact. Policies that aim to expand modern manufacturing can also stimulate employment among smaller and often informal firms serving local markets. Understanding the conditions under which local employment spillovers generate sustained productivity growth and higher wages remains an important avenue for future research.

References

Abebe, Girum, Margaret McMillan, and Michel Serafinelli. 2022. "Foreign direct investment and knowledge diffusion in poor locations." *Journal of Development Economics*, 158: 102926.

Aghion, Philippe, Jing Cai, Mathias Dewatripont, Luosha Du, Ann Harrison, and Patrick Legros. 2015. "Industrial Policy and Competition." *American Economic Journal: Macroeconomics*, 7(4): 1–32.

Amodio, Francesco, Pamela Medina, and Monica Morlacco. 2025. "Labor Market Power, Self-Employment, and Development." *American Economic Review*, 115(9): 3014–57.

Bassi, Vittorio, Jung Hyuk Lee, Alessandra Peter, Tommaso Porzio, Ritwika Sen, and Esau Tugume. 2023. "Self-Employment Within the Firm." National Bureau of Economic Research, Inc NBER Working Papers 31740.

Bassi, Vittorio, Raffaela Muoio, Tommaso Porzio, Ritwika Sen, and Esau Tugume. 2022. "Achieving Scale Collectively." *Econometrica*, 90(6): 2937–2978.

Borusyak, Kirill, Peter Hull, and Xavier Jaravel. 2022. "Quasi-experimental Shift-share Research Designs." *The Review of economic studies*, 89(1): 181–213.

Borusyak, Kirill, Peter Hull, and Xavier Jaravel. 2025. "A Practical Guide to Shift-Share Instruments." *Journal of Economic Perspectives*, 39(1): 181–204.

Criscuolo, Chiara, Ralf Martin, Henry G. Overman, and John Van Reenen. 2019. "Some Causal Effects of an Industrial Policy." *American Economic Review*, 109(1): 48–85.

Diao, Xinshen, Mia Ellis, Margaret McMillan, and Dani Rodrik. 2025. "Africa's Manufacturing Puzzle: Evidence from Tanzanian and Ethiopian Firms." *The World Bank Economic Review*, 39(2): 308–340.

Donovan, Kevin, Will Jianyu Lu, and Todd Schoellman. 2023. "Labor Market Dynamics and Development." *The Quarterly Journal of Economics*, 138(4): 2287 – 2325.

Fernandes, Ana Margarida, and Tristan Reed. 2026. *Industrial Policy for Development: Approaches in the 21st Century. Policy Research Reports*, Washington, DC:World Bank.

Gebreeyesus, Mulu. 2016. "Industrial Policy and Development in Ethiopia." In *Manufacturing Transformation: Comparative Studies of Industrial Development in Africa and Emerging Asia*. , ed. Carol Newman, John Page, John Rand, Abebe Shimeles, Måns Söderbom and Finn Tarp. Oxford University Press.

Gebrewolde, Tewodros Makonnen, and James Rockey. 2023. "The effectiveness of industrial policy in developing countries: causal evidence from Ethiopian manufacturing firms." *Journal of Development Effectiveness*, 15(2): 196–222.

Goldsmith-Pinkham, Paul, Isaac Sorkin, and Henry Swift. 2020. "Bartik Instruments: What, When, Why, and How." *American Economic Review*, 110(8): 2586–2624.

Hsieh, Chang-Tai, and Peter J Klenow. 2009. "Misallocation and manufacturing TFP in China and India." *The Quarterly journal of economics*, 124(4): 1403–1448.

Juhász, Réka, Nathan Lane, and Dani Rodrik. 2024. "The New Economics of Industrial Policy." *Annual Review of Economics*, 16(1): 213–242.

Kruse, Hagen, Emmanuel Mensah, Kunal Sen, and Gaaitzen de Vries. 2023. "A Manufacturing (Re)Naissance? Industrialization in the Developing World." *IMF Economic Review*, 71: 439–473.

Lane, Nathan. 2025. "Manufacturing Revolutions: Industrial Policy and Industrialization in South Korea*." *The Quarterly Journal of Economics*, 140(3): 1683–1741.

Liu, Ernest. 2019. "Industrial Policies in Production Networks." *The Quarterly Journal of Economics*, 134(4): 1883–1948.

McMillan, Margaret, and Albert Zeufack. 2022. "Labor Productivity Growth and Industrialization in Africa." *Journal of Economic Perspectives*, 36(1): 3–32.

Ministry of Finance and Economic Development. 2002. "Sustainable Development and Poverty Reduction Program (SDPRP)." Ministry of Finance and Economic Development, Federal Democratic Republic of Ethiopia, Addis Ababa, Ethiopia.

Ministry of Finance and Economic Development. 2006. "Ethiopia: Building on Progress: A Plan for Accelerated and Sustained Development to End Poverty (PASDEP), 2005/06–2009/10. Volume I: Main Text." Ministry of Finance and Economic Development, Federal Democratic Republic of Ethiopia, Addis Ababa, Ethiopia.

Ministry of Finance and Economic Development. 2010. "Growth and Transformation Plan I (GTP I), 2010/11–2014/15." Ministry of Finance and Economic Development, Federal Democratic Republic of Ethiopia, Addis Ababa, Ethiopia.

Moretti, Enrico. 2010. "Local Multipliers." *American Economic Review*, 100(2): 373–377.

National Planning Commission. 2016. "Growth and Transformation Plan II (GTP II), 2015/16–2019/20." National Planning Commission, Federal Democratic Republic of Ethiopia, Addis Ababa, Ethiopia.

Oqubay, Arkebe. 2015. *Made in Africa: Industrial Policy in Ethiopia.* Oxford:Oxford University Press.

Oqubay, Arkebe. 2019. "Industrial Policy and Late Industrialization." In *The Oxford Handbook of the Ethiopian Economy*. Oxford University Press.

Perra, Elena, Marco Sanfilippo, and Asha Sundaram. 2024. "Roads, competition, and the informal sector." *Journal of Development Economics*, 103339.

Rodrik, Dani. 2013. "Unconditional Convergence in Manufacturing." *Quarterly Journal of Economics*, 128: 165–204.

Startz, Meredith. 2024. "The value of face-to-face: Search and contracting problems in Nigerian trade." Mimeo.

Tafese, Tevin, and Alisha Weber. 2026. "The Impact of Industrial Parks on Local Labour Markets: Evidence from Ethiopia." mimeo.

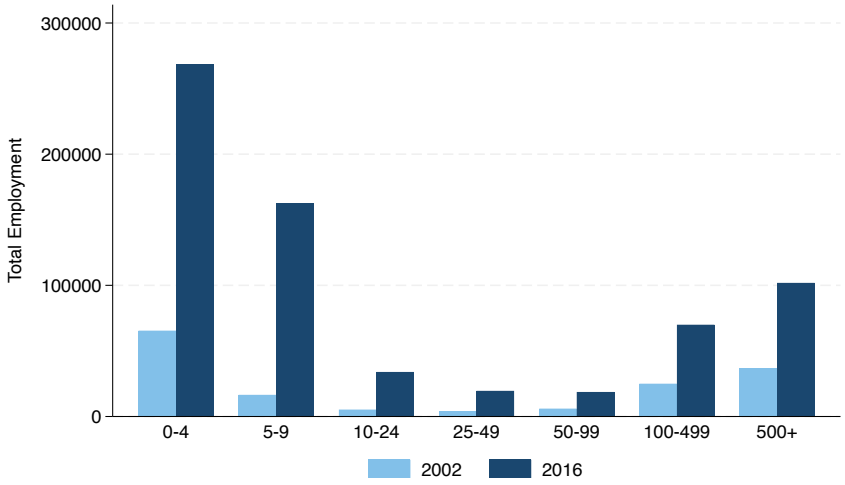
Toews, Gerhard, and Pierre-Louis Vezina. 2022. "Resource Discoveries, FDI Bonanzas, and Local Multipliers: Evidence from Mozambique." *The Review of Economics and Statistics*, 104(5): 1046–1058.

Ulyssea, Gabriel. 2018. "Firms, Informality, and Development: Theory and Evidence from Brazil." *American Economic Review*, 108(8): 2015–2047.

Vitali, Anna. 2023. "Consumer Search and Firm Location: Theory and Evidence from the Garment Sector in Uganda." Mimeo.

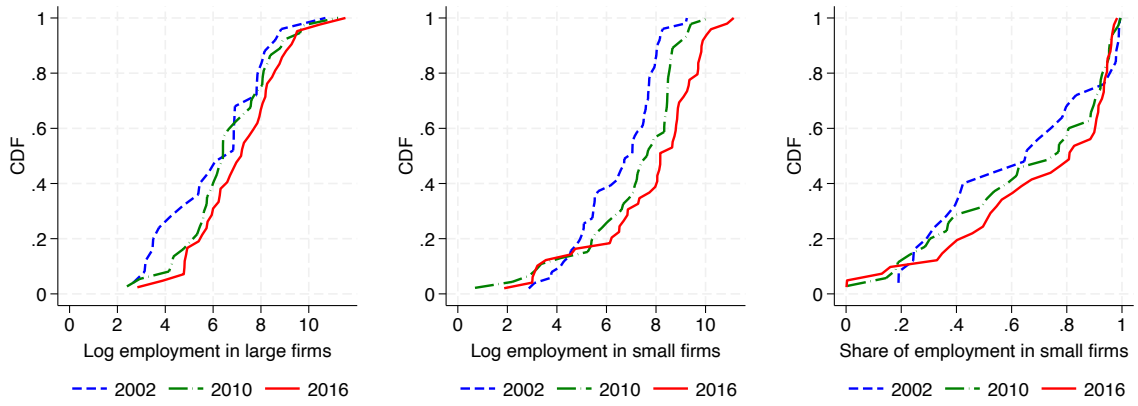
Exhibits

Figure 1: Employment by firm size category: 2002 vs. 2016



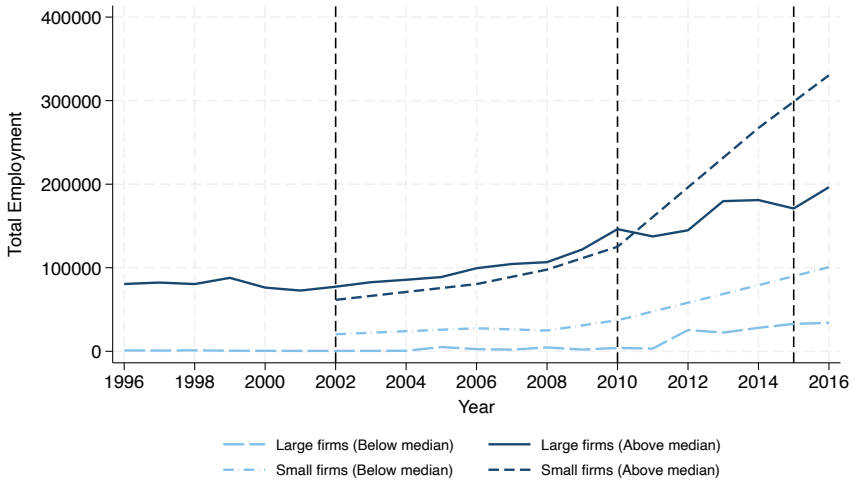
Notes. The figure shows the total number of workers (including working owners) by firm size category, and separately for the years 2002 and 2016.

Figure 2: Large- and small-scale manufacturing employment across zones over time



Notes. The figures show the distribution across zones of the (log) total number of workers in large firms (left panel) and small firms (center panel), as well as the share of small-scale manufacturing employment over the total (right panel). Large firms are those in LMMS census data. Small firms are those surveyed by the SSIS. Each figure plots the cumulative density function at the beginning, middle and end of the analysis period.

Figure 3: Manufacturing employment and exposure to industrial policy



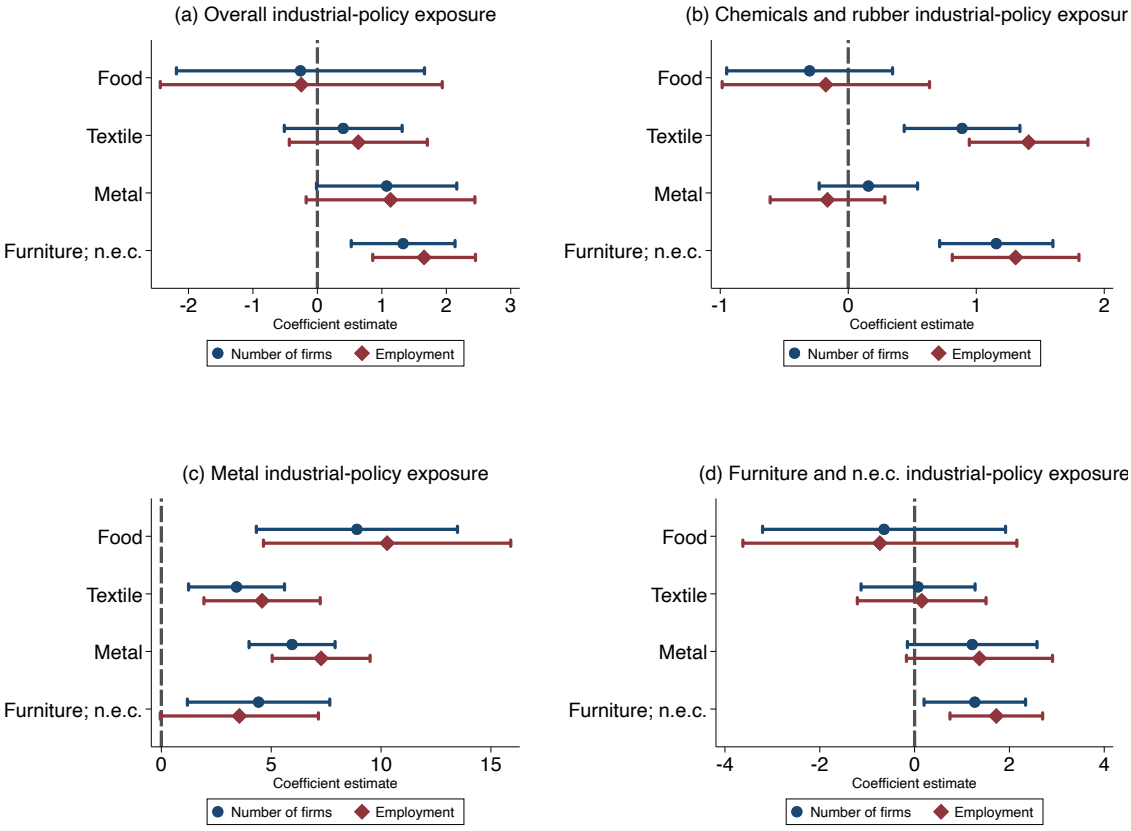
Notes. The figure plots total employment in large and small firms over time, aggregated separately for zones with below- and above-median exposure to industrial policy. Exposure is defined as the average value of the shift-share industrial policy exposure variable over 2002–2016, constructed by interacting baseline (1996-2000) industrial employment shares with national sectoral targeting indicators (see equation 1). The vertical lines mark 2002, 2010 and 2015, the onset of industrial policies (see Appendix Figure A.1). LMMS data on large firms are available from 1996, while SSIS data on small firms are available from 2002.

Table 1: Regression results

	Log Number of Firms			Log Employment		
	(1) All	(2) Large firms	(3) Small firms	(4) All	(5) Large firms	(6) Small firms
IP Exposure	0.961**	0.891***	0.909**	1.286**	1.083	1.147**
	(0.369)	(0.275)	(0.397)	(0.528)	(0.674)	(0.473)
Zone FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Mean outcome	1285.12	30.77	1254.35	6379.26	2652.35	3726.92
Observations	336	336	336	336	336	336

Notes. * p-value<0.1; ** p-value<0.05; *** p-value<0.01. The unit of observation is a zone-year. All regressions include zone and year fixed effects. Standard errors are clustered at the zone level and reported in parentheses. The mean outcome is calculated using the corresponding outcome in levels rather than its transformed value.

Figure 4: Heterogeneity by sectoral policy exposure and small firms' sector



Notes. Each panel reports reduced-form estimates of the effect of exposure to industrial policy on small-firm outcomes, estimated separately using different exposure measures. Panel (a) uses overall industrial-policy exposure, while panels (b)–(d) use exposure to chemicals and rubber, metals, and furniture and other manufacturing, respectively. Within each panel, estimates are reported separately for the log number of small firms (circles) and log employment in small firms (diamonds) across four manufacturing industry groups (Food, Textile, Metal, Furniture and n.e.c.). All regressions include zone and year fixed effects. Standard errors are clustered at the zone level. Horizontal bars denote 95% confidence intervals.

Appendix for Online Publication

Industrial Policy and Local Manufacturing

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A Additional tables and figures

Table A.1: Descriptive statistics for small and large firms

	Number of Firms	Mean	Percentiles 25th	50th	75th
Panel A: Small Firms					
Sales	220,494	20,686.82	2,093.35	5,888.29	14,711.33
Total outputs	220,500	24,220.51	2,085.42	5,798.02	14,274.18
Capital	408,515	2,298.22	255.29	878.17	2,181.32
Total wage bill	328,249	878.59	150.00	413.86	993.95
Number of workers	420,381	2.98	2.00	3.00	4.00
Sales per worker	219,929	6,665.58	951.71	2,216.13	4,843.68
Output per worker	219,934	7,606.70	935.67	2,191.24	4,707.44
Average Wage	327,417	233.53	59.91	143.75	286.27
Panel B: Large Firms					
Sales	9,966	3,357,547.50	35,885.89	160,102.55	1,168,817.00
Total outputs	9,971	3,346,388.00	35,685.45	158,414.31	1,112,556.62
Capital	10,013	862,384.62	3,333.42	35,298.72	325,677.69
Total wage bill	10,088	111,221.12	4,317.93	11,438.48	48,846.50
Number of workers	10,329	86.28	13.00	22.00	54.50
Sales per worker	9,956	31,442.03	2,045.51	6,344.68	22,752.80
Output per worker	9,961	33,960.06	2,068.07	6,038.37	21,346.86
Average Wage	10,086	1,004.20	251.48	546.10	991.51

Notes. This table reports weighted summary statistics separately for small and large firms. Large firms are those in with at least ten employees. Small firms are those with fewer than ten employees. Sales, output, capital, wage bill, sales per worker, output per worker, and average wages are in current USD.

Table A.2: Firm size distribution and shares of economic activity

Firm Size	Number of Firms	Total Employment	Share of Empl.	Capital	Sales	Wages
		Panel A: 2002				
0–4	28,816	65,453	0.411	0.098	0.029	0.084
5–9	2,794	16,529	0.104	0.023	0.012	0.029
10–24	350	5,289	0.033	0.035	0.030	0.027
25–49	120	4,099	0.026	0.058	0.062	0.037
50–99	86	6,010	0.038	0.091	0.099	0.057
100–499	111	25,013	0.157	0.247	0.313	0.306
500+	37	36,681	0.231	0.448	0.454	0.462
		Panel B: 2016				
0–4	112,590	268,357	0.397	0.054	0.097	0.132
5–9	26,508	162,686	0.241	0.029	0.072	0.127
10–24	2,267	33,960	0.050	0.026	0.036	0.033
25–49	614	19,553	0.029	0.037	0.054	0.038
50–99	258	18,706	0.028	0.057	0.069	0.045
100–499	329	69,979	0.104	0.288	0.322	0.243
500+	75	101,878	0.151	0.510	0.350	0.382

Notes. The table reports the distribution of firms and economic activity across firm size categories. Shares refer to the fraction of total employment, capital, sales, and wages accounted for by each size category in the respective year. Aggregate numbers for firms with fewer than ten workers are obtained using SSIS sampling weights.

Table A.3: Distribution of small and large firms by 2-digit sector

	Small Firms		Large Firms	
Sector (ISIC Rev. 3.1)	Number	Share	Number	Share
15. Food and beverages	246,845	0.586	3,046	0.295
16. Tobacco	1	0.000	6	0.001
17. Textiles	5,934	0.014	448	0.043
18. Wearing apparel	31,071	0.074	256	0.025
19. Leather and footwear	2,049	0.005	472	0.046
20. Wood products	3,514	0.008	261	0.025
21. Paper products	15	0.000	97	0.009
22. Publishing and printing	3,586	0.009	514	0.050
23. Petroleum refining	10	0.000	3	0.000
24. Chemicals	234	0.001	431	0.042
25. Rubber and plastics	221	0.001	598	0.058
26. Non-metallic minerals	8,804	0.021	1,541	0.149
27. Basic metals	614	0.001	178	0.017
28. Fabricated metal products	43,123	0.102	695	0.067
29. Machinery and equipment	741	0.002	94	0.009
30. Office and computing machinery			1	0.000
31. Electrical machinery	30	0.000	21	0.002
32. Radio and communication equipment	19	0.000	17	0.002
33. Medical and precision instruments			4	0.000
34. Motor vehicles	201	0.000	55	0.005
36. Furniture; n.e.c.	74,346	0.176	1,596	0.154
37. Recycling			2	0.000

Notes. The table reports the distribution of firms across manufacturing sectors based on ISIC Rev. 3.1 classification. Shares correspond to the fraction of firms in each sector within the respective sample. Small firms are those with fewer than ten workers (including working owners). Large firms are those with at least 10 employees. Aggregate numbers for small firms are obtained using the SSIS sampling weight.

Table A.4: Distribution of small and large firms by region

	Small Firms		Large Firms	
Region	Number	Share	Number	Share
1. Tigray	39,769	0.094	653	0.073
2. Afar	1,985	0.005	28	0.003
3. Amhara	120,018	0.285	767	0.086
4. Oromia	137,111	0.325	2,126	0.239
5. Somali	1,670	0.004	70	0.008
6. Benishangul-Gumuz	2,201	0.005	10	0.001
7. S.N.N.P.R	54,138	0.128	896	0.101
12. Gambela	943	0.002	10	0.001
13. Harari	2,445	0.006	110	0.012
14. Addis Ababa	57,526	0.137	3,976	0.446
15. Dire Dawa	3,550	0.008	267	0.030

Notes. The table reports the distribution of firms across Ethiopian regions. Shares correspond to the fraction of firms in each region within the respective sample. Small firms are those with fewer than ten workers (including working owners). Large firms are those with at least ten employees. Aggregate numbers for small firms are obtained using the SSIS sampling weight.

Table A.5: Small firm share cumulative distribution by year

	Percentiles				
Year	10th	25th	50th	75th	90th
2002	24.3	36.1	65.5	93.4	98.8
2010	18.8	37.0	77.0	92.2	95.7
2016	32.9	51.0	81.0	93.5	96.1

Notes. The table reports the distribution across zones of the share of manufacturing employment accounted for by small firms. For each zone and year, the share is total employment in firms with fewer than 10 workers divided by total manufacturing employment in the zone, where employment counts all workers including working owners. Firms are classified by reported employment: those with fewer than 10 workers are surveyed in the SSIS and aggregated using its sampling weights, while those with 10 or more are covered by the LMMS census. Columns report percentiles of the share across zones, expressed in percent.

Table A.6: Placebo effects on employment

	Zone Level			Industry Level		
	(1) All	(2) Large firms	(3) Small firms	(4) All	(5) Large firms	(6) Small firms
IP Exposure	1.287*	0.560	1.044*	0.640	0.695*	0.733
	(0.648)	(0.814)	(0.538)	(0.409)	(0.404)	(0.557)
Five-year Lead of IP Exposure	-0.002	0.807	0.159	-0.090	-0.072	-0.582
	(0.445)	(0.701)	(0.458)	(0.417)	(0.415)	(0.520)
Unit FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Mean outcome	6379.26	2652.35	3726.92	7782.84	6795.20	9505.30
Observations	336	336	336	132	132	132

Notes. * p-value<0.1; ** p-value<0.05; *** p-value<0.01. The unit of observation is a zone-year in columns (1)–(3) and an industry-year in columns (4)–(6). The dependent variable is $\log(1 + \text{employment})$. Columns (1) and (4) use total manufacturing employment, columns (2) and (5) employment in large firms, and columns (3) and (6) employment in small firms. Each specification includes contemporaneous industrial-policy exposure and its five-year lead. The coefficient on the lead provides a placebo test for differential pre-trends, conditional on contemporaneous exposure. All specifications include unit and year fixed effects. Standard errors are clustered at the zone level in columns (1)–(3). Robust standard errors are reported in columns (4)–(6), as the small number of industries does not allow for asymptotically valid cluster-robust inference.

Table A.7: Robustness checks

	Excluding Addis Ababa		Excluding Industrial Parks		Differential Trends		2002 Cohort Share x Year FE	
	(1) Large firms	(2) Small firms	(3) Large firms	(4) Small firms	(5) Large firms	(6) Small firms	(7) Large firms	(8) Small firms
IP Exposure	1.111	1.134**	1.241*	1.283**	0.669	0.700*	0.900	1.494***
	(0.674)	(0.468)	(0.737)	(0.520)	(0.693)	(0.398)	(0.729)	(0.535)
Zone FE	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Mean outcome	1492.46	3240.98	878.03	2575.37	2652.35	3726.92	2652.35	3726.92
Observations	330	330	264	264	336	336	336	336

Notes. * p-value<0.1; ** p-value<0.05; *** p-value<0.01. The unit of observation is a zone-year. The dependent variable is log employment at large firms in odd-numbered columns and log employment at small firms in even-numbered columns. Columns (1)–(2) exclude the zone containing Addis Ababa. Columns (3)–(4) exclude zones that include an industrial park. Columns (5)–(6) include differential linear trends according to whether a zone had no early large-scale manufacturing employment. Columns (7)–(8) interact the baseline employment share in sectors first targeted in 2002 with a full set of year indicators. All regressions include zone and year fixed effects. Standard errors are clustered at the zone level and reported in parentheses. The mean outcome is calculated using the corresponding outcome in levels rather than its transformed value.

Table A.8: Alternative Timing of the First Industrial-Policy Wave

	Log Number of Firms			Log Employment		
	(1) All	(2) Large firms	(3) Small firms	(4) All	(5) Large firms	(6) Small firms
IP Exposure	0.669**	0.497**	0.654*	0.806*	0.239	0.805**
	(0.322)	(0.217)	(0.337)	(0.408)	(0.519)	(0.400)
Zone FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Mean outcome	1285.12	30.77	1254.35	6379.26	2652.35	3726.92
Observations	336	336	336	336	336	336

Notes. * p-value<0.1; ** p-value<0.05; *** p-value<0.01. The unit of observation is a zone-year. This table reproduces the specifications in Table 1 after dating the onset of industrial-policy targeting for the original cohort of sectors to 2005 rather than 2002. The sector composition of the original cohort and the timing and sector composition of the 2010 and 2015 policy expansions are otherwise unchanged. All regressions include zone and year fixed effects. Standard errors are clustered at the zone level and reported in parentheses. The mean outcome is calculated using the corresponding outcome in levels rather than its transformed value.

Table A.9: Distribution of baseline sectoral employment shares across zones (in percent)

	Percentile				
Sector (ISIC Rev. 3.1)	50th	75th	90th	Max	Mean
Chemicals and rubber (24–25)	0.00	0.00	0.21	89.63	2.02
Metals and metal products (27–28)	0.00	0.00	0.72	22.02	0.67
Furniture and n.e.c. (36)	0.00	4.00	46.30	100.00	11.20

Table A.10: Large-firm input use and small-firm output

	Large-Firm Domestic Input Use (Log)			
	(1)	(2)	(3)	(4)
Small-Firm Domestic Output Value (Log)	-0.104	-0.069	0.155	0.005
	(0.188)	(0.186)	(0.193)	(0.171)
Zone FE		✓	✓	✓
Product Code FE			✓	✓
Year FE				✓
Observations	57	55	52	52

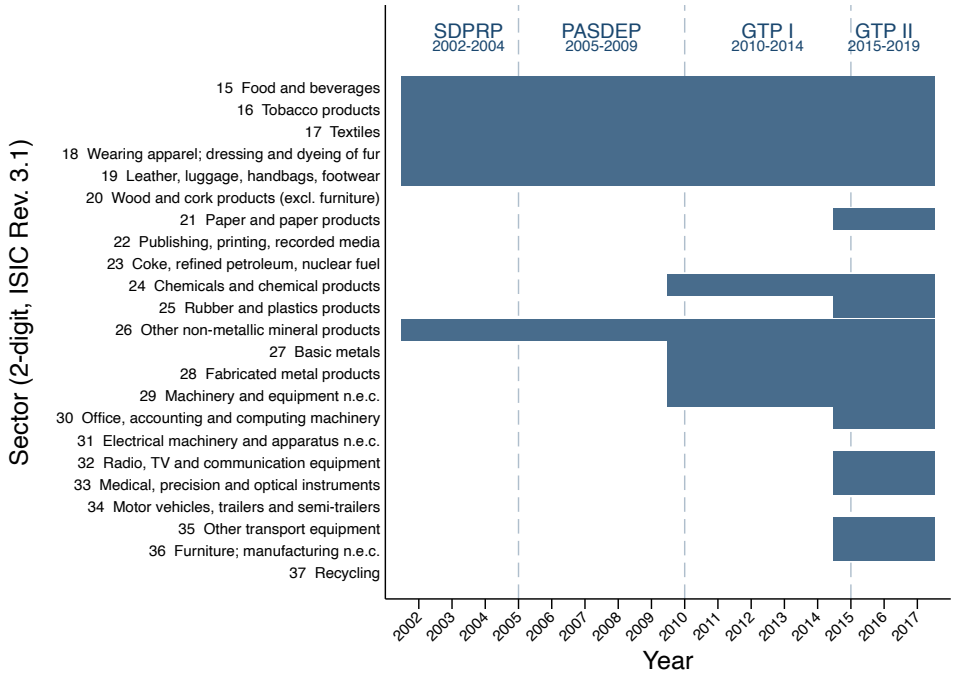
Notes. * p-value<0.1; ** p-value<0.05; *** p-value<0.01. The unit of observation is product-zone-year. The dependent variable is the (log) aggregate value of domestic product input use across large firms. The main regressor is the (log) aggregate value of domestic output of the same product across small firms. The table reports OLS coefficient estimates. Robust standard errors are reported in parentheses.

Table A.11: Large-firm output and small-firm input use

	Large-Firm Domestic Output Value (Log)			
	(1)	(2)	(3)	(4)
Small-Firm Domestic Input Use (Log)	0.171**	0.169	0.007	-0.140
	(0.078)	(0.119)	(0.139)	(0.201)
Zone FE		✓	✓	✓
Product Code FE			✓	✓
Year FE				✓
Observations	59	45	42	42

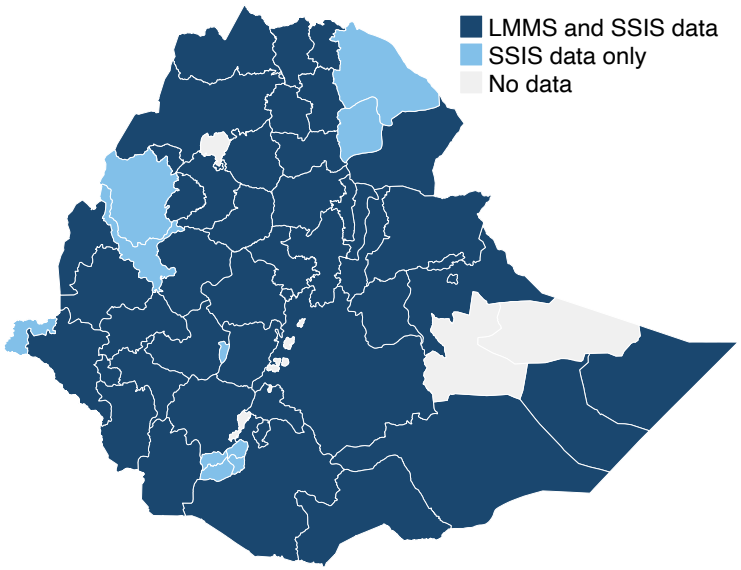
Notes. * p-value<0.1; ** p-value<0.05; *** p-value<0.01. The unit of observation is product-zone-year. The dependent variable is the (log) aggregate value of domestic product output across large firms. The main regressor is the (log) aggregate value of domestic input use of the same product across small firms. The table reports OLS coefficient estimates. Robust standard errors are reported in parentheses.

Figure A.1: Industrial policy targeting by 2-digit sector and year



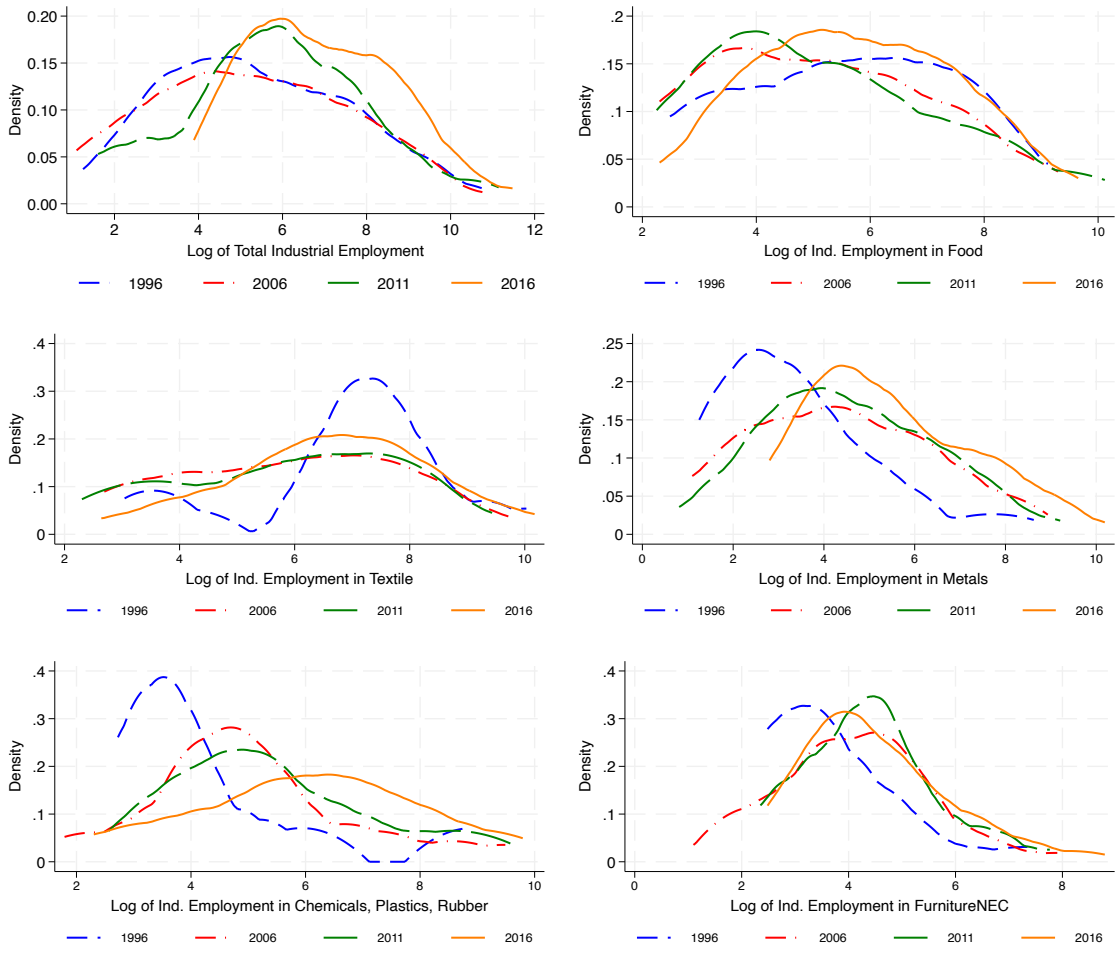
Notes. The figure displays the progressive targeting of sectors over time based on Ethiopia's national development plans—SDPRP (2002), PASDEP (2005-2010), and GTP I (2010-2014) and GTP II (2015-2019).

Figure A.2: Map of zones in Ethiopia



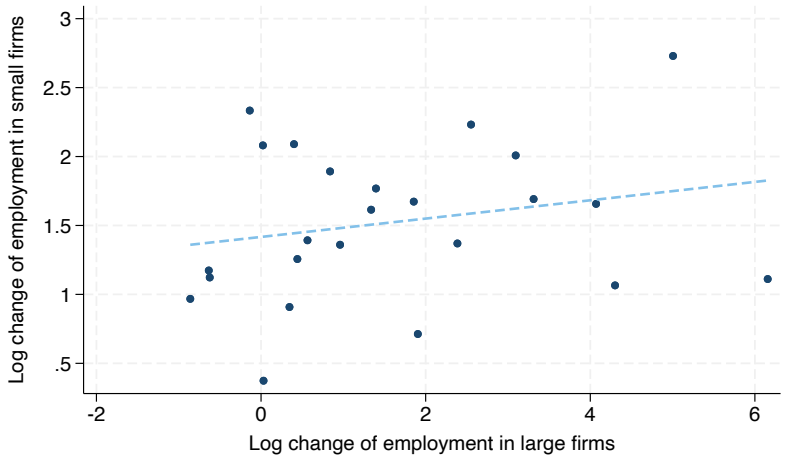
Notes. The map shows the boundaries of zones in Ethiopia. These are level 2 administrative units, below regions and above woredas or districts. It also shows using shades of gray those zones that are represented in SSIS data and LMMS data.

Figure A.3: Large-scale manufacturing employment across zones over time



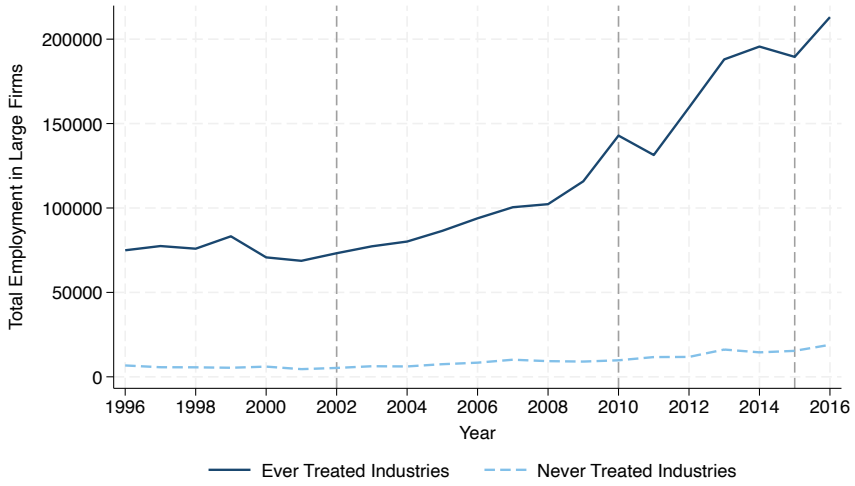
Notes. The figures plot the distribution of the (log) total number of industrial jobs (i.e., aggregate employment across firms with more than 10 employees from the LMMS census data) overall and by sector across zones over time.

Figure A.4: Large vs. small-scale manufacturing employment: changes over time



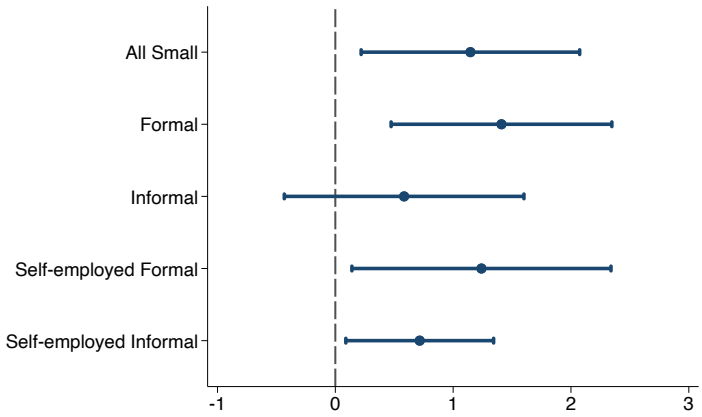
Notes. The figures plots the change in the (log) total number of workers in small firms against the corresponding change in employment in large firms across zones over the period 2002 to 2016.

Figure A.5: Industrial jobs in treated and control industries



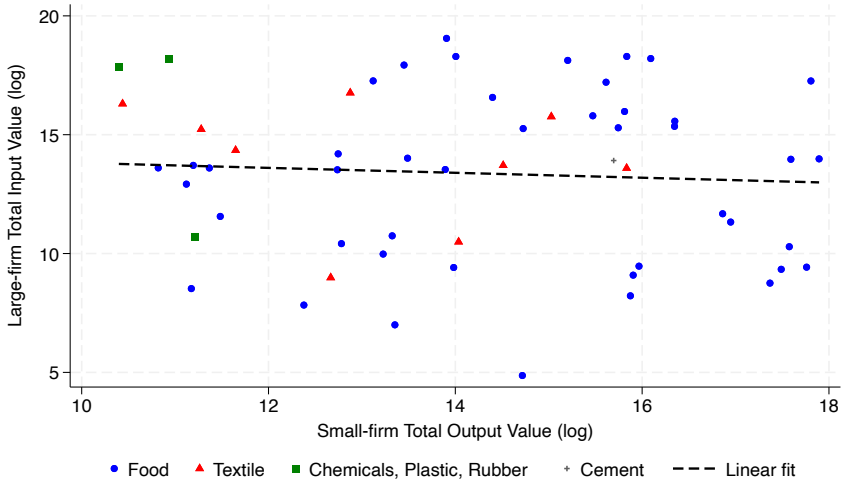
Notes. The figure plots total employment in large firms for industries targeted and not targeted by industrial policy over time. The vertical lines mark 2002, 2010 and 2015, the onset of industrial policies (see Appendix Figure A.1).

Figure A.6: Heterogeneity by size and informality of small firms



Notes. The figure reports reduced-form estimates of the effect of industrial-policy exposure on employment across different categories of small firms. The dependent variable is the log number of workers in all small firms, formal small firms, informal small firms, formally self-employed firms, and informally self-employed firms, as indicated on the y-axis. Each coefficient is obtained from a separate zone-year regression of the corresponding outcome on industrial-policy exposure. All specifications include zone and year fixed effects. Standard errors are clustered at the zone level. Points denote coefficient estimates and horizontal bars represent 95% confidence intervals.

Figure A.7: Input-output relationships between large and small firms



Notes. The figure illustrates the unconditional relationship between small- and large-firm output and use, respectively, of given manufacturing products. Each observation is a product-zone-year for which both variables take non-zero values. Markers identify the broad sector of the product, and the dashed line reports the linear fit. Product definitions and the harmonization procedure are described in Appendix C. Appendix Tables A.10 provides the corresponding regression results, both unconditional and conditional on product, zone, and year fixed effects.

B Coding of industrial policy targeting

This appendix describes the construction of the sector-year industrial policy indicator IP_{jt} used in the shift-share industrial polixy exposure variable. The indicator is based on Ethiopia's national development plans and equals one if two-digit manufacturing industry j is coded as explicitly targeted by national industrial policy in year t—see Appendix Figure A.1. We use four official planning documents:

- Sustainable Development and Poverty Reduction Program (Ministry of Finance and Economic Development, 2002)
- Plan for Accelerated and Sustained Development to End Poverty (Ministry of Finance and Economic Development, 2006)
- First Growth and Transformation Plan (GTP I, 2010/11–2014/15) (Ministry of Finance and Economic Development, 2010)
- Second Growth and Transformation Plan (GTP II, 2015/16–2019/20) (National Planning Commission, 2016)

We constructed the indicator through a structured text-coding procedure. We searched the sections on industrial development, export promotion, trade and industry, strategic sectors, selected manufacturing subsectors, and sectoral targets. A sector was coded as treated from the first year in which the corresponding activity was explicitly identified as a priority, strategic, selected, specially supported, or targeted manufacturing activity. We then mapped the terminology used in the plans to the closest two-digit ISIC Rev. 3.1 manufacturing category. Once a sector is treated, IP_{jt} remains equal to one in subsequent years. Table B.1 summarizes this process.

Table B.1: Textual basis for industrial-policy sector coding

First year	Policy source	Textual coding trigger	ISIC Rev. 3.1 sectors coded as treated
2002	SDPRP; reinforced by PASDEP	Agriculture-industry linkages; export-oriented processing of skins/leather and textile garments; food-processing; strategic sectors in PASDEP include textiles/garments, meat/leather, agro-processing, and construction.	15 Food and beverages; 16 Tobacco products; 17 Textiles; 18 Wearing apparel; 19 Leather, luggage, handbags, footwear; 26 Other non-metallic mineral products.
2010	GTP I	Special support to medium and large industries, including chemicals/pharmaceuticals, metal and engineering, cement, agro-processing, textiles/apparel, and leather products.	24 Chemicals and chemical products; 27 Basic metals; 28 Fabricated metal products; 29 Machinery and equipment n.e.c.
2015	GTP II	Priority manufacturing industries and new subsectors, including pulp and paper, rubber/plastics, ICT/electronics, medical equipment, transport equipment, furniture, and light manufacturing.	21 Paper and paper products; 25 Rubber and plastics products; 30 Office, accounting and computing machinery; 32 Radio, TV and communication equipment; 33 Medical, precision and optical instruments; 35 Other transport equipment; 36 Furniture and manufacturing n.e.c.

Notes. The table summarizes the textual basis for the sector-year treatment indicator IP_{jt} shown in Figure A.1. Policy documents do not use ISIC codes; sector names in the plans are therefore mapped to the closest two-digit ISIC Rev. 3.1 manufacturing category. PASDEP reinforces the early SDPRP-based priorities but does not introduce a separate treatment wave in the baseline coding.

C Output and input product harmonization

The LMMS and the SSIS provide detailed information on outputs produced by small firms and inputs consumed by large firms. In both cases, items are identified using survey-specific product codes and accompanied by textual descriptions. However, the coding systems for outputs and inputs differ, which prevents a direct matching of products across the two datasets.

To study production linkages between small and large firms, we construct a harmonized classification that maps outputs produced by small firms to inputs used by large firms. The harmonization is based on the textual descriptions of products and inputs provided in the survey codebook. We proceed in three steps.

First, we restrict attention to manufactured goods. We exclude primary inputs such as agricultural products (e.g., wheat, cattle, oil seeds) and natural resources, as these are not produced within the manufacturing sector and are therefore unlikely to capture linkages between manufacturing firms. Second, we identify correspondences between outputs and inputs by comparing their textual descriptions. We implement a manual text-based matching procedure, supported by standardization of product names (e.g., lowercasing, removal of qualifiers, and harmonization of spelling differences such as "polyethylene" vs. "polythene"). Matches are retained when the output of one firm corresponds closely to the input of another firm within the manufacturing sector. Third, we construct a harmonized product code that assigns the same identifier to each pair of matched outputs and inputs.

The resulting crosswalk, reported in Table C.1, captures intermediate manufactured goods that can plausibly be traded across firms, such as flour, sugar, fabrics, chemicals, and construction materials.

Table C.1: Manufacturing product crosswalk

Harmonized Product	Code	Small-Firm Output	Large-Firm Input
Flour	1	0038	0103
Sugar	2	00048	0112
Edible oil	3	0029	0318
Malt	4	00078	0114
Molasses	5	00050	0113
Carbon dioxide	6	00187	0176
Cotton yarn	7	00093	0061
Acrylic yarn	8	00095	0054
Fabrics	9	00092	0062
Leather sole	10	00147	0115
Plastic sole	11	01147	0118
Paper	12	00300	0214
Boxing paper	13	00301	0329
Paraffine	14	00304	0404
Polyethylene	15	00219	0100
Cement	16	00264	0267
Iron bars	17	00281	0290

Notes. This table reports the crosswalk between harmonized product categories and the corresponding product codes used to identify small-firm output and large-firm input.

D Zone harmonization

Zone identifiers are not directly comparable over our study period: between the 1994 Census and the most recent surveys the Ethiopian authorities repeatedly redrew and renumbered zones, for example due to zone splits and mergers, the creation of new zones and special districts (*woredas*). Additionally, in some cases it appears that survey enumerators recorded zone codes with error.

To construct a consistent zone-year panel, and to merge the three data sources, we map every zone identifier onto a single time-consistent classification: the harmonized second-level geography (GEO2) distributed by IPUMS-International, which provides zone units that are consistent across the 1994 and 2007 census rounds.[23] The target classification contains 58 zone units covering all of Ethiopia's regions.

Step 1. Town-code validation (LMMS). The LMMS reports, for each establishment, its region, zone, district (woreda) and town. Because the town field is the finest geographic variable and the one enumerators report most consistently, we use it as the anchor for diagnosing zone errors. Town codes are region-specific two-digit codes—the same code denotes different towns in different regions—so the anchor is only informative once the region is known to be right. Working from the town labels and the replication materials of Abebe, McMillan and Serafinelli (2022), we therefore establish the home region of each town code and retain the town code only for establishments recorded in that region; establishments whose region–town combination is internally inconsistent are left with a missing value of the validated town code, `town_corr`. The procedure is deliberately conservative: rather than impute a location for an inconsistent record, we withhold the anchor, so that such records are simply not eligible for the town-based corrections of Steps 2 and 3. This validated town code is the only geographic variable carried forward from this step.

Step 2. Within-firm measurement-error correction (LMMS). Because the LMMS is an establishment panel, a firm's zone should not change from year to year in the absence of redistricting. We first collapse Addis Ababa and Dire Dawa—which are single-zone city regions—to one zone each (codes 1401 and 1501). We also collapse Harari to a single zone. We then construct, for every firm, year-on-year indicators for switches in region, zone and town, the number of such switches, and the firm's modal zone. We reclassify a firm's zone in three cases of likely measurement error:

1. the firm switches zone once and then returns to its original, modal zone (e.g. the sequence $A\,A\,B\,A\,A$): the firm is assigned its modal zone throughout;

[23] See `international.ipums.org`, variable `GEO2_ET`. The harmonized shapefile used to produce the map in Appendix Figure A.2 is the `geo2_et1994_2007` vintage.

2. the firm reports exactly two distinct zones over the panel, one of which is the placeholder code "99" (a missing value), with no accompanying region switch: the "99" observations are set to the firm's valid zone;

3. the firm stays in the same region *and* town but reports a different zone: the firm is assigned its modal zone.

Counted separately, the three rules change 195, 297 and 645 establishment-years; after overlaps (and including the three single-zone collapses), 1,091 of the 32,361 establishment-years (3.4%) have a zone different from the one originally reported.[24]

Step 3. Mapping LMMS zones to the harmonized classification. We next flag whether each of the 142 (corrected) zone codes already belongs to the IPUMS harmonized list of 58 zones. We find that 53 do.[25] Of the remaining 89 zones, we are able to assign 14 thanks to the IPUMS crosswalk. For a further 40, we use town codes and extensive online searches to match the name of the town to its most likely zone. For example, the vast majority of firms in the zone originally coded 427 are located in towns (Nazareth, Debreziet, Modjo and Ziway) that all belong to East Shewa, in IPUMS zone 407. Hence, we reassign code 427 to 407. If establishments in the same original zone code are coded to be located in towns spanning more than one IPUMS zone, we split it. For example, original zone 426 is assigned to harmonized zone 405, except establishments in the towns of Adama/Nazareth and Shashemene, which are assigned to zone 407. Of the 40 zone codes reassigned through town codes, 33 are assigned as a whole and 7 are split across two IPUMS zones. Two further codes are recovered from the recorded town name alone, and for five the towns place only part of the observations. The 28 codes we cannot assign are almost all negligible — 24 are 'small', i.e. contain two or fewer observations, and apart from 320 (52 observations) and 644 (19) none carries more than ten. In total, 9,550 of 32,361 (30%) of LMMS establishment-year observations have their zone code reassigned in this step.

Step 4. SSIS harmonization. Overall, the SSIS zones are much easier to handle than LMMS, as they appear to follow IPUMS more closely. Raw SSIS zone codes are remapped to the IPUMS harmonized zones region by region (for instance, in Oromia codes 408, 411, 415 and 417 are all assigned to zone 407; SNNP zones are renumbered as in the LMMS), and the Addis Ababa sub-codes (1401–1499) are collapsed to a single zone, 1401. This reassigns the zone code of roughly 39% of SSIS observations. This step also constructs the zone-level analysis-sample flag used in the Result below, which is written out and merged into the LMMS panel so that both files carry an

[24] Of the 10,768 establishments in the 1996–2017 panel, 15% had reported more than one zone at some point.
[25] 5 IPUMS zones never appear in the LLMS panel.

identical definition; the steps are numbered by data source rather than by run order, and the SSIS harmonization is executed before Step 3.

Result. After harmonization, the two datasets carry a zone identifier defined on the common IPUMS GEO2 (1994–2007) classification over the period used in the analysis, which makes them mergeable into the zone-year panel. We restrict the panel to zones that are on the harmonized list *and* appear in at least one SSIS analysis wave, which retains 56 zones. Appendix Figure A.2 maps the zones covered by each survey. Pooling the six SSIS waves (2002, 2006, 2008, 2010, 2014 and 2016), merging the LMMS and filling in zeroes for missing values of LMMS (84 zone-years), SSIS (15 zone-years) and both (28 zone-years) yields the final panel of 56 zones times 6 years.