Online Appendix (Not For Publication)

Appendix A Details of LLM Implementation: Overcoming Hallucination

A.1 Overview of the Process

A.1.1 Large Language Models.

LLMs are advanced deep learning algorithms with billions of parameters, making them ideal tools for analyzing texts for tasks like summarization, extraction, and classification. They learn language meanings and extensive knowledge from diverse text sources and prediction tasks, fine-tuned to follow human instructions with feedback. Their capabilities in text tasks are impressive, shaped by data volume and parameters, which influence their knowledge and reasoning. Despite their strengths, LLMs can generate incorrect responses, termed "hallucination," when uncertain or misinterpreting instructions. Think of LLM as a well-read research assistant across various domains, capable but prone to confident errors if misunderstood. Clear instructions and strategies to minimize hallucinations are essential for accurate outcomes.

Due to the intricate nature of our tasks, especially those requiring extensive knowledge and proficiency in Chinese, we utilize Google's `Gemini-1.5-flash-001` model from DeepMind. It is trained on a large multilingual corpus totaling 6.5 trillion tokens, equivalent to millions of books, providing a wide range of necessary information for our analyses. User feedback indicates that `Gemini-1.5-flash-001` performs favorably against some versions of `GPT-4`, like `GPT-4-0314` and `GPT-4-0613`, and outperforms most Chinese LLM models in tasks conducted in both English and Chinese, highlighting its ability to handle complex tasks effectively. The model can process texts up to one million tokens, or around 750,000 words, without noticeable degradation in performance, which enables us to input both complete policy texts and vital definitions and guidance. This is essential because many queries require full document comprehension, and issues often require clear definitions and guidance to resolve. For example, determining if a policy document qualifies as industrial policy involves assessing various factors: government issuance, industry targeting and favoring, inclusion of policy tools, and intent to alter long-term economic structure. Since relevant data is dispersed across policy documents, full-text querying of the LLM is critical. Moreover, discerning whether a policy targets specific industries or is a general policy and whether it aims to adjust the economy's structure versus responding to short-term shocks involves nuanced judgment, often containing elements of both. Clarifying definitions and providing guidance, including counterexamples, enhances output quality. Nevertheless, our policy documents are lengthy, typically 1,160 words, with the longer ones reaching up to 5,461 words. Also, defining industrial policy and tools alone takes 2,406 words. Consequently, the `Gemini-1.5-flash-001` model fits our needs perfectly.

A.1.2 Major Prompt Strategies.

To reduce hallucination in LLM outputs, we utilize various prompt design methods to boost accuracy across multiple prompt rounds. First, we provide detailed and clear definitions to minimize ambiguity, such as a comprehensive 2,406-word definition of industry policy and policy tool categories, which aids in accurate LLM analysis. We include counterexamples where applicable to clarify understanding. The counterexamples are summarized through iterative prompt experiments using different policy document samples. Second, we also present structured guidelines for text analysis and break down complex tasks into step-by-step questions

to enhance the LLM's analytical approach. For instance, before evaluating if a policy is industrial, the LLM must answer eleven detailed questions related to industrial policy.

Further, general prompt strategies from the literature are employed: setting temperature to zero for consistency,[21] assigning the LLM a role as a China industrial policy expert, emphasizing answering based on the text, allowing "I don't know" responses, emphasizing conservative judgment to reduce false classifications, ensuring consistency among questions, using clear formatting, and stressing key points. Importantly, we require answers to major questions to include confidence scores (0-100), concise reasoning, and all relevant text excerpts for transparency, logical consistency, and hallucination mitigation. The provision of relevant text and reasoning further improves transparency. By verifying whether the policy texts contain these keywords, we can directly mitigate hallucinations. This approach results in fewer incorrect policy citations and allows another LLM to critique responses for ongoing improvement.

A.1.3 Overview of the Processes.

We conduct two major rounds of LLM queries using both the titles and the full texts of policy documents, with each round containing several rounds of refinement. The first round covers all policy documents in our sample. The second round focuses on a subset tentatively identified as industrial policies, which we detail in the next section. We separated the queries into two rounds because the performance of the LLM model deteriorates with excessively long questions, despite the strong performance of the model in processing long texts.

In the first major round, our queries address several key aspects: whether the policy document constitutes an industrial policy; the issuing government; the list of targeted industries; policy tone; policy objectives; the list and classification of policy tools; measures of policy strength; the conditionality of the policy; references to other governments; and citations of other policies. The second major round of queries delves into additional dimensions and repeats some first-round questions to enhance the output quality: policy issuance dates and effective periods; the list of targeted industries; policy tone; organizational arrangement for policy implementation, including the role of political incentives, experimentation and learning, adaptation to local conditions, and organizational support in policy implementation; and continued references to other governments and citations of other policies. Appendix B provides a detailed list of the main components of the prompts we query the LLM.

A.1.4 Multi-round Refinement with Additional LLM Analysis.

Furthermore, based on recent findings (Li et al., 2024), we integrate orthogonal judgments from additional LLMs or have one LLM critically review the outputs of another for several key questions, in addition to the two major rounds of LLM queries, aiming to minimize hallucination and improve output quality. These key questions include the determination of industry policy, the list of relevant industries, and the classification of policy implementation tools and organizational arrangements. Such integration and critical reviews have been shown to substantially improve performance across applications.

Determination of Industrial Policy. For an additional round of LLM evaluation regarding industrial policies, we choose policies that surpass a basic threshold derived from the initial LLM evaluations. Specifically, we consider policies where either (1) the LLM industry score is present and above 30, or (2)

[21] In artificial intelligence (AI) and machine learning, temperature is a parameter for adjusting the output of large language models (LLMs). Temperature controls the randomness of text that is generated by LLMs during inference.

the LLM industry score is absent, but the LLM's reasoning doesn't clearly suggest that the text is unrelated to industrial policy. We adopt this threshold cautiously to ensure nearly all possible industrial policies are included. In this subsequent LLM analysis, we use a more advanced yet expensive LLM model, `Gemini-1.5-pro-exp-0827`, developed by Google DeepMind, which surpasses `Gemini-1.5-flash-001` in knowledge and ability to handle complex tasks. To manage costs, we only provide it with the policy titles, which are most indicative of the policies' nature.

In this prompt, we reiterate the definition of industrial policies and provide the LLM with counterexamples, instructing the LLM to utilize all relevant data to arrive at the final decision. To discover the main categories of counterexamples, we have an LLM summarize titles based on the definition of industrial policies using a 10,000 random sample from the selected policies after the first LLM round. We then manually refine these summaries. This two-step method guarantees a comprehensive summary of all common non-industrial-policy documents, thereby minimizing misclassification. We take a cautious stance, focusing only on obvious counterexamples to mitigate the chances of misclassification in the subsequent LLM round.

Finally, we combine the LLM score from the first round, which evaluates the full text of the document, with the LLM score from the second round, which focuses on the document title, to classify whether a document constitutes an industrial policy. Specifically, our criteria are: 1) the first-round score regarding "the document is an industrial policy" must exceed 60 (out of 100); 2) the second-round score regarding "the document is definitely not an industrial policy" should be under 60 (out of 100); and 3) the score difference must be greater than 15. That is, we only tag a policy document as industrial policy if the LLM assesses it strongly suggesting industrial policy status based on the full text, and the LLM does not assess it to be strongly indicative of non-industrial policy based on the document title; moreover, the positive indication based on the full text needs to exceed the negative indication based on the title by a set margin.[22] Through these procedures, we identify 768,387 industrial policies out of a total of 3.1 million policy documents.

Extracting Industries and Matching to Standardized Industry Codes. To enhance the accuracy of identifying industries from policy texts, we have implemented measures to improve LLM output. Specifically, we extract industry-related text in two major rounds of LLM queries using full policy documents. Although the responses largely overlap, our sample shows that policy texts typically mention multiple industries—some as main targets and others briefly. To distinguish between these, an additional LLM reviews the text lists from both rounds alongside the complete policy texts, adding any missed relevant information, removing errors due to hallucinations, and crucially, identifying main policy targets from briefly mentioned industries. This mainly helps select main policy targets, with minimal additions and deletions. Finally, we provide the refined list of relevant text regarding main policy targets and a standardized list of four-digit industry codes and names to the advanced LLM model, `Gemini-1.5-pro-exp-0827`. This model, acting as an expert on Chinese industries, maps extracted industry names to standardized codes and names.

Our methodology is multistep: The first three LLM queries extract relevant text lists linked to main policy targets, and the third and fourth rounds of query, using a more advanced model, map these to standardized industry classifications. We avoid direct mapping of full policy texts to complete industry lists due to cost and potential performance issues with long texts. Including the full industry name list with policy texts would notably increase input length, impairing LLM effectiveness. The extracted text allows for further refinement.

[22] In principle, we can adjust the thresholds in the two rounds. The current thresholds are based on our experiments using random samples of documents through several iterations.

Policy Tools. The extraction and categorization of policy tools is pivotal. We organize these tools into 20 categories, including an "other" category for uncategorized tools. To improve precision, we provide explicit definitions, as detailed in Section B. The initial LLM prompt involves two question sets: one for extracting policy tool keywords and another for classifying text into relevant categories. In the second set of questions, keywords aren't limited to one category to prevent false negatives. In particular, we ask LLM to match the keywords one by one to each category. Separation of extraction and classification links each identified tool to specific text to avoid hallucinations from direct model queries. In contrast, directly prompting the language model to determine whether a policy contains specific policy tools may lead the model to hallucinate and produce false positive responses. This issue may arise even with the above careful prompt engineering techniques.

A manual review of initial outputs shows high extraction accuracy, though some misclassifications occur due to non-exclusive category assignments. A second round of LLM query refines results by re-evaluating with a focus on definitions and counterexamples. We acquire the counterexamples following the same procedures in the determination of industrial policies—we have an LLM summarize outcomes using a 10,000 random sample from the first LLM round, and then manually refine these summaries. We feed the extracted relevant texts as well as LLM outputs from the first two rounds, along with the definitions with counterexamples to the third round of LLM query for the model to conduct self-critique; and feed the first three rounds of responses to an orthogonal model `GPT 4o-mini` for one more round of refinement. The final classification merges initial and 3 rounds of reviewed scores, providing refined categorization.

Figure A1 summarizes our discussions above and illustrates the broad roadmap of our LLM approach to decode China's industry policy from government policy documents.

[Figure A1 about here]

A.2 Verification of LLM Outputs

In this appendix, we describe the results of several verification checks that we use to evaluate the quality of the LLM outputs.

A.2.1 Word Cloud and Manual Checks

We first present two important verifications of key variables in our LLM-analyzed data set. First, we present evidence from manual checks and a set of word cloud results for the determination of industrial policies, the policy-targeted sector(s), and the industrial policy tools deployed. The results provide the most straightforward check of the validity of the LLM analysis.

Determination of industrial policies Table A1 presents a random selection of 10 titles from texts identified as industrial policies and 10 titles from those not identified as such. Several observations emerge from this comparison. First, nearly all texts identified as industrial policies are arguably so, while those not identified generally pertain to social affairs, letters of opinion, specific regulatory approvals for individual firms, or personnel promotions. Second, industrial policies are diverse and concern different industries or economic activities at various stages of policy implementation. Some policies directly target specific industries like tourism, while others focus on economic activities such as entrepreneurship or science and technology. In addition, some involve the pilot stages of programs, whereas others pertain to the implementation or audit of fund usage. Third, there are usually no specific keywords that readily identify a policy as an industrial policy. Conversely, even when titles contain keywords seemingly related to industrial policies, such as "company,"

"assets," "supporting funds," or "credit union," the texts may not actually pertain to industrial policy upon closer examination. Taken together, these observations highlight the advantages of using Large Language Models (LLMs), which understand jargon and contextual meanings within texts. LLMs holistically evaluate sentences, paragraphs, and entire documents to reach conclusions, rather than focusing solely on individual words.

[Table A1 about here]

To gain an overview, we present the word cloud based on keywords in titles of industrial policies vs. non-industrial policies in Figure A2. Although, as previously discussed, not all industrial policies contain informative keywords and some non-industrial policies may include relevant ones, we still observe distinct patterns in keyword usage between the two categories. Terms such as "service sector," "advanced technology," "environment," "science and technology," "firm," "industry," "planning," "project," "digitalization," "execution plans," "fund," "special fund," and "subsidy" appear more frequently in industrial policies. In contrast, terms associated with individuals, administration, public affairs, or announcement—such as "Chinese People's Political Consultative Conference," "reply," "meeting," "comrade," "appointment," "dismissal," "proposal," "social insurance," "announcement," and "education bureau"—are more likely to appear in the titles of non-industrial policies. A set of terms such as "committee," "office," "notice," "opinion," and "projects" that can be linked to both industrial and non-industrial policies equally appear in both sets of word clouds. Overall, the distinct pattern in these keywords helps confirm that LLM models systematically identify industrial policies from other policies.

[Figure A2 about here]

Notably, by incorporating an additional-round LLM analysis, we significantly enhance the quality of our policy classification. Specifically, when determining industrial policies based solely on first-round scores, a threshold of 90 serves as a reasonable cutoff that balances the trade-off between false positives and false negatives. Under our final criteria—which integrate scores from both rounds—317,714 policies with first-round LLM scores equal to or greater than 90 are filtered out, while 179,703 policies with first-round scores below 90 are retained. Considering that our final sample comprises 768,387 industrial policies, these adjustments have a substantial impact. Most of the filtered-out policies pertain to public affairs, administrative matters, replies to public inquiries, proposals by the Chinese People's Political Consultative Conference, law enforcement, public services, and information disclosure. In contrast, the majority of the filtered-in policies are arguably industrial policies, though they may focus on specific targets or represent relatively weak forms of industrial policy, such as promotional activities or labor policies aimed at the R&D sector. Table A2 presents random samples of the policies that were filtered out and filtered in according to the final criteria compared with setting the threshold at 90 based on first-round LLM industry score.

[Table A2 about here]

Target industries To assess the validity of the LLMs' mapping of policies to target industry codes, we generate word clouds based on extracted industry names and the full policy texts for two standardized industry codes identified by the LLM: electric vehicles and electricity production. The electric vehicle sector is a well-known target of industrial policy, and the electricity production sector includes solar energy, another prominent target of industrial policy.

Examining the word cloud based on extracted industry names for electric vehicles as depicted in Figure A3 Panels A and B, the most frequent keywords—"vehicle," "electric vehicle," "new energy," "clean

technology," "electric-powered," "energy saving," "battery charging," "green," "power battery," "manufacturing," "equipment," "materials," "enterprises," "industry," and "product"—are all closely related to the electric vehicle industry. Interestingly, since policies often target multiple industries with shared characteristics, high-tech sectors such as shipping and pharmaceuticals also appear in the word cloud. Turning to the word cloud based on full policy texts, in addition to the aforementioned keywords, terms such as "limited liability company," "project," "technology," "critical," "science and technology," "innovation," "supporting," "encourage," "promote," and "execution" frequently occur. This indicates that the policies may target specific firms, establish projects to support the sector, and that the electric vehicle industry is perceived as a high-tech sector with an emphasis on innovation and technology.

[Figure A3 about here]

A similar pattern emerges from the word cloud on electricity production as shown in Figure A3 Panels C and D. In the word cloud based on extracted industry names, frequent keywords include "electricity," "energy," "energy saving," "industry," "manufacturing," "new energy," "firm," "critical," "project," "clean," "green," and "coal." This reflects that the industry code of electricity production encompasses traditional production method using coal. Similar to the case of the electric vehicle, industries that utilize electricity, such as agriculture, are also mentioned. In the word cloud based on full policy texts, again, similar to the case of electric vehicle, we see additional keywords related to policy implementation and firms.

Overall, these results confirm the validity of the LLM approach in extracting industry names from policy texts and mapping these industry names to standardized industry codes.

Policy tools Figure A4 presents the word clouds based on a list of policy tool keywords extracted regarding four types of policy tools: tax incentives, fiscal subsidies, credit policies, and industrial funds, respectively. They are commonly used, and importantly, they all involve some form of monetary or funding support, so it is possible that the LLM may confuse one with another. An examination of the word clouds reveals that each category of policy is associated with terminology that aptly reflects the characteristics of its specific policy type. For tax incentive policies, terms such as "tax," "exemption," "deduction," "income tax," "fee," "preferential policies," "business tax," and "value-added tax" appear with high frequency. Similarly, fiscal subsidy policies prominently feature words like "fund," "subsidy," "provide," "fiscal," "project," "support," "government," "agriculture," "industry," "encouragement," "arrangement," and "science and technology." In the realm of credit policies, the most frequent terms include "loan," "credit," "financial institution," "interest subsidy," "guarantee," "pledge," "guidance," "funds," "bank," and "financial." Policies pertaining to industrial funds are characterized by recurrent terms such as "fund," "industrial," "venture investment," "set up," "startup investment," "shareholding," "capital," "innovation," "specific fund," and "projects." Collectively, these lexical patterns observed across the different policy categories corroborate the validity of the LLM's classification results regarding industry tools.

[Figure A4 about here]

By incorporating the additional rounds of LLM analysis, we significantly enhance the quality of our policy classification. In particular, the number of unique policy tool categories in each document decreases from 6.37 with one round of LLM analysis to 4.42 afterwards. Table A3 presents the common types of misclassifications on four major policy tool categories that the second-round LLM analysis excludes from the first-round results. Each of the four categories involves certain forms of funding support so that it is easy for the LLM to confuse one with the other; for example, fiscal subsidies may be confused with tax

incentives, industrial funds, or credit policies. Some first-round misclassifications arise because some policy tools may be commonly used in the corresponding activities of the policy text, but they are not explicitly mentioned. For example, it is likely that "Encourage the promotion and application of new technologies" is achieved through tax incentives, but as tax incentive is not explicitly mentioned, it is excluded by the additional-round LLM.

[Table A3 about here]

A.2.2 Verification from the Time Series

An alternative approach to validate our findings is to examine the temporal distribution of industrial policies. To this end, we focus on policies that affect the electric vehicle (EV) industry.

Two waves of supportive national policies were introduced in 2009 and 2013. The first, known as the "Interim Measures for the Management of Financial Incentive Funds for Technological Innovation in the New Energy Vehicle Industry" or "Ten Cities, Thousand Vehicles," was launched in 2009 to encourage electric vehicle adoption in cities. This policy, along with local government initiatives, acted as a pilot to test the viability of the EV industry. Based on these pilots, the central government concluded that the policies were generally effective and the EV industry showed promise, leading to recommendations for continued but stronger support. As a result, the second key policy, titled "Notice on Continuing the Promotion and Application of New Energy Vehicles," was released in 2013. Rapid policy support led to significant rent seeking. From 2016 to 2018, government financial backing was strategically reduced to curb this issue, shifting the focus from subsidies to promoting a market-driven growth model.[23] After a three-year slowing down in supportive policy, the new policy offered continued support while planning to phase out fiscal subsidies by 2020, pushing companies to enhance self-reliance without relying on continued policy assistance.

Figure A10A presents the fraction of industrial policies related to electric vehicles out of all identified industrial policies over time. We observe a sharp rise in the number of policies since 2009, aligning with the 2009 national initiative, as numerous localities began rolling out pilot subsidies for electric vehicles. An even sharper increase follows after 2013, corresponding with the second major national policy. The momentum stabilized after 2016, aligning with the national strategic reduction in fiscal subsidy. Moreover, consistent with the phase-out of subsidies by 2020, we see a marked increase in national government policies just before 2020 and a sharp decline thereafter. Interestingly, provincial and city-level policies stepped up slightly after 2020. Overall, the trends in policies identified from the data closely mirror the policymaking process described by the leading policymaker, supporting the validity of our empirical results.

Appendix B Major Components of LLM Prompts

This section presents the summary of the definitions we provide to the LLMs for the major classification tasks.

B.1 Stated Goal

1. **Promote strategic industry**: Policies aimed at fostering sectors deemed critical for national or regional development.
2. **Promote emerging industry**: Supporting nascent sectors like EV or artificial intelligence (AI) that are expected to drive future economic growth.

[23] https://www.gov.cn/xinwen/2016-01/23/content_5035573.htm

3. **Promote pillar industry**: Supporting the traditional sectors that form the backbone of the economy, such as steel, machinery, or textiles.
4. **Support traditional advantageous industry**: Supporting traditional industries established advantages. that are important for the local economy with
5. **Upgrade traditional industry**: Encouraging traditional sectors to modernize and adopt new technologies in order to remain competitive in a globalized market.
6. **Support green industry**: Supporting sectors involved in environmental sustainability, renewable energy, and green technologies to foster a low-carbon economy.
7. **Promote innovation**: Policies aimed at developing technologies that address critical technological challenges, such as"choke point" technologies or frontier tech advancements.
8. **Promote new technology adoption**: Encouraging firms to adopt cutting-edge technologies, such as digitization or artificial intelligence, to enhance productivity and competitiveness.
9. **Stimulate employment**: Industrial policies that focus on stimulating labor-intensive industries, mitigating unemployment, and providing a safety net for displaced workers.
10. **Promote social equity and welfare**: Policies that prioritize inclusive development, poverty alleviation, rural revitalization, or improving social welfare.
11. **Urbanization**: Supporting policies that promote urban development, integrate rural and urban areas, and manage the challenges associated with rapid urbanization.

B.2 Industrial Policy Tool

1. **Tax incentives:** Implementing industrial policies through tax reductions, tax credits, accelerated depreciation, etc.
2. **Fiscal subsidies:** The government subsidizes companies or industries through direct fiscal subsidies, in-kind grants, production subsidies, etc., as a form of industrial policy.
3. **Credit and finance:** The government guides financial institutions to provide low-interest loans, interest subsidies, loan guarantees, development bank loans, policy-directed lending by financial institutions, and priority bank credit to industries or enterprises as a form of industrial policy.
4. **Equity support:** State-owned enterprises, governments, local government financing platforms, etc., support the development of specific industries or enterprises through equity injections.
5. **Industrial fund:** The government establishes industrial funds or government investment funds to provide venture capital support, invest through industrial funds, guide government investments, prioritize government venture capital support in specific industries.
6. **Trade protection:** The government implements industrial policies through export bans, export licensing requirements, export quotas, export taxes, export subsidies, export tax incentives, export credit agencies, export-related non-tariff measures, other export incentives, import bans, import licensing requirements, import monitoring, import quotas, import tariffs, import-related non-tariff measures, internal taxes on imports, technical barriers to imports, technical matching or technology transfer requirements related to imports, anti-dumping measures, countervailing measures, and other import incentives. Similar policies may also be used to target enterprises from other regions rather than foreign enterprises.

7. **Investment policy:** The government attracts and guides foreign investment by imposing entry restrictions on foreign or out-of-region enterprises, shareholding ratio restrictions on foreign or out-of-region enterprises, preferential policies for foreign or out-of-region investments; establishing specialized investment promotion agencies to provide investment consulting, project matchmaking, policy interpretation, and other services.
8. **Technology R&D and adoption:** The government encourages enterprises to conduct R&D through R&D subsidies, funding coordination, technology innovation funds, additional deductions for R&D expenses, support for technology transfer, industry-university-research cooperation alliances, establishment or support of public research institutions, etc.; or encourages enterprises to adopt specific technologies or high-tech through subsidies, funding coordination, tax and fee reductions, and other measures.
9. **Public procurement:** The government supports the development of domestic enterprises by prioritizing procurement of goods and services from the industry by the government or state-owned enterprises, procurement quotas, etc.
10. **Labor policy:** The government provides human resource assurance for industrial development through technical training programs, providing training subsidies, establishing or supporting training institutions, establishing skills committees, labor market access policies, migration policies and quotas, talent attraction supporting policies (such as priority household registration for talents, preferential housing for talents), wage tax credits, talent subsidies, etc.
11. **Infrastructure investment:** The government provides basic support for industrial development by constructing transportation infrastructure, information and communication technology infrastructure, energy infrastructure, and other areas.
12. **Promote industrial cluster:** The government promotes industrial agglomeration and development by constructing economic zones or industrial parks, supporting innovation clusters, industrial chain collaboration, etc. Additionally, the government encourages the development of key nodes in the industrial chain, provides upstream and downstream industry support, or simultaneously encourages the joint input and development of upstream and downstream industries to drive the entire industry.
13. **Environmental policy:** The government guides enterprises toward green development through environmental protection subsidies, energy conservation and emission reduction policies, green credit, etc.
14. **Market access and regulation:** The government regulates market competition behavior by formulating product standards, industry access standards, implementing anti-monopoly policies, and maintaining fair competition policies.
15. **Consumer subsidy:** The government encourages industrial development through product subsidies, consumer stimulus subsidies, licensing support, and other measures. For example, but not limited to, encouraging trade-in of old products for new ones, promoting products in rural areas, issuing consumption vouchers, and providing supportive policies for electric vehicle licensing.
16. **Preferential land supply:** The government ensures land use needs for industrial development through preferential allocation of industrial land, land purchase discounts, rent subsidies, assisting enterprises in land consolidation, provision of utilities (such as water, power, roads), etc.
17. **Localization policy:** The government promotes local supply chains and economic development by requiring enterprises to employ local labor, operate locally, procure locally, etc.

18. **Promote entrepreneurship:** The government fosters emerging industries and innovative enterprises by building entrepreneurial service platforms such as incubators and accelerators, providing startups with facilities, funding, consulting, training, and other support.
19. **Industrial promotion:** The government provides display platforms for specific industries or enterprises by organizing or supporting trade exhibitions, product promotion events, etc., to expand product visibility and promote market development.
20. **Improving business environment:** The government reduces institutional transaction costs for enterprises by streamlining administration and delegating power, combining deregulation with enhanced services, optimizing approval processes; or by building a service-oriented government, enhancing the awareness and efficiency of government services for enterprises; or by improving the legal environment, increasing judicial efficiency, providing a fair business environment for enterprises, reducing transaction costs for enterprises; or by improving intellectual property protection mechanisms to enhance enterprises' motivation for R&D.

B.3 Conditionality

1. **Firm scale:** Policies specify the size of enterprises eligible for support, which can include conditions such as asset size, registered capital, number of employees, profitability, or tax contributions.
2. **Firm age:** Policies are designed to either support startups or target enterprises that have been operating for a specified number of years.
3. **R&D investment or specific technology:** Policies require that firms have a certain level of R&D investment or possess specific technological qualifications (e.g., patents, R&D platforms, or high-tech capabilities).
4. **Firm location:** Policies that are region-specific, meaning that only firms operating in a particular geographical area, paying taxes locally, or sourcing materials regionally are eligible.
5. **Firm ownership type:** Policies requiring certain types of ownership. For instance, some policies favor state-owned enterprises (SOEs), while others may prioritize domestic private firms, foreign-invested enterprises, or specific ownership structures.
6. **Specific firms:** Policies explicitly support a limited number of designated enterprises. These policies often name the supported firms directly.

B.4 Organizational Arrangements of Policy Implementation

B.4.1 Incentive Scheme

1. **KPI:** Using the assessment results of policy implementation as a crucial basis for evaluating lower-level governments, departments, and their leaders. These outcomes are critical criteria for officials' selection, promotion, and disciplinary actions. Notably, the assessment subjects focus on the performance of governments, departments, and officials, excluding enterprises or market entities.
2. **Supervision and inspection:** Conducting special supervision, regular inspection, organizing on-site examination, requiring lower-level governments and departments to regularly report work progress to higher-level departments during policy implementation.
3. **Positive incentives:** Commending and promoting exemplary models, providing financial rewards, giving preferential treatment in evaluations and selections, prioritizing support in project approvals, fund allocation, and linking with land quota allocations, etc.

4. **Negative incentive:** Specifying responsible units or individuals, issuing public criticisms to entities with unsatisfactory assessment results, establishing an accountability system, strictly holding accountable those who are ineffective in their work, severely punishing those with acts of dereliction of duty or misconduct, and implementing a "one-vote veto" system, etc.
5. **Setting target:** Setting clear and specific targets with indicators and numerical values, developing timeline, creating work logs, and breaking down and delegate tasks.

B.4.2 Experimentation and Learning

1. **Pilot & demonstration:** Selecting specific regions or units to carry out pilot projects, encourage pioneering and experimentation, supporting the demonstration bases, etc.
2. **Requiring local implementation:** Delegating approval authority to lower-level governments or relevant departments, granting decision-making discretion, encouraging them to formulate implementation plans independently, and encouraging their adjustments based on actual situations, etc.
3. **Encouraging innovation:** Encouraging lower-level governments and departments to engage in policy implementation innovation, allowing them to independently innovate in the process of policy execution, and promoting the development of innovative mechanisms and models.
4. **Allowing mistake:** During policy implementation, establishing fault tolerance mechanisms for lower-level governments and departments, exempting relevant responsibilities, showing leniency towards mistakes, and excluding such errors from negative evaluations or performance assessments.
5. **Learning experience:** Encouraging or requiring lower-level governments and departments to summarize their practices in policy implementation, promoting successful cases and innovative achievements, and forming replicable and scalable models, etc.

B.4.3 Local Condition

1. **Local adaptation:** Highlighting the importance of independently crafting policies tailored to the particular needs and circumstances of a locality, or devising support plans and detailed implementation strategies for higher-level government policies by aligning them with local conditions.
2. **Local input advantage:** Leveraging the region's advantages in factors such as geographical location, natural resources, labor force, capital, technology, business environment, and supply chain advantages to formulate policies and develop related industries.
3. **Local industry advantage:** Leveraging the existing local industrial base, prominent specialized sectors, key fields, and leading enterprises to promote related industries or establish regional industrial clusters.
4. **Differentiation:** Emphasizing the development of region-specific policies, offering targeted guidance, enacting enterprise-specific strategies, and devising tailored support policies based on the distinct circumstances of various industries.

B.4.4 Organizational Support

1. **Funding support:** Providing specific financial support for policy implementation, such as allocating special funds, increasing fiscal expenditure, broadening financing channels, securing matching funds, enhancing fund management, etc.

2. **Strict enforcement:** Highlighting the crucial need for policy execution, utilizing obligatory actions to mandate enforcement by subordinate government levels.
3. **Facilitating coordination:** Defining organizational arrangement (for example, forming specialized committees, drafting specific rules and processes, assigning departmental roles, proposing task requirements, highlighting focus areas, prioritizing efforts, planning work, assigning tasks, and scheduling workflows) along with establishing coordination and execution frameworks (such as integrated planning, creating inter-departmental coordination systems, regular meetings, joint inspections, information-sharing infrastructures, and collaborative problem-solving for crucial and complex issues).
4. **Institutional support:** Offering supportive policies by easing approval processes and enhancing key infrastructure; boosting capabilities through professional training and seminars for government staff to build a stronger talent pool; and advancing institutional development through system reforms and standardized management.

B.5 Intergovernmental Relationships

1. Implementing higher-level policies.
2. Citing higher-level laws and policies as the basis.
3. Executing according to higher-level requirements.
4. Forwarding higher-level documents.
5. Responding to higher-level Initiatives.
6. Receiving Guidance from Higher Levels.
7. Reporting for approval or authorization.
8. Designating Pilot Programs.
9. Promoting policy experiences.
10. Policy applicability.
11. Commendation and rewards.
12. Criticism and punishment.

B.6 Reasons for Policy Citations

1. Forwarding. For instance, forwarding or distributing a particular document to relevant governments or departments.
2. Implementation. Such as implementing according to the spirit, provisions, or regulations of a certain document.
3. Basis for Policy. For example, formulating detailed implementation rules based on specific laws or regulations.
4. Policy Continuation or Abolition. For instance, continuing to execute a certain policy, taking further measures based on it, or if this policy document replaces a previous policy, leading to its abolition.
5. Policy Coordination. Such as linking or aligning with certain policies.

Appendix C Illustration with Key Industries

With the rich information extracted from industrial policy documents, as discussed above, we can gain a more comprehensive understanding of industrial policies in key sectors. To illustrate this, we present a comparative analysis of three of China's most hotly discussed industries in recent years: semiconductors (chips), electric vehicles (EVs), and solar energy. These industries have been at the forefront of China's industrial policy agenda, and their development provides a clear example of how targeted policies, coordination between government levels, and local adaptation can shape industry growth and innovation. By analyzing the differences in policy objectives, implementation tools, and government-level coordination across these industries, we gain insights into how China's industrial policy framework is adapted to foster the growth of strategic, emerging, and technologically advanced sectors.

Time trend Figure A10 shows the time trends of industrial policy activity for these three key industries—the solid line plots the share of policies at the central level, long-dashed line for provincial level, short dashed line for city level, and the dotted line for the share of policies with supportive tones. The share of policies highlights the differences in how policy interest has evolved across government levels—central, provincial, and city—over time. In the semiconductor industry, local governments (especially at the city level) have been more active in recent years, with a noticeable boom in policy attention starting from 2018. This suggests a growing local-level enthusiasm to follow the national directives to boost domestic chip production amid global supply chain concerns. The EV industry saw policy attention emerge later compared to the other two industries, with local governments leading the charge. The city and provincial governments became especially active in recent years, reflecting the strong regional push to foster the EV industry as part of local economic development strategies, supported by both environmental goals and technological innovation. The solar energy industry was initially led by local initiative from 2005; however, there has been fluctuations in local government enthusiasm over time. Amid the global financial crisis around 2008, the solar industry saw a boost in policy support on a global scale, resulting in a considerable decline in solar energy product prices. This led to a substantial reshuffling of the previous profitable companies in the domestic market[24]. Interestingly, during this period, while policy interest in the solar energy sector began to wane at the city level, it remained robust at the provincial level and even experienced some growth at the national level. The central government continues to emphasize solar energy as a key national priority, whereas local governments have become more responsive to market conditions and shifted their focus toward other sectors. Similarly, between 2017 and 2020, as the sector gets more crowded, profit margins shrink, local interest wanes, and central support strengthens. Although supportive policies are prevalent across the three sectors, trends differ: the chip industry sees a rise in support, the EV and solar sectors experience slight declines with some volatility, and the solar sector shows a more significant drop—consistent with the industry's overcapacity issue in recent years.

[Figure A10 about here]

Geographical distribution Figure A11 depicts the geographical distribution of policy support for the chip, EV , and solar energy industries in China, and it shows clear regional patterns, reflecting the influence of local economic conditions and regional development strategies. The chip industry is concentrated in more developed regions, particularly in coastal provinces with higher levels of human capital and better access to technology and financing. This skew toward wealthier regions aligns with the high-tech and capital-intensive

[24] https://36kr.com/p/2230777297628807

nature of semiconductor manufacturing, which requires significant resources and expertise. Support for EV policies is more evenly spread across inland areas, traditionally known for manufacturing. This suggests an initiative to develop new industrial centers, with the EV sector playing a key role in their industrial modernization. These efforts may be fueled by both local and national strategies to strengthen industrial growth. The solar energy industry is most prominent in northwestern regions, which are well-suited for solar energy production due to favorable geographic conditions, including high levels of solar radiation and vast plain land with low occupancy rate and low development cost. The regional skew reflects China's broader strategy to utilize the country's diverse geography for renewable energy development, with northwestern provinces emerging as key players in solar energy production.

[Figure A11 about here]

Implementation tools We then examine the industrial policy tools utilized in each one of the three sectors. Table A7 compares the use of each policy tool and reveals different patterns of support for these industries.

[Table A7 about here]

As with the general feature, fiscal and financial support plays a significant role in all three industries, with the highest emphasis on fiscal subsidies, especially for chips (61%) and EVs (64%). Tax incentives are also widely used, with chips receiving the most support (37%), followed by EVs (30%). This is likely consistent with the wide tax deduction policies in R&D-related activities. Credit and finance support is more evenly distributed across the three industries.

Entry and regulation tools are also heavily utilized across the industries, with industrial funds being particularly prominent in the chip industry (20%)— consistent with several big waves of national industrial fund in the chip industry.[25] Market access and regulation is more emphasized in the EV and solar energy industries (37% and 33%, respectively), suggesting active local engagement in attracting new investment in these sectors. Improving the business environment is similarly prioritized across the three, with the highest focus on chips and EV (32%).

Input policy tools like technology R&D and adoption are critical, especially in the chip industry (57%), reflecting the research-intensive nature of semiconductor development. Labor policy is most emphasized in the chip sector (41%), indicating the importance of attracting and retaining talent in this high-tech industry. Infrastructure investment is prioritized for EVs (41%), suggesting that the physical infrastructure needed for EV adoption, such as charging stations, is a key focus.

Demand-side tools, especially consumer subsidies and industrial promotion, are more prominent in the EV industry, with consumer subsidies (22%) and government procurement (25%) playing a significant role in boosting EV adoption. This reflects the growing consumer market for EVs and the need for demand-side support to encourage widespread use.

Supply chain support, particularly through promoting industrial clusters, is most evident in the chip industry and EV industry (39%), highlighting the importance of clustering and the complication of supply chain management in fostering innovation in the semiconductor sector. The emphasis on localization policy is evenly distributed across the three industries.

[25] https://36kr.com/p/2796503120703107

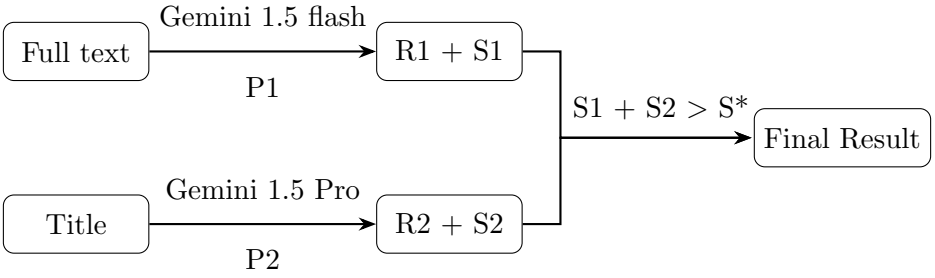
Organizational Arrangements of Policy Implementation Lastly, Table A8 compares key aspects of organizational arrangement for the three industries. Comparing the three industries reveals that the chip sector exhibits greater flexibility in institutional arrangements: Solar energy (25%) and EVs (25%) employ negative incentives like penalties more often than chips (21%). Conversely, positive incentives are equally utilized across all industries. The chip sector focuses less on specific targets (53% versus 59% in EVs and 60% in solar) and strict enforcement (32% versus 39% in EVs and 42% in solar) and is less commonly included in local KPIs (13% versus 19% in EVs and 18% in solar). This could be due to the chip industry's status as an emerging, technology-intensive sector with higher uncertainties, necessitating flexible policies to foster local engagement.

Upon examining the three sectors in contrast to the overall statistics as reported in 8, we find that institutional structures allow for greater flexibility to bolster policy innovation and local initiatives. This is reflected in higher positive incentives (16% for chip, 17% for EV, 16% for solar vs. 13% overall) and reduced negative incentives (21% for chip, 25% for EV, 25% for solar vs. 30% overall). There is increased emphasis on pilot projects (32% for chip, 40% for EV, 38% for solar vs. 21% overall) and innovation (9% for chip, 12% for EV, 9% for solar vs. 6% overall), a greater allowance for mistakes (5% for chip, 4% for EV, 3% for solar vs. 2% overall), higher leverage local strengths (28% for chip, 28% for EV, 24% for solar vs. 12% overall), and are less focused on strict enforcement (32% for chip, 39% for EV, 42% for solar vs. 45% overall). These sectors also receive notably higher funding (62% for chip, 64% for EV, 59% for solar vs. 43% overall) and institutional backing (43% for chip, 47% for EV, 41% for solar vs. 36% overall).

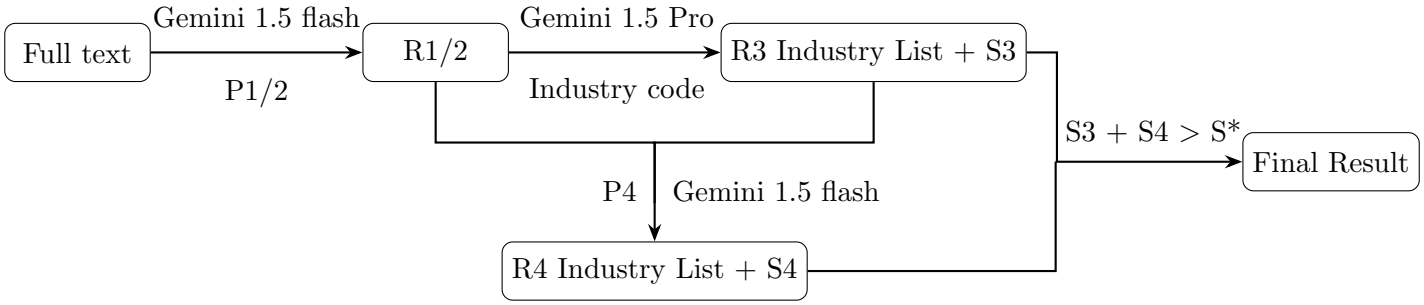
[Table A8 about here]

Appendix D Appendix Figures and Tables

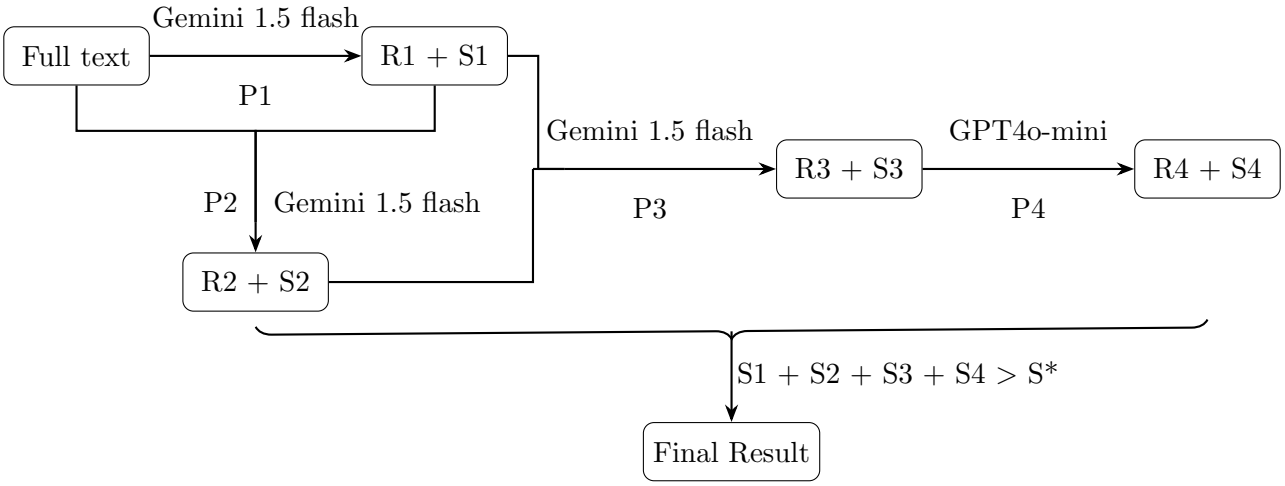
Figure A1: LLM Implementation Roadmap



(A) Determine Industrial Policy



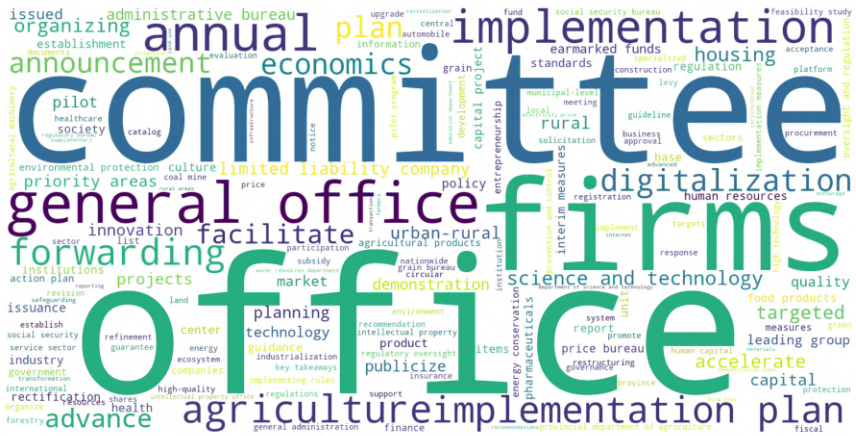
(B) Policy-targeted Industry



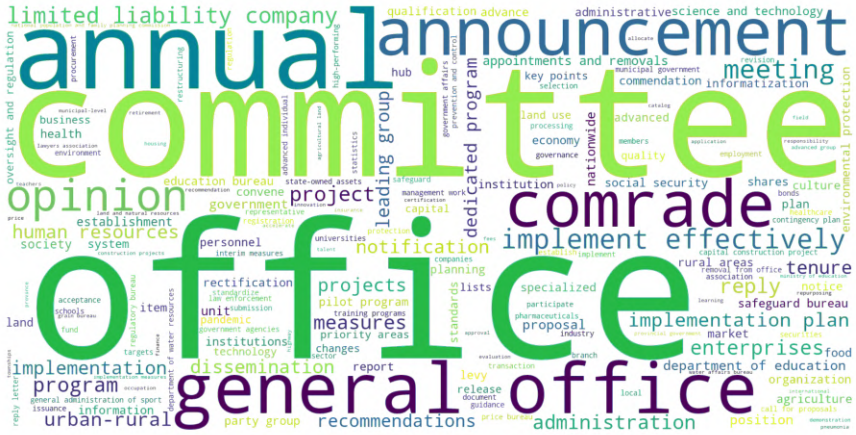
(C) Policy Tool and Implementation

Notes: This figure presents the roadmap for LLM implementation. *Pn* represents the prompt for the n-th round of LLM inquiry. Rn represents the LLM response from the n-th round, including the extracted relevant text; Sn represents the confidence score of the n-th round LLM response. S^* represents the threshold score for final determination, which can be adjusted flexibly.

Figure A2: Word Cloud: Industrial Policy vs. Non-Industrial Policy

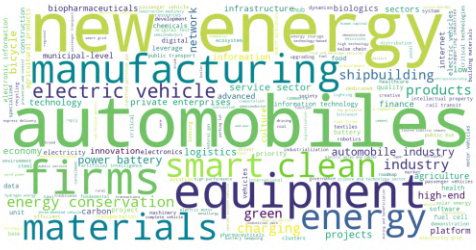


(A) Industrial Policy

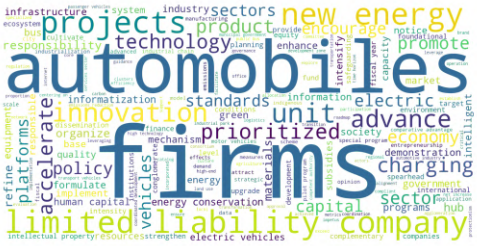


(B) Non-Industrial Policy

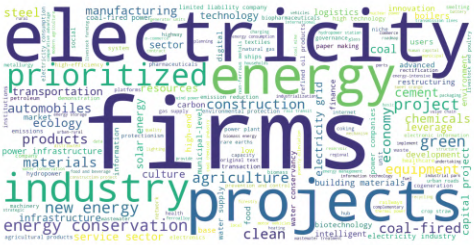
Figure A3: Word Cloud: Electric Vehicle and Electricity Production



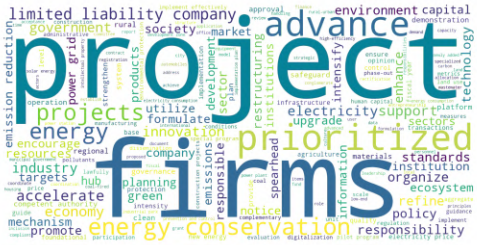
(A) Electric Vehicle (Title)



(B) Electric Vehicle (Full Text)



(C) Electricity Production (Title)



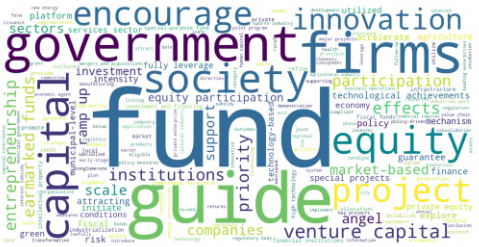
(D) Electricity Production (Full Text)

Figure A4: Word Cloud: Industrial Policy Tools

(A) Tax Incentive

(B) Fiscal Subsidy

(C) Credit and Finance



(D) Industrial Fund

Figure A5: Evolution of the Share of Industrial Policies with Supportive Tones, by Government Level

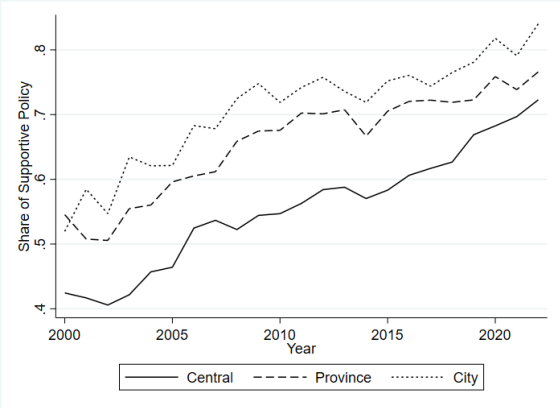
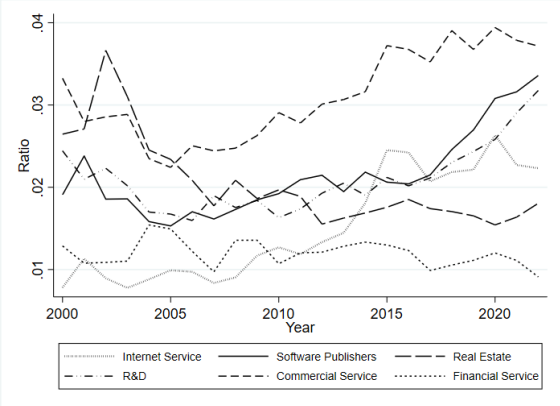
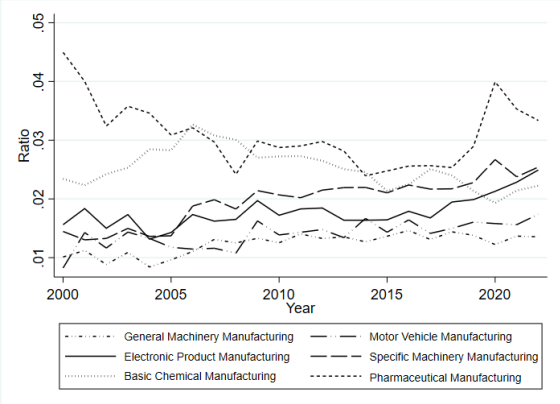


Figure A6: Time Trend of Policy-Targeted Industries in Manufacturing and Service Sectors (Breakdown)



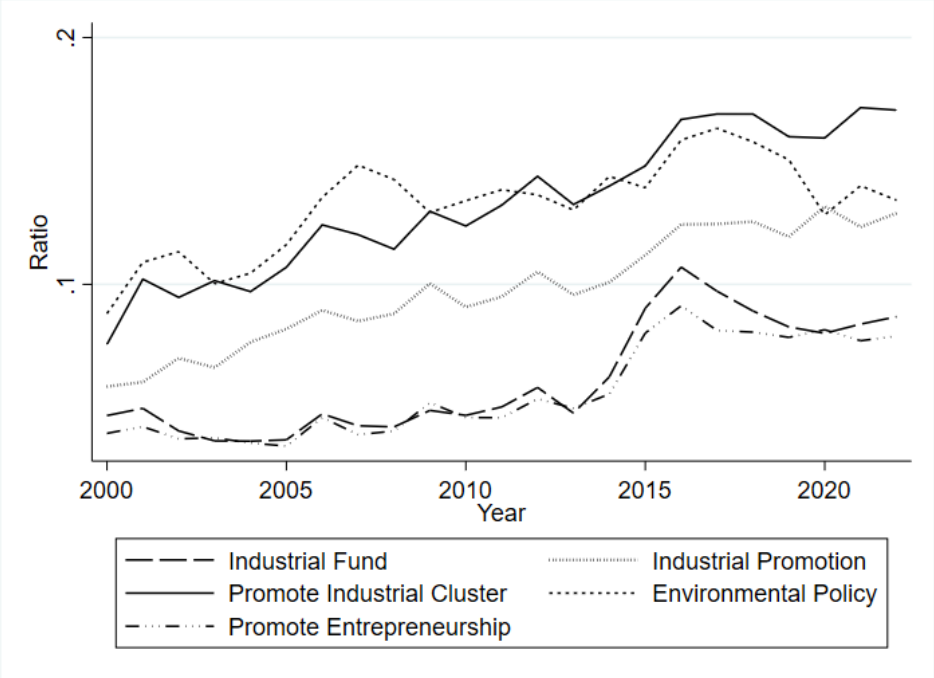
(A) Manufacturing Sector



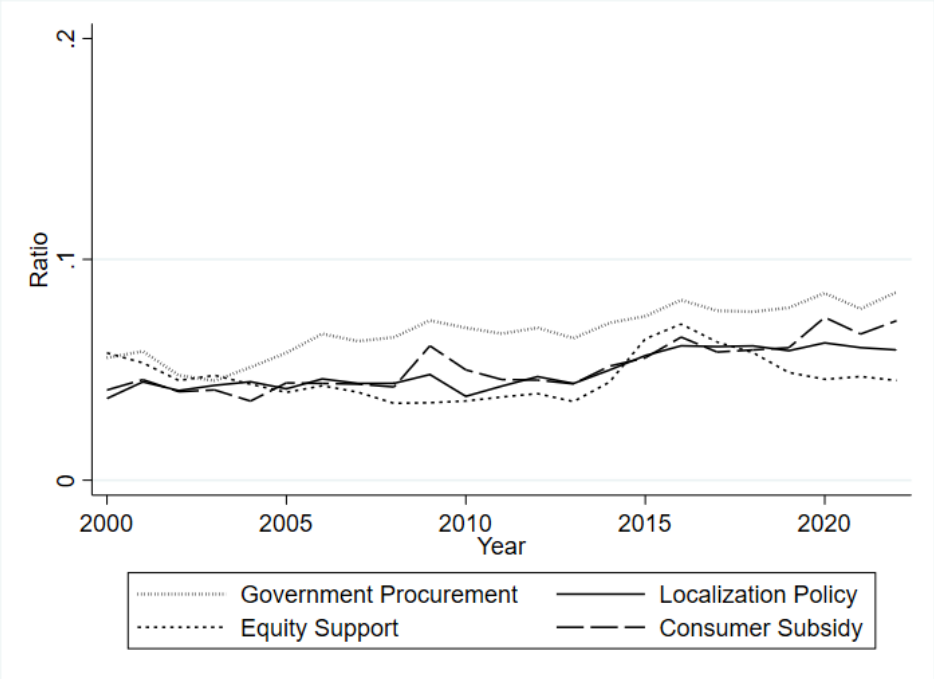
(B) Service Sector

Notes: This figure presents the trends of a breakdown of the targeted industry at 3-digit level for the most frequently targeted within the manufacturing and the service sector. The vertical axis represents the proportion of policies that target each sector within each government level.

Figure A7: Time Trend of Industrial Policy Tool (New)

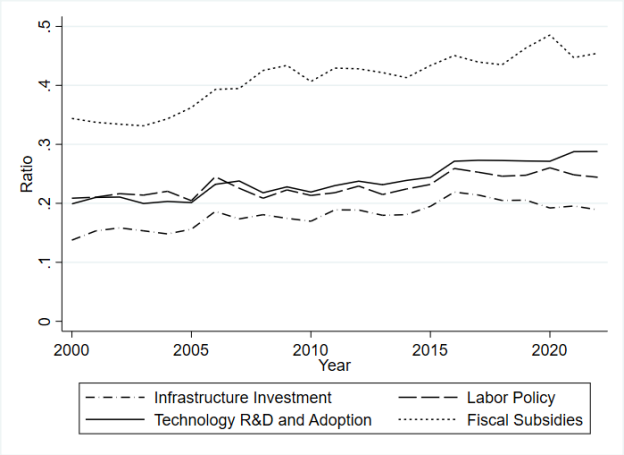


(A) New (Rapid Growth)

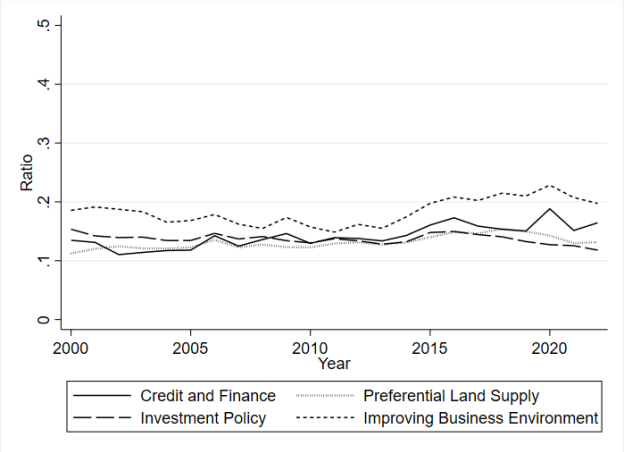


(B) New (Moderate Growth)

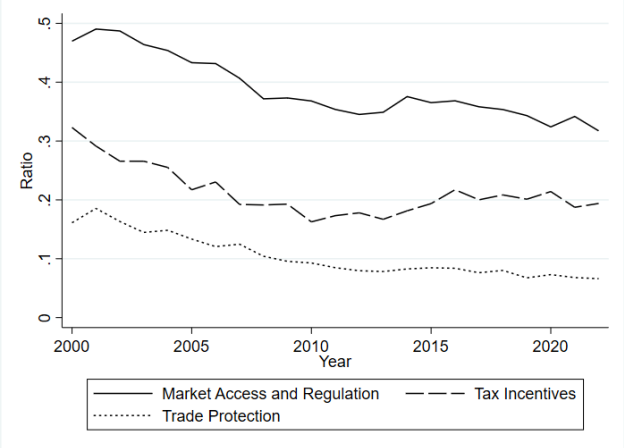
Figure A8: Time Trend of Industrial Policy Tool (Traditional)



(A) Traditional (Strong)

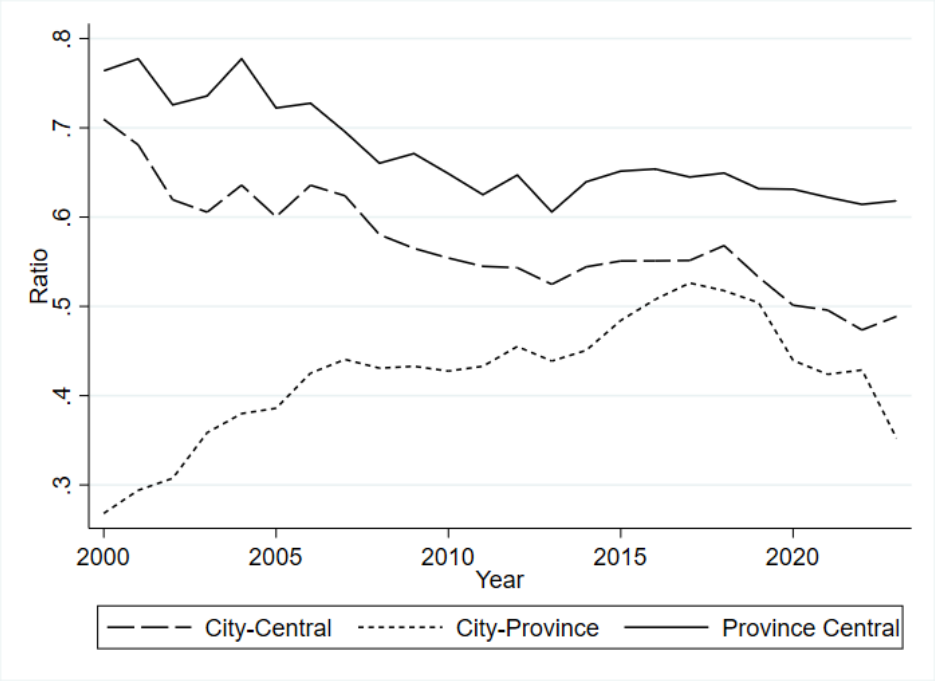


(B) Traditional (Stable)

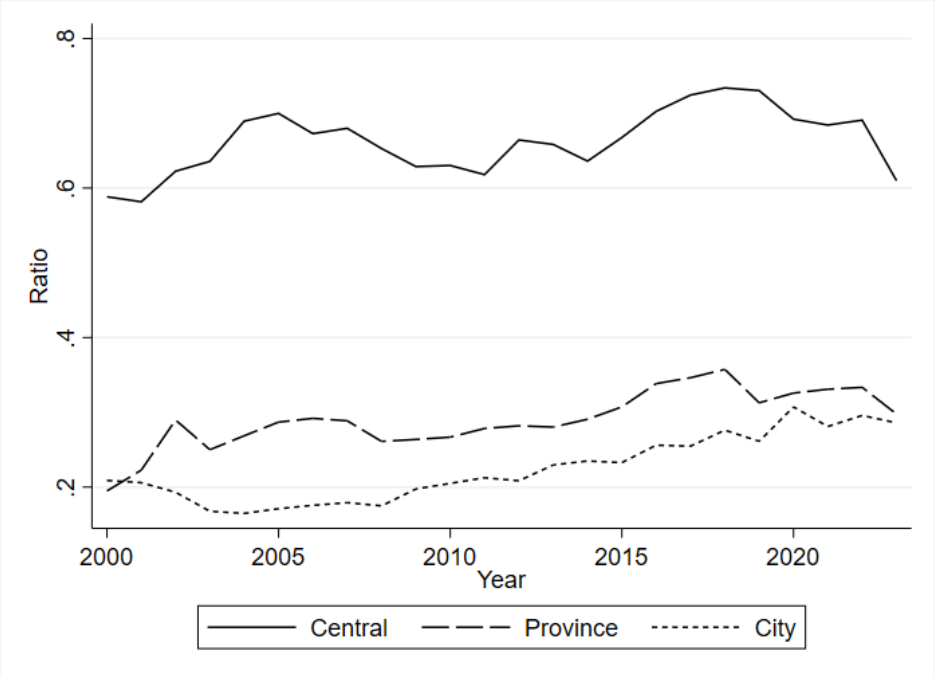


(C) Traditional (Declining)

Figure A9: Time Trend of Policy Citation



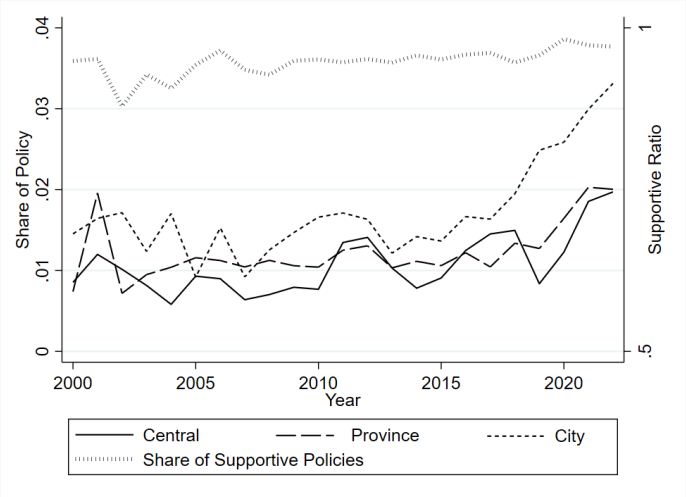
(A) Upper-level Government



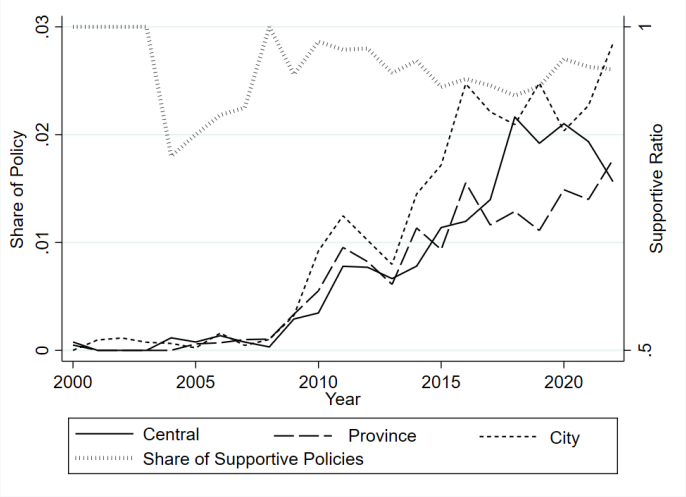
(B) Same-level Government

Notes: This figure plots the policy citation rate over time for industrial policies at different levels of government. Panel A plots the share of policy documents citing upper-level government. The green line represents the share of city-level policies citing provincial government policies, the red line for provincial policies citing central government policies, and the blue line for city-level policies citing central government policies. Panel B plots the within-government level citation rate over time, representing the share of policies that cite government entities at the same level.

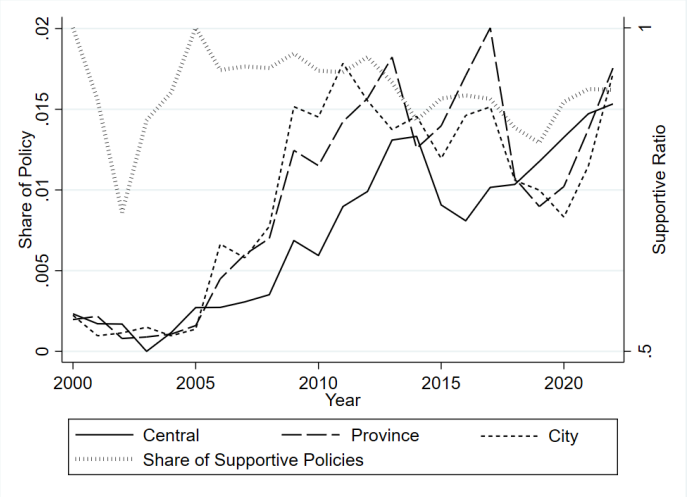
Figure A10: Time Trend of Chip, EV, and Solar Industrial Policy



(A) Chip

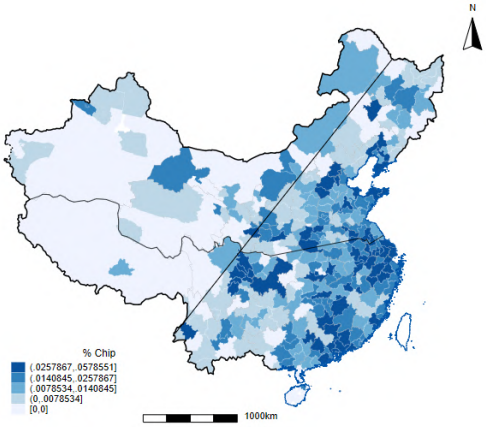


(B) EV

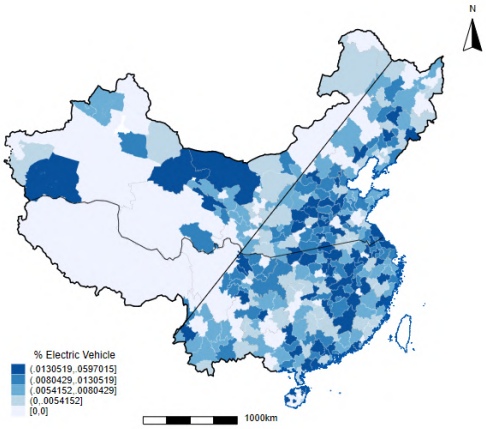


(C) Solar

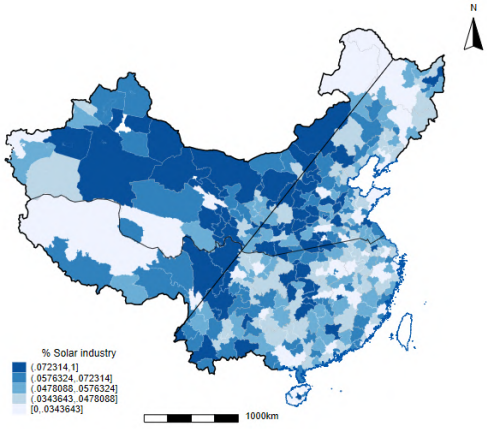
Figure A11: Geographic Distribution of Chip, EV, and Solar Industrial Policy



(A) Chip



(B) EV



(C) Solar

Table A1: Random Sample of Industrial Policies and non-Industrial Policies

Panel A: Random titles of industrial policies
Several Opinions of the Guangdong Provincial People's Government on Implementing the State Council's Opinions on Accelerating the Development of the Tourism Industry
Audit Pre-announcement (2014) No. 2: Pre-announcement by Zhoushan City Audit Bureau on Conducting a Special Audit Investigation into the Effectiveness of Municipal Financial Subsidies to Enterprises in 2013
Notice of the Jiangsu Provincial Development and Reform Commission on Organizing the Final Evaluation of China Clean Development Mechanism Fund Grant Projects
Notice of the Chongqing Poverty Alleviation and Development Office on Issues Related to Conducting 2015 Entrepreneurship Training for Leaders in Poverty Alleviation
Notice of the China Banking and Insurance Regulatory Commission, the National Intellectual Property Administration, and the National Copyright Administration on Further Strengthening Intellectual Property Pledge Financing Work
Notice of the Fuzhou Municipal People's Government on Forwarding the "Approval of the Fujian Provincial People's Government on the Implementation Plan for the Ninth Batch of Agricultural Land Conversion and Land Acquisition in Fuzhou City in 2015"
Notice of the Office of the People's Government of Changping District, Beijing Municipality, on Issuing the "Implementation Plan for Further Deepening Key Tasks in Streamlining Administration and Decentralization, Combining Delegation with Regulation, and Optimizing Services Reform in Changping District"
Notice of the Henan Provincial Department of Science and Technology on Applications for the First Batch of Academician Workstations in Henan Province in 2011
Notice of the National Energy Administration on Issuing the Administrative Measures for Completion Acceptance of Coal Mine Construction Projects
Notice of the Office of the People's Government of Anqing City on Supporting Large Commercial Circulation Enterprises in Carrying Out Pilot Projects for the Construction of Modern Rural Circulation Systems
Panel B: Random titles of non-industrial policies
Letter of the Anhui Provincial Department of Science and Technology on Collaborative Opinions Regarding Proposal No. 0090 at the Fifth Session of the 12th Provincial CPPCC
Notice of the Teacher Resources Division of the Jiangxi Provincial Department of Education on Holding Training Classes on Teacher Ethics and Conduct for Rural Compulsory Education Primary and Secondary School Teachers Across the Province
Notice of the Party Group of the Wuxi Water Resources Bureau on Issuing the "Specific Measures of the Wuxi Water Resources Bureau on Further Improving Work Style"
Reply Letter from the Municipal Civil Affairs Bureau on the Scope Change of Ronghe Garden and Yuanyong Commercial Plaza
Announcement of the Fujian Provincial Department of Justice on Matters Regarding On-site Verification for Applications for Legal Professional Qualifications
Approval of the China Securities Regulatory Commission on Approving Hubei Kailuo Technology Co., Ltd. to Issue Shares to Shanghai Zhuofan Investment Co., Ltd. and Others to Purchase Assets and Raise Supporting Funds

Announcement of the Haikou Municipal Bureau of Land and Resources on Restoring the Legal Effectiveness of State-owned Land Certificate No. 609 (2003) in Laocheng

Notice of the Taizhou Municipal People's Government on the Removal of Comrade He Rusong from His Position

Approval of the China Banking Regulatory Commission on the Entrusted Application by Jiangxi Rural Credit Union for a Unified Government Procurement Card Brand

Approval of the China Insurance Regulatory Commission on the Head of the Finance Department of Taiping Life Insurance Co., Ltd.

Table A2: Random Samples of Filtered-out and Filtered-in Policies

Panel A: Titles of Filtered-out Policies
Notice from the General Office of the People's Government of Guigang City on Issuing the 2012 Geological Disaster Prevention Plan of Guigang City
Administrative Measures for Township Ferry Terminals in Suzhou City (2004 Revision)
Response from the Anhui Provincial Department of Education to Proposal No. 468 of the First Session of the 13th Provincial People's Congress
Second Announcement of Bidding for Survey and Design of the Three-Year Improvement Project for County and Township Highways in Dinghai District
Response from the Anhui Provincial Department of Housing and Urban-Rural Development to Proposal No. 0674 of the First Session of the 11th Provincial Committee of the Chinese People's Political Consultative Conference
Notice from the People's Government of Ziyuan County on Issuing the Compensation Measures for Expropriation of Houses on State-Owned Land for the Shantytown Redevelopment Project in Ziyuan County
Letter from the China Banking Regulatory Commission Approving the Adjustment of Registered Capital and Change of Shareholders of Defutai Bank Co., Ltd.
Notice from the General Office of the Guangzhou Municipal People's Government Forwarding the Guiding Opinions of the Municipal Information Office on Informatization Work in Districts and County-Level Cities
Response from the Ministry of Human Resources and Social Security to Proposal No. 3848 (Social Management Category No. 377) of the Fifth Session of the 12th National Committee of the Chinese People's Political Consultative Conference
Notice from the Ningbo Municipal Bureau of Housing and Urban-Rural Development on Publishing the List of the First Batch of Pilot Villages for Village Design Implementation in 2021
Panel B: Titles of Filtered-in Policies
Notice from the Xiamen Municipal Bureau of Commerce on Issuing the "Implementation Plan for Creating Green Shopping Malls in Xiamen City (2020-2022)"
Notice from the Hunan Provincial Department of Science and Technology on Publishing the Results of the Regular Evaluation of Provincial Key Laboratories and Engineering Technology Research Centers in 2022

Notice from the Beijing Municipal Commission of Housing and Urban-Rural Development on Commending the "Beijing Civilized and Safe Construction Sites" and "Beijing Civilized and Safe Model Construction Sites" of the Construction System in 2011

Notice from the Anhui Provincial Department of Science and Technology on Focusing on Connecting and Encouraging the Development of a Batch of Provincial Science and Technology Innovation Think Tanks

Notice from the Shandong Provincial Department of Agriculture and Rural Affairs on Conducting Investigation and Rectification Work on the Operation and Maintenance Management of High-Standard Farmland

Notice on Issuing the "Opinions of the Chengdu Municipal Economic Commission on Regulating the Development of Industrial Industry Associations (Trial Implementation)" by the Chengdu Municipal Economic Commission

Notice from the Fujian Provincial Economic and Information Commission, Fujian Provincial Department of Finance, Fujian Provincial State Taxation Bureau, and Fujian Provincial Local Taxation Bureau on Recognizing Products Produced by Longyan Zhongfu Wood Industry Co., Ltd. and 29 Other Enterprises as Resource Comprehensive Utilization Products

Notice from the Jiangsu Provincial Department of Science and Technology on Organizing the Application for Jiangsu Provincial High-Tech Products in 2017

Interpretation of the "Opinions on Accelerating the Cultivation and Development of Agricultural Innovators"

Notice from the General Office of the People's Government of Fuzhou City on Issuing Measures for Promoting Commercial Consumption Growth in Response to the Epidemic

Table A3: Common Types of Misclassifications on Four Example Policy Tools

Policy Tool	Type of excluded misclassifications	Examples of keywords from first-round LLM
Tax Incentives	Fiscal Support and Subsidies	Introduce local fiscal subsidy policies for the transfer of yak industry grasslands
Tax Incentives	Mention of Taxes, Rewards/Penalties, or Numbers without Incentives	Enterprises must legally pay taxes and register their business operations
Tax Incentives	Fee and Price Adjustments	Implement a paid usage system for plastic shopping bags
Tax Incentives	General Policy Support	Encourage the promotion and application of new technologies
Fiscal Subsidies	Tax incentives and Fee Reductions	Enjoy equal treatment with state-owned enterprises in taxes, loans, and business startups
Fiscal Subsidies	General Policy Support	Promote the construction of the Yangpu railway branch project
Fiscal Subsidies	Administrative Management and Procedures	Organize the collection, use, and management of water resource fees
Fiscal Subsidies	Enterprise Self-Funding	Expenses are self-funded
Credit Policies	Fiscal Support and Subsidies	Apply for central special funds
Credit Policies	Market Mechanisms and Industry Operations	Encourage venture capital investments
Credit Policies	Infrastructure Construction	Support enterprises investing in infrastructure construction
Industrial Funds	Fiscal Support and Subsidies	Use 60% of local retention from new taxes to subsidize construction in new dairy farms
Industrial Funds	Other Financial Support	Support enterprises in issuing bonds for financing
Industrial Funds	Infrastructure and Public Project Construction	Increase funding efforts for park construction
Industrial Funds	Enterprise Policies and Support	Encourage enterprises to invest overseas, focusing on cooperation with ASEAN
Industrial Funds	Project-Related Support	Funding support for excellent entrepreneurial projects

Table A4: Top Title Keywords and Full Text Keywords from LLM-identified Industrial Policies

Top Title Keywords	Top Full Text Keywords
Industry	Industry Chain
Special Funds	Leading Enterprises
Small and Medium-sized Enterprises	Key Enterprises
Service Industry	Technology-Based
High-Tech	Supply Chain
Support	Leading Industries
Modern	Core Technology
Cultivate	Sales Revenue
High Quality	Incubator
Industrialization	Main Business
Transformation	Venture Capital
Research and Development	Deep Processing
Encourage	Logistics and Distribution
Manufacturing	Value-Added
Power Generation	Advanced Processing
Integration	Famous Brands
E-commerce	High Yield
Logistics	High Performance
Breeding	Brand-Name Products
Mechanization	Market Share

Table A5: Random Sample of Documents with Keywords

Title	Informative keyword in title
Excellent Case No. 5 of the "Ten Projects of Ten Million Square Meters"—Qingdao M6 Virtual Reality Industrial Park	Industrial Park
Letter from the Shaanxi Provincial Bureau of Surveying, Mapping, and Geoinformation on Holding a Training Course on Technical Standards for Surveying and Mapping Geoinformation, Promotion and Application of the 2000 National Geodetic Coordinate System, and Quality Management	Promotion and Application
Notice from the Fuzhou Real Estate Registration and Transaction Center on Continuing Volunteer Service Activities for Civilized Guidance at Metro Stations to Support Urban Construction and Management Work	Guidance
Notice from the Department of Agriculture and Animal Husbandry of Inner Mongolia Autonomous Region on Conducting Research on the Work of Stabilizing Live Pigs Production and Supply in 2020 and the Implementation of Related Policies	Live Pigs
Notice from the Price Bureau of Guangxi Zhuang Autonomous Region on the Feed-in Electricity Price Tariff for Tianhu Hydropower Station	Electricity Price
Notice from the Department of Finance of Inner Mongolia Autonomous Region on Allocating Interest Subsidies for Long-term Policy Loans for Relocation-based Poverty Alleviation and Income from Special Construction Funds in the First Quarter of 2018	Interest Subsidies
Notice from the General Office of Hulunbuir Municipal People's Government on Adjusting the Leading Group for the Resource Utilization of Livestock and Poultry Manure in Hulunbuir City	Manure
Announcement from the Shanghai Stock Exchange on Approving China Galaxy Securities Co., Ltd. to Provide Primary Liquidity Services for the E Fund CSI Biopharmaceuticals ETF	Biopharmaceuticals
Notice from the Audit Division of Jiangsu Provincial Department of Education on Holding a Symposium on Auditing the Construction Project of Advantageous Disciplines in Provincial Universities	Advantageous
Forwarding the Notice from the Ideological and Political Work Department of the Ministry of Education on Cultivating and Building High-Quality Projects in University Ideological and Political Work by the Hunan Provincial Department of Education	Cultivating
Title	**Informative keyword in full text**
Notice of the Xinxiang Municipal People's Government on Issuing the "Interim Measures for Commissioned Loans of Personal Housing Provident Fund in Xinxiang City"	Collateral

Notice of the General Office of Yinchuan Municipal People's Government on Issuing the "Guiding Opinions on the Standards and Cost Estimation for the Separation, Transfer, Maintenance, and Renovation of 'Three Supplies and One Industry' in Staff Family Areas of Yinchuan State-owned Enterprises"	Copper Rod
Notice of the Office of the People's Government of Wuchuan Gelao and Miao Autonomous County on Issuing the "Trial Measures for the Management and Use of Special Funds and Materials for Civil Affairs in Wuchuan Autonomous County"	Agricultural Subsidy Network
Reply from the Hangzhou Municipal Bureau of Agriculture and Rural Affairs Regarding Recommendation No. 13 from Yuhang District at the First Session of the 14th Municipal People's Congress	Market Share
Notice of the Office of Binzhou Municipal People's Government on Issuing the "Regulations on Functional Allocation, Internal Institutions, and Staffing of Binzhou Municipal Construction Bureau"	Introduction of Technology
Approval for the Adjustment of Construction Tasks for the Xiangshuiba Reservoir Project in Jinping County	Multiple Cropping Index
Notice of the Deyang Municipal People's Government on Announcing the Projects for the 12th Exhibition of Philosophical and Social Science Research Achievements in Deyang City	Chain Method
Letter from the Department of Agriculture of Guangxi Zhuang Autonomous Region Submitting Collaborative Handling Opinions on Proposal No. 20160090 at the Fourth Session of the 11th CPPCC of the Autonomous Region	Business Model
Notice of the Guangzhou Municipal Science and Technology Bureau on Issuing the Application Guide for the 2023 Municipal Innovation Environment Plan—Science Popularization Theme (Science Popularization Brand Projects)	Yanhe
Implementation Opinions of the Sichuan Bureau of Surveying and Mapping on Strengthening Surveying and Mapping Culture Construction	High Added Value

Note: This table lists ten randomly selected policy titles that contain at least one title or full-text keyword with informativeness greater than or equal to 70%, along with the corresponding keywords.

Table A6: Random Sample of LLM-identified Industrial Policies without Keywords

Title of Identified Industrial Policies without Informative Title Keyword
Opinion from the Hebei Provincial Development and Reform Commission on Renewing the Approval of Pesticide Formulation Production Qualifications for Enterprises such as Xingtai Haiyuan Agrochemical Technology Co., Ltd.
Notice from the General Office of Jieyang Municipal People's Government on Establishing the Jieyang PM2.5 Pollution Control Working Group
Announcement from the Guangxi Zhuang Autonomous Region Market Supervision Administration on Issuing the "Catalogue of Electric Bicycles Approved for Registration in Guangxi Zhuang Autonomous Region" (23rd Batch)

Notice from the Dongguan Municipal Real Estate Administration Bureau on Carrying Out the Application for Evaluation of the "2011 Dongguan City Model Residential Communities (Buildings, Industrial Areas) in Property Management" Projects
Announcement No. 13 of 2018 by the National Energy Administration—Approval of 15 Industry Standards Including the "Welding Procedure Qualification Code for Conventional Islands of Nuclear Power Plants"
Notice from the State Administration of Radio and Television on Issuing the Measures for Rewarding Technical Quality of Radio and Television Programs
Notice from the Department of Housing and Urban-Rural Development of Hubei Province on Organizing the Application for the 2010 Hubei Provincial Construction Industry New Technology Application Demonstration Projects
Notice from the Department of Transportation of Guizhou Province on Issuing the "14th Five-Year Plan for Energy Conservation and Environmental Protection Development in Transportation of Guizhou Province"
Notice from the Jiangsu Provincial Sports Bureau on Issuing the "Jiangsu Province Fitness Club Promotion Plan (2016–2020)"
Notice from the Department of Finance of Henan Province on Issuing the Budget of Project Funds for the 2013 International Cooperation Plan
Title of Identified Industrial Policies without Informative Full Text Keyword
Notice of the Suzhou Municipal Agriculture Committee on Summarizing 2015 Work in Leisure and Sightseeing Agriculture and Analyzing Typical Cases
Notice from the Zhejiang Provincial Department of Land and Resources Forwarding the "Notice from the General Office of the Ministry of Land and Resources on Further Promoting Matters Related to Establishing Model Counties (Cities) for Economical and Intensive Use of Land and Resources"
Notice of the Ningbo Municipal Government on Carrying Out Work to Integrate Mineral Resource Development
Notice of the Office of Xiufeng District People's Government of Guilin City on Issuing the Implementation Plan for the "Xiufeng Residents Tour Xiufeng" Activity in Xiufeng District, Guilin City
Notice of the Guangdong Provincial Price Bureau and the Guangdong Provincial Department of Transportation on Issuing the "Measures for Motor Vehicle Maintenance Price Management by the Guangdong Provincial Price Bureau and Department of Transportation"
Notice of the Departments of Science and Technology, Education, Finance, and Human Resources and Social Security of Fujian Province on Issuing the "Seven Measures for Further Promoting the Implementation of Policies on Innovative Development of Universities and Provincial Research Institutes"
Notice of the Guizhou Provincial Price Bureau and the Guizhou Provincial Department of Construction on Establishing Standards for Transaction Fees of Non-Residential Real Estate in Our Province
Approval on Recognizing Ningbo Galaxy Pile Co., Ltd. and Cixi City Building Components Co., Ltd. as Resource Comprehensive Utilization Enterprises
Decision of the General Office of the Fujian Provincial People's Government on Amending the "Notice Forwarded by the General Office of the Fujian Provincial People's Government on Several Measures by the Provincial Administration for Industry and Commerce to Promote Trademark Brand Work" (2018)
Circular on Commending the Model Enterprises and Advanced Enterprises in Energy Conservation and Emission Reduction in Ningbo City for the Year 2008

Table A7: Industrial Policy Tool: Chip, EV, and Solar Energy

	Chip	EV	Solar
Fiscal and Financial			
Credit and Finance	0.28	0.29	0.27
Tax Incentives	0.37	0.30	0.23
Equity Support	0.13	0.10	0.08
Fiscal Subsidies	0.61	0.64	0.61
Entry and Competition			
Industrial Fund	0.20	0.16	0.10
Promote Entrepreneurship	0.22	0.17	0.12
Market Access and Regulation	0.24	0.37	0.33
Investment Policy	0.26	0.26	0.26
Improving Business Environment	0.32	0.32	0.25
Trade Protection	0.06	0.05	0.05
Input			
Labor Policy	0.41	0.35	0.29
Preferential Land Supply	0.19	0.24	0.22
Infrastructure Investment	0.25	0.41	0.35
Technology R&D and Adoption	0.57	0.50	0.43
Environmental Policy	0.19	0.30	0.32
Demand-based			
Consumer subsidy	0.08	0.22	0.10
Industrial Promotion	0.22	0.25	0.19
Government Procurement	0.14	0.17	0.12
Supply Chain			
Promote Industrial Cluster	0.39	0.39	0.33
Localization Policy	0.07	0.08	0.06
Observations	11310	15513	23844

Note: This table presents the distribution of industrial policy tool usage for three key industries— EV, solar, and semiconductor. Each cell reports the proportion of the government documents within each industry that employs the tool.

Table A8: Organizational Arrangements: Chip, EV, and Solar Energy

	Chip	EV	Energy
Incentive Scheme			
Setting Target	0.53	0.59	0.60
KPI	0.13	0.19	0.18
Supervision & Inspection	0.31	0.40	0.44
Positive Incentive	0.16	0.17	0.16
Negative Incentive	0.21	0.25	0.25
Experimentation and learning			
Pilot &Demonstration	0.32	0.40	0.38
Encouraging Innovation	0.09	0.12	0.09
Requiring Local Implementation	0.12	0.16	0.13
Allowing Mistake	0.05	0.04	0.03
Learning Experience	0.14	0.17	0.15
Local Condition			
Local Industry Advantage	0.28	0.28	0.24
Local Input Advantage	0.13	0.14	0.20
Differentiation	0.23	0.24	0.20
Local Adaptation	0.37	0.45	0.47
Organizational Support			
Strict Enforcement	0.32	0.39	0.42
Facilitating Coordination	0.68	0.73	0.69
Funding Support	0.62	0.64	0.59
Institutional Support	0.43	0.47	0.41
Observations	11310	15513	23844

Note: This table presents the distribution of the methods of policy implementation and organizational details for three key industries—EV, solar, and semiconductor. Each cell reports the proportion of the government documents within each industry that specifies the implementation method.

Table A9: Summary Statistics for Administrative Tax Data

	Obs.	Mean	SD	Min	Max
Subsidy (thousand RMB)	3,760,219	349.61	1,936.95	0	20,727
Tax deduction rate	6,080,762	0.07	0.23	0	1
Leverage (equity/asset)	7,027,631	0.66	0.64	-0.07	6.27
1(Long term debt)	7,239,822	0.07	0.26	0	1
Revenue (thousand RMB)	7,012,096	121,218.30	447,571	1	4,508,752
Output value (thousand RMB)	5,361,358	84,565.97	323,932.10	0	3,262,687
Value-added (thousand RMB)	4,499,134	15,736.92	67,731.90	-11257	688,829
Asset (thousand RMB)	7,198,993	258,310.20	1,227,122	0	13,100,000
Input value (thousand RMB)	4,391,739	70,188.01	273,349.80	0	2,766,013
Employment	7,170,999	111.66	302.69	1	2797
TFP (revenue-based)	5,957,269	6.07	1.73	-19.92	18.02
TFP (output-based)	3,705,065	5.90	1.78	-21.83	28.10
TFP (value-added-based)	2,523,638	3.21	1.98	-28.81	16.10

Note: The table reports the summary statistics for key variables based on the administrative tax data. The unit of observation is firm-year level, and the sample coverage is 2008-2020.

Table A10: Summary Statistics for City Politicians

	Secretary	Mayor
	Mean	Mean
Age	52.62	50.63
Gender (Male=1, Female=0)	0.96	0.94
Tenure	2.72	2.58
Change (Yes=1, No=0)	0.28	0.29
Connection with provincial governor (Yes=1, No=0)	0.11	0.11
Connection with provincial secretary (Yes=1, No=0)	0.09	0.06

Note: The table reports the summary statistics for key variables based on the city-level policitian data. The unit of observation is city-year level, and the sample coverage is 2001-2020.

Table A11: Sector Choice and Regional Advantage

	(1)	(2)	(3)	(4)
l.RCA^n	0.00198***			0.000946***
	(0.000181)			(0.000153)
l.RCA^p		0.0147***		0.0127***
		(0.000708)		(0.000698)
l.AA			3.439***	2.520***
			(0.193)	(0.206)
Constant	-2.133***	-2.150***	-2.142***	-2.157***
	(0.00408)	(0.00419)	(0.00412)	(0.00422)
Industry-by-year FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
Observations	1,234,115	1,234,115	1,234,115	1,234,115

Note: This table reports the PPML estimation results of Equation (4). The dependent variable is a dummy variable indicating whether each city implements an industrial policy targeting each industry in each year. The unit of observation is 4-digit industry-city-year level, and the sample coverage is 2001-2020. Standard errors are clustered at the city-by-industry level. ***, **, and * represent significance at 1%, 5%, and 10%, respectively.