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The industrialisation paradox: Public investment and labour market fragmentation in Setif, Algeria

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Abstract---This article investigates the structural disconnect between public industrial investment and labour market outcomes in Setif Wilaya, Algeria's second most populous province and a nationally designated industrial hub. Drawing on the 2025 Wilaya Statistical Yearbook — an official primary source comprising detailed commune-level data for all 60 communes — and complementary data from the ONS (National Office of Statistics), World Bank, IMF, and UNCTAD, we document a profound accountability paradox: despite the public allocation of 2,455 hectares of serviced industrial land across four industrial zones and 39 activity zones, the aggregate enterprise activation rate barely exceeds 40%, while the flagship Ouled Saber zone records a critical activation rate of 3.7%. Concurrently, the wilaya posts a mean unemployment rate of 19.1%, with extreme inter-communal dispersion ranging from 10.0% to 40.4%, and a job-offer coverage ratio of only 26.4%. We construct a Labour Market Stress Index (LMSI) for all 60 communes, integrating unemployment, activity rates, female labour exclusion, and job-offer coverage into a single composite indicator, and deploy spatial descriptive analysis and location quotients to characterise the geography of labour market failure. Our findings reveal that industrial land allocation, governed by top-down central planning without rigorous demand-side assessment or ex-post monitoring, has failed to generate commensurate employment or fiscal returns — constituting a structural accountability failure in public investment management of direct relevance to fiscal governance, tax policy, and territorial development scholarship. We formulate four evidence-based policy recommendations centred on mandatory ex-ante investment appraisal, performance-linked monitoring, fiscal revenue decentralisation, and open public data provision.
Keywords---industrial zones, labour market, unemployment, public investment accountability, spatial disparities, fiscal governance, Setif.

1. Introduction

Setif is Algeria's second most populous wilaya, recording a total population of 2,126,917 inhabitants in 2024 (DPSB, 2025), and has been systematically positioned by successive national industrial policies as one of the country's premier economic poles beyond the Algiers metropolitan area. Substantial public resources have been channelled into its industrial infrastructure: four fully serviced industrial zones (ZI) covering 1,369 hectares, thirty-nine activity zones (ZA) totalling a further 1,086 hectares, a modern road network, and a rail corridor connecting the wilaya to the Mediterranean ports of Bejaia and Jijel. The logic underpinning this investment has always been straightforward — public infrastructure endowment would attract private enterprise, which would in turn generate employment, fiscal revenues, and economic diversification.

The empirical record tells a different story. As of 2024, the wilaya records a mean unemployment rate of 19.1%, with 108,509 registered job-seekers confronting a market capable of absorbing only 28,685 of them — a job-offer coverage ratio of

26.4%. Within the industrial zones that public expenditure has sustained, the overall enterprise activation rate stands at 55.8% for the four ZIs and 37.7% for the thirty-nine ZAs. Most strikingly, the Ouled Saber industrial zone — the largest in the wilaya at 696 hectares, representing 51% of total ZI area — hosts 164 registered enterprises of which just 6 are operational, yielding a catastrophic activation rate of 3.7%. These figures represent not merely an economic underperformance, but a failure of public investment management with direct fiscal and governance implications.

This article examines that failure through the lens of public investment accountability — a concept that connects the design, implementation, and monitoring of state capital expenditure to its intended fiscal and socioeconomic returns. The accountability of public investment has emerged as a central preoccupation of fiscal governance scholarship (Rajaram et al., 2014; Andrews et al., 2017; World Bank, 2024), and the Algerian case offers a particularly rich empirical setting: a country in which non-hydrocarbon diversification is an explicit policy priority (Kharchi, 2025a), yet in which the institutional architecture for investment appraisal and monitoring remains underdeveloped (IMF, 2022, 2023). Setif's industrial zone paradox — abundant infrastructure, minimal activity — is not an isolated anomaly but a territorial expression of systemic governance gaps.

The article makes three contributions to this literature. First, it provides a commune-level spatial analysis of labour market fragmentation in Setif Wilaya, exploiting a rich primary source — the 2025 Statistical Yearbook. Second, it constructs a replicable composite Labour Market Stress Index (LMSI) for all 60 communes, enabling rigorous inter-communal comparison and identification of spatial clusters of disadvantage. Third, it frames industrial zone underperformance explicitly as a public investment accountability failure with quantifiable fiscal costs, connecting micro-level territorial evidence to macro-level debates on fiscal governance and tax policy in resource-dependent economies.

1.1 Research Questions

This study is organised around three interrelated research questions. RQ1: What is the spatial pattern of labour market stress across the 60 communes of Setif Wilaya, and to what extent do industrial zones generate measurable employment spillovers in surrounding communes? RQ2: What is the magnitude of the enterprise activation gap in publicly funded industrial zones, and how does this gap translate into foregone employment and fiscal returns? RQ3: What institutional and governance mechanisms explain the documented disconnect between public infrastructure investment and labour market outcomes, and what policy reforms could address this disconnect?

1.2 Hypotheses

Two hypotheses are advanced. H1: The geographic concentration of publicly funded industrial zones in a limited number of communes produces spatially bounded labour market effects, leaving the majority of communes structurally disconnected from formal employment opportunities. H2: The enterprise activation rate in public industrial zones is significantly and systematically below the threshold required to justify their capital and land costs, revealing a structural accountability failure in investment management.

2. Theoretical and Institutional Framework

2.1 Public Investment Accountability: Conceptual Foundations

The concept of public investment management (PIM) quality has emerged as a critical determinant of development outcomes in the fiscal governance literature. Rajaram et al. (2014) identify eight core functions of a high-quality PIM system: (i) investment guidance and preliminary screening; (ii) formal project appraisal; (iii) independent review of appraisals; (iv) multi-year budgeting of projects; (v) project selection and funding; (vi) project implementation; (vii) project adjustment; and (viii) ex-post evaluation. Their central finding is that in low- and middle-income countries, the weakest functions are typically at both ends of this cycle — upstream appraisal and downstream evaluation — precisely the functions that would detect demand-side failures before resources are committed and assess whether committed resources have delivered intended returns.

Andrews, Pritchett and Woolcock (2017) extend this analysis with their concept of "capability traps": situations in which governments maintain the external forms of functional state institutions — project registries, appraisal committees, monitoring frameworks — without the substantive analytical or implementation capacity to make these institutions effective. The result is systematic over-investment in physical infrastructure relative to the institutional capacity to manage it, generating stranded assets and accountability deficits that persist across successive political administrations. The Algerian industrial zone programme exhibits multiple hallmarks of this trap.

At the sub-national scale, accountability is further complicated by fiscal architecture. In highly centralised systems, where sub-national entities depend on central government transfers rather than own-revenue sources, local authorities have limited incentive and limited power to redirect misallocated investment or impose performance requirements on centrally designated projects (Bahl & Bird, 2018; Rodden, 2006; Storper, 2013). This creates what Bardhan & Mookherjee (2006) term a "dual accountability deficit": national authorities lack localised information to assess performance, while local authorities lack the fiscal and legal authority to act on performance data. Algeria's budget architecture, which channels the overwhelming

majority of investment through central government appropriations (IMF, 2022), is a textbook case of this configuration.

2.2 Industrial Zones and Labour Market Geography

The global literature on special economic zones and industrial parks offers nuanced evidence on employment generation. Akinci & Farole (2011), in a comprehensive cross-country assessment, identify four conditions under which industrial zones generate genuine agglomeration economies and sustained employment: adequate firm density to support backward and forward linkages; a pre-existing or rapidly developing skilled labour pool; competitive regulatory and fiscal incentives relative to comparator locations; and proximity to consumption markets or export logistics infrastructure. When one or more of these conditions is absent — as is frequently the case in inland developing regions — industrial zones tend to become what Zeng (2015) calls "land banks": public land allocations that absorb capital expenditure without generating economic activity (Arif & Kharchi, 2026b).

In the Algerian context, Hammache & Zemirli (2017), Ladjedel (2024), Gribi et al. (2024), Ferdj (2024), and El Mestari (2024) document recurring structural deficiencies in the national industrial zone programme: site selection driven by administrative convenience rather than economic logic; inadequate on-site utility infrastructure (water pressure, electricity reliability, broadband connectivity); excessive and poorly coordinated administrative requirements at the investor onboarding stage; and a near-total absence of ex-post monitoring of zone performance by either national or local authorities. The CNES — National Economic and Social Council — (2019) and Arif & kharchi (2026a and b) identify regulatory fragmentation — the simultaneous application of requirements from the Ministry of Industry, the environmental agency, the AAPI (Algerian Investment Promotion Agency), local planning authorities, and sector-specific regulatory bodies — as a principal deterrent to investor activation within designated zones.

2.3 Labour Market Spatial Analysis and Composite Indicators

Spatial labour market analysis at the intra-provincial level has a well-established methodological tradition in regional economics. Overman and Puga (2002) demonstrate the persistence of spatial unemployment clusters across European regions, arguing that local labour market conditions are highly path-dependent and resistant to standard macroeconomic stabilisation policies. Moretti (2011) shows that local multiplier effects — the employment generated in non-tradeable sectors by each new tradeable-sector job — can be substantial when industrial activity reaches critical mass, but negligible below that threshold. The implication for zones with very low activation rates, such as Ouled Saber, is that even the few operational enterprises are unlikely to generate measurable spillover employment in surrounding communes.

Composite indicator construction follows the methodology of the OECD (2008) Handbook on Composite Indicators. The critical methodological decisions concern variable selection, normalisation, and weighting. Our Labour Market Stress Index draws on four dimensions — unemployment, activity, female exclusion, and job-offer coverage — that capture distinct but complementary facets of labour market dysfunction. Normalisation uses the min-max method to ensure scale invariance across dimensions with different natural units. Weights are assigned in accordance with the theoretical primacy of unemployment and activity rates as labour market outcome measures (ILO, 2023), with job-offer coverage serving as structural amplifiers.

3. Data and Methods

3.1 Primary Data Source

The principal empirical foundation of this article is the 2025 Statistical Yearbook of Setif Wilaya (Monographie de la Wilaya de Sétif, Direction de la Programmation et du Suivi Budgétaire, 2025). This official administrative document is compiled annually from mandatory returns submitted by all sectoral directorates of the wilaya to its budget programming directorate. For this study, three modules are systematically extracted and digitised: (i) the employment module, providing commune-level data on active population, employed population, unemployed population, registered job-seekers disaggregated by sex, job offers, and placements for all 60 communes and 20 dairas; (ii) the industry module, providing zone-by-zone inventories of total surface area, occupied surface area, total registered enterprises, and active enterprises for all four industrial zones and thirty-nine activity zones; and (iii) the sectoral employment distribution, providing branch-level employment disaggregated by sex across six economic sectors.

This primary source has two acknowledged limitations. First, data on investment volumes — the capital cost of zone infrastructure — are not systematically recorded in the yearbook, necessitating recourse to World Bank benchmark estimates for cost attribution. Second, the employment module records registered job-seekers and formal job offers via the ANEM (National Employment Agency) network; it does not capture informal employment, which is known to be substantial in Algeria (CNES, 2022; Kharchi, 2025a and b; ILO, 2023). Both limitations are explicitly flagged in the analysis and sensitivity discussion below.

3.2 Complementary Data Sources

Wilaya-level findings are contextualised through four complementary source categories. National economic data derive from ONS (2023) employment surveys and industrial output statistics. Macroeconomic governance context is drawn from IMF Algeria Article IV Consultation Reports (2022, 2023) and the World Bank Algeria Country Economic Memorandum (2024). International benchmarks for industrial zone performance and labour market composite indicators are taken from UNCTAD (2021),

Akinci & Farole (2011), Mérenne-Schoumaker (1991, 2011), Soussi (2013), and the ILO (2023) World Employment and Social Outlook. All cost estimates referencing monetary values use constant 2024 Algerian dinars (DZD); the USD equivalents apply the 2024 annual average official exchange rate of approximately 135 DZD/USD.

3.3 Construction of the Labour Market Stress Index (LMSI)

The LMSI is a composite indicator computed for each of the 60 communes from four sub-indices, each normalised to a 0–100 scale via min-max normalisation:

$$score_i = (x_i - x_{min}) / (x_{max} - x_{min}) \times 100.$$

A score of 100 on any sub-index denotes the commune experiencing the highest stress on that dimension; a score of 0 denotes the lowest. The four sub-indices are:

- UI (Unemployment Index): raw commune unemployment rate, where higher values indicate greater stress.
- ARI (Activity Rate Inverse): computed as (1 – employed population / working-age population), where higher values indicate lower labour market participation.
- FEI (Female Exclusion Index): share of female job-seekers in total commune active population, where higher values indicate greater structural exclusion of women from formal employment.
- JOCI (Job-Offer Coverage Inverse): computed as (1 – job offers / registered job-seekers), where higher values indicate greater unmet demand for formal employment.

The composite LMSI is defined as:

$$LMSI = 0.35 \times UI + 0.30 \times ARI + 0.15 \times FEI + 0.20 \times JOCI.$$

The weighting scheme accords primary importance to unemployment and activity rates — the two dimensions most directly linked to labour market outcomes and fiscal implications — while treating female exclusion and job-offer coverage as structural amplifiers. Robustness to alternative weighting schemes (equal weights; double-weighting of FEI) is assessed in Section 5.4. Location quotients (LQ) are computed for industrial sector employment: LQ_c = (industrial employment in commune c / total employment in commune c) / (total wilaya industrial employment / total wilaya employment). $LQ > 1$ indicates industrial over-representation; $LQ \leq 0.5$ indicates structural marginalisation from the formal industrial economy.

4. The Labour Market of Setif Wilaya: Aggregate Profile and Spatial Structure

4.1 Aggregate Labour Market Indicators

Table 1 presents the aggregate labour market profile of Setif Wilaya for 2024. The wilaya's working-age population of 1,244,462 persons generates an economically active population of 565,996, implying an aggregate activity rate of 45.5% — some 8–12 percentage points below the OECD average for comparable urban-rural mixed provinces (OECD, 2023). Of the active population, 457,728 are classified as

employed, yielding an employment rate of 80.9% of active persons. The remaining 108,268 are unemployed, generating a headline rate of 19.1%.

Three features of this aggregate profile warrant emphasis. First, the unemployment rate of 19.1% is 7.3 percentage points above the national ONS estimate of 11.8% for 2022, suggesting that Setif's labour market underperforms systematically relative to the national average despite — or perhaps because of — its designation as a privileged industrial investment site. Second, the female share of registered job-seekers (59.8%) is structurally anomalous: women constitute approximately 50% of the working-age population yet represent nearly 60% of formal employment demand. This points to a severe structural barrier between female human capital formation —Setif 1 and 2 Universities have 60,000 students with a female majority — and formal labour market integration. Third, the job-offer coverage ratio of 26.4% means that the formal economy can accommodate barely one in four job-seekers, implying that the remaining three in four must either enter informality, remain unemployed, or migrate.

Table 1
Aggregate Labour Market Profile, Setif Wilaya (2024)

Indicator	Value	National benchmark (ONS 2023)*
Total population (2024 census)	2,126,917	46,000,000 (est.)
Working-age population (15–59 yrs)	1,244,462	~27,000,000
Economically active population	565,996	~12,100,000
Activity rate (% of working-age)	45.5%	~47.2%
Employed population	457,728	~10,600,000
Employment rate (% of active)	80.9%	~87.6%
Registered unemployed	108,268	~1,500,000
Mean unemployment rate	19.1%	~11.8%
Registered job-seekers (ANEM)	108,509	—
of whom female	64,867 (59.8%)	(est. 52–55% nationally)
Formal job offers recorded (ANEM)	28,685	—
Job-offer coverage ratio	26.4%	—
Placements achieved (ANEM)	21,052	—

Sources: Direction de l'Emploi de Sétif (2024); DPSB Wilaya de Sétif (2025); ONS Algeria (2023).

* National figures are approximate; exact wilaya-level national comparators are not publicly disaggregated by the ONS.

Note: Job-offer coverage ratio = job offers recorded / registered job-seekers × 100.

KEY PARADOX — Setif hosts four publicly funded industrial zones, 39 activity zones, and over 283,000 registered production units, yet formal industrial employment

accounts for only 15% of the employed population (68,559 workers). Agriculture absorbs 28% and commerce 26%, suggesting that decades of public industrial investment have failed to structurally transform the employment base — the central question of accountability this article addresses.

4.2 Spatial Heterogeneity: The LMSI Across 60 Communes

Table 2
LMSI: Highest and Lowest Stress Communes, Setif Wilaya (2024)

Commune	Unemp. rate (%)	Activity rate (%)	Female job-seekers (%)	Job-offer coverage (%)	LMSI score (0–100)	Stress tier
TEN HIGHEST-STRESS COMMUNES						
Ain Sebt	**40.40**	20.3	62.0	n/a	**79.2**	*Critical*
Oued El Bared	**37.93**	34.4	69.2	n/a	**77.1**	*Critical*
Ain El Kebira	**34.06**	22.3	54.4	3.9	**73.8**	*Very High*
Beni Aziz	**31.98**	26.1	57.3	14.0	**70.4**	*Very High*
Beida Bordj	**31.35**	29.6	65.2	1.6	**69.3**	*Very High*
Babor	**30.87**	27.0	59.3	0.2	**68.5**	*Very High*
Ain Azal	**30.10**	34.1	62.0	3.6	**67.1**	*Very High*
Boutaleb	**28.93**	39.3	54.2	0.2	**64.8**	*High*
Ouled Addouane	**28.66**	53.5	56.4	1.3	**63.2**	*High*
Serdj El Ghoul	**29.11**	29.7	57.2	0.2	**63.0**	*High*
TEN LOWEST-STRESS COMMUNES						
Beni Ourtilane	**10.04**	55.4	56.9	11.2	**21.3**	*Low*
Guidjel	**11.04**	48.0	56.7	81.5	**19.8**	*Low*
Ouled Saber	**11.91**	48.8	55.0	130.3	**18.9**	*Low*
Guellal	**12.55**	50.1	71.5	n/a	**20.1**	*Low*
Bazer Sakhra	**12.64**	57.1	n/a	n/a	**22.0**	*Low*
Mezloug	**13.02**	41.8	64.3	108.3	**20.5**	*Low*
Setif (city)	**12.98**	46.5	56.0	72.3	**19.4**	*Low*
Harbil	**13.55**	50.4	56.9	7.0	**24.1**	*Low*
Ain Roua	**14.25**	49.8	55.2	9.3	**24.8**	*Low*
El Eulma	**16.28**	36.6	68.0	44.8	**25.6**	*Low*

Sources: Direction de l'Emploi de Sétif (2024). LMSI computed by the author using min-max normalisation. Weights: UI 0.35, ARI 0.30, JOCI 0.20, FEI 0.15.
Note: LMSI coefficient of variation across 60 communes = 0.42. Low-stress communes are disproportionately adjacent to active industrial zones

The aggregate figures conceal an extreme spatial heterogeneity that is the central analytical finding of this study. Table 2 presents LMSI scores and their component indicators for the ten highest-stress and ten lowest-stress communes among the 60 in the wilaya.

The LMSI reveals a spatial structure of labour market stress that maps onto three distinct territorial configurations. The critical-stress tier — communes with LMSI scores above 65 — comprises exclusively remote mountain communes in the Babor massif (Ain Sebt, Oued El Bared, Ain El Kebira, Beni Aziz, Babor) and isolated pastoral communes in the southern steppe fringe (Beida Bordj, Ain Azal). These communes share a structural profile: high unemployment exceeding 30%, very low activity rates reflecting widespread economic inactivity rather than voluntary leisure, near-zero job-offer coverage implying total exclusion from the ANEM formal matching system, and female job-seeker shares above 54% indicating that structural female exclusion is even more acute in peripheral areas than in the wilaya average.

The low-stress tier is dominated by communes that either host or immediately adjoin functioning industrial or activity zones: Guidjel, Ouled Saber (activity zones), Setif city and El Eulma (industrial zones). This spatial adjacency is consistent with localised agglomeration effects — formal employment in operational zones reduces local unemployment and increases activity rates in the host commune. However, the key finding is that these benefits are geographically circumscribed: communes as close as 20–30 kilometres from the Setif city zone (e.g., Ain El Kebira at 34.1%, Beni Aziz at 32.0%) exhibit LMSI scores in the very high range, confirming that industrial zone spillovers do not diffuse beyond the immediate commune and its immediate neighbours.

The coefficient of variation of LMSI scores across 60 communes is 0.42 — substantially higher than the 0.15–0.25 range characterising homogeneous territorial labour markets in comparable MENA provinces (World Bank, 2022). This degree of within-wilaya heterogeneity is itself diagnostic: it implies that a single provincial unemployment rate is a poor summary statistic of labour market conditions, and that effective policy must be differentiated at the commune level rather than administered uniformly at the wilaya level.

4.3 Gender Dimension: Female Labour Exclusion as a Structural Feature

The feminisation of job-seeking across the wilaya deserves extended analysis as an independent finding. With 64,867 female job-seekers out of a total of 108,509 (59.8%), women are systematically over-represented in formal unemployment relative to their population share. This over-representation is not uniform: in the lowest-stress communes adjacent to industrial zones (Guidjel, Ouled Saber, Setif city),

female job-seeker shares of 55–57% approach the wilaya mean, while in the highest-stress peripheral communes, female shares reach 62–69%.

The mechanism is likely bidirectional. On the supply side, the concentration of Setif University's female graduates in fields — law, social sciences, languages, economics — that are poorly matched to the skill requirements of predominantly manufacturing and logistics industrial zones creates a structural skills mismatch. On the demand side, industrial zone enterprises in Algeria's manufacturing sector are documented to have significant gender preferences in hiring, with women systematically under-recruited relative to their qualification levels (CNES, 2022). The fiscal implication is clear: a labour market that excludes 60% of its formal job-seeking population from productive employment foregoes substantial income tax revenues, social insurance contributions, and aggregate demand — an accountable investment system would treat this exclusion as a measurable opportunity cost.

5. The Industrial Zone Accountability Gap

5.1 Zone Performance Audit

Table 3 presents a systematic performance audit of the four industrial zones (ZI) and the thirty-nine activity zones (AZ) of Setif Wilaya for 2024.

Table 3

Industrial Zone and Activity Zone Performance Audit, Setif Wilaya (2024)

Zone (4 ZIs)	Location	Total area (ha)	Occupied area (ha)	Total enterp.	Active enterp.	Activation rate
INDUSTRIAL ZONES (ZI)						
ZI Setif city (2)	Setif	425.18	354.17	212	**183**	**86.3%**
ZI El Eulma (1)	El Eulma	247.98	212.17	65	**57**	**87.7%**
ZI Ouled Saber (1)	Ouled Saber	696.08	284.33	164	**6**	**3.7% ⚠**
TOTAL ZI	—	1,369.24	850.67	441	**246**	**55.8%**
ACTIVITY ZONES (ZA) — Aggregate (39 zones)						
39 Activity Zones	Various	1,086	—	2,040	**770**	**37.7%**
COMBINED ZI + ZA						
Total (ZI + ZA)	—	**2,455**	—	2,481	**1,016**	**40.9%**

Sources: Direction de l'Industrie et des Mines de Sétif (2024); DPSB Wilaya de Sétif (2025).

⚠ = Critical underperformance flag. * Employment generated: direct employment in active enterprises only; indirect and induced employment excluded.

Note: 2,455 hectares of public industrial land with 40.9% activation represents approximately 1,451 hectares of stranded public capital.

Table 3 reveals a stark performance bifurcation within the ZI portfolio. The two mature zones — Setif city (86.3%) and El Eulma (87.7%) — demonstrate that industrial zones can perform effectively in this territorial context when they benefit from adequate infrastructure quality, proximity to urban labour pools, and established investor networks. Their activation rates are broadly comparable to well-performing industrial zones in lower-middle-income countries as documented by Akinci & Farole (2011). Against this benchmark, the 3.7% activation rate of the Ouled Saber zone — a facility developed after the mature zones and with the benefit of their institutional precedent — cannot be attributed to exogenous factors. It reflects an endogenous institutional failure.

STRANDED CAPITAL CALCULATION — Combining industrial zones (1,369 ha) and activity zones (1,086 ha), the wilaya has allocated 2,455 hectares of public land for industrial and commercial use, of which approximately 41% hosts active enterprises. The inactive land mass totals approximately 1,451 hectares. Applying the World Bank Algeria benchmark cost of 500 million DZD per hectare for serviced industrial zone infrastructure (World Bank, 2024), the stranded capital is estimated at approximately 725 billion DZD — equivalent to roughly USD 5.3 billion at 2024 exchange rates. This capital has generated no income tax, no payroll tax, no social contributions, and no productivity spillovers since its allocation.

5.2 Sectoral Employment Structure and the Informalisation Penalty

Table 4 presents the full sectoral disaggregation of employed persons in the wilaya, with a fiscal accountability lens applied to each sector.

The sectoral distribution carries direct fiscal implications that Table 4's assessment column makes explicit. Agriculture (27.5% of employment) and commerce (25.6%) — together absorbing over half the employed population — are the sectors with the highest informal employment shares in Algeria, generating minimal income tax (IRG) and social contribution revenues per worker. The formal public administration sector (15.6%) generates full fiscal contributions but creates no new taxable private-sector activity. Formal industry (15.0%) generates the highest per-worker fiscal yield of any private-sector activity, including VAT on production, IRG on wages, and social insurance contributions, yet accounts for only 68,559 of 457,750 employed persons — a share that reflects the activation failure of the industrial zone programme.

The gender gap in employment is stark and independently significant. Women constitute 88,176 out of 457,750 employed persons — 19.3% of the employed workforce — while representing approximately 50% of the working-age population. The gap between the female employment share (19.3%) and the female job-seeking share (59.8%) is 40.5 percentage points, representing a structural exclusion surplus of enormous magnitude. The annual fiscal cost of this exclusion — foregone IRG on

wages, foregone social contributions, and foregone indirect tax on consumption — cannot be precisely estimated from available data, but is conservatively in the order of tens of billions of DZD annually.

Table 4
Sectoral Distribution of Employed Population by Sex and Formality Assessment, Setif Wilaya (2024)

Sector	Men	Women	Total	Share (%)	Fiscal/formality assessment
Agriculture	119,102	7,090	126,192	27.5%	*High informality; minimal IRG/payroll tax yield*
Commerce & trade	83,437	33,783	117,220	25.6%	*Mixed; significant informal component; VAT leakage*
Public administration	37,768	33,580	71,347	15.6%	*Fully formal; complete IRG/social contribution coverage*
Industry (manufacturing)	62,486	6,073	68,559	15.0%	*Predominantly formal; highest per-worker fiscal yield*
Services	30,237	5,906	36,144	7.9%	*Mixed formal/informal*
Construction & public works	36,544	1,744	38,288	8.4%	*Mixed; day-labour informality common*
TOTAL	**369,574**	**88,176**	**457,750**	**100%**	*Est. 45–55% informal (CNES 2022 methodology)*

Sources: Direction de l'Emploi de Sétif (2024). Formality assessment: authors' classification following CNES (2022) and ILO (2023) sectoral informality indicators for Algeria.

Note: Women represent only 19.3% of employed persons but 59.8% of registered job-seekers — a structural exclusion gap of 40.5 percentage points.

5.3 Location Quotients and Industrial Specialisation

Location quotients for industrial employment, computed from commune-level data, confirm the extreme spatial concentration of formal manufacturing. The Setif city commune records an LQ of approximately 2.8 — nearly three times the wilaya's industrial employment share — while El Eulma records an LQ of approximately 1.9. By contrast, the ten highest-stress communes identified in Table 2 record LQs below 0.3, indicating structural marginalisation from the formal industrial economy. The spatial correlation between LQ > 1.0 and LMSI below 30 is near-perfect: every commune with significant industrial over-representation records low LMSI scores, and every commune with an LQ below 0.5 records a LMSI score above 60.

This spatial correlation is consistent with Moretti's (2011) local multiplier framework: formal industrial employment generates secondary employment in non-tradeable

services (retail, transport, food service, construction), producing a local employment multiplier estimated at 1.5–2.5 for comparable emerging-economy industrial zones (UNCTAD, 2021). In the absence of industrial activity — as in the majority of Setif's 60 communes — this multiplier is truncated at its base, and the non-tradeable service sector subsists on agricultural income and public administration wages alone. This structural limitation cannot be addressed by macroeconomic instruments; it requires territorial industrial policy specifically designed to extend the zone benefit beyond the current cluster of three or four communes.

5.4 Robustness of the LMSI

To assess the sensitivity of the LMSI results to methodological choices, we compute three alternative indices: (i) an equal-weight index (each sub-index weighted at 0.25); (ii) a double-weight female exclusion index (FEI weight 0.30, UI weight 0.30, ARI weight 0.25, JOCI weight 0.15); and (iii) a labour market outcome-only index (UI weight 0.50, ARI weight 0.50). The ranking of communes within each tier is stable across all four specifications: no commune moves more than three ranks in the high-stress tier and no commune moves more than four ranks in the low-stress tier. The coefficient of variation across 60 communes remains in the range 0.39–0.46 across all specifications. The core finding — extreme within-wilaya spatial heterogeneity, with industrial zone proximity as the dominant predictor of low stress — is robust.

6. Discussion: Diagnosing the Accountability Failure

6.1 The Investment-Employment Disconnect as Governance Failure

The evidence assembled in Sections 4 and 5 is consistent with a single diagnostic: the industrial zone programme in Setif Wilaya reflects a governance failure at multiple levels of the PIM cycle, rather than merely a conjunctural or macroeconomic misfortune. To apply Rajaram et al.'s (2014) PIM framework to the Setif evidence: at the upstream appraisal stage, the designation of the 696-hectare Ouled Saber zone without a documented investor pipeline implies the absence of formal demand-side feasibility analysis. At the implementation stage, the annuaire itself notes regulatory fragmentation — overlapping requirements from the environmental agency, the construction authority, the AAPI, and sector-specific regulators — as a primary deterrent to investor activation. At the downstream evaluation stage, the absence of any publicly available performance assessment of zone infrastructure returns over the decade since Ouled Saber's designation is itself an accountability failure: no stakeholder — budgetary authority, elected assembly, civil society, potential investor — has access to systematic evidence of whether the investment has delivered its intended returns.

The Andrews et al. (2017) capability trap framework provides additional explanatory purchase. The existence of formal institutional architecture — the AAPI as a one-stop investor service centre, the CACI as an investors' advisory body, the DIM as

zone administrator — creates the appearance of a functional investment management system without the substantive analytical capacity that would make these institutions effective. Zone administrators record enterprise registrations but do not systematically track activation. The AAPI processes investor files but does not publish processing times or rejection rates. National budgetary authorities allocate investment appropriations for zone extension without requiring performance data from existing zones. These are the institutional signatures of a capability trap: form without function, accountability without consequence.

6.2 Fiscal Implications: The Tax Revenue Foregone

The accountability failure documented in this article has a quantifiable fiscal dimension that connects it directly to the concerns of tax policy scholarship. Consider the following estimation exercise. A fully activated Ouled Saber zone — 164 enterprises at comparable productivity levels to the Setif city zone — would generate approximately 4,800 direct manufacturing jobs. Using Algeria's standard social insurance contribution rate of 34% (employer and employee combined) on an assumed average manufacturing wage of 55,000 DZD/month, full activation of Ouled Saber would generate annual social contributions of approximately 90 million DZD. Adding corporate tax (IBS at 19% of estimated profits) and VAT on production can be added.

This calculation must be qualified: it assumes that enterprises suppressed by the current activation failure would otherwise be profitable and taxpaying, rather than simply uncompetitive. The activation barrier is institutional, not commercial — there is demonstrated investor interest (164 registered enterprises) — suggesting that the suppressed fiscal yield is largely real rather than hypothetical. The appropriate policy inference is that reducing the institutional barriers to activation would generate a direct and measurable fiscal return, making zone management reform a tax policy intervention with a positive revenue impact, not merely an economic development aspiration.

6.3 The Decentralisation-Accountability Nexus

A structural factor underlying the accountability failures documented in this article is the fiscal architecture of Algerian subnational governance. With revenue collection and investment allocation concentrated at the central government level, the wilaya administration and its 60 communes have limited authority to redirect misallocated public investment, impose performance conditions on centrally designated zones, or create fiscal incentives for investors operating on centrally owned industrial land. This configuration reproduces the dual accountability deficit described by Bardhan & Mookherjee (2006): central authorities lack the granular territorial intelligence needed to identify activation barriers, while local authorities lack the fiscal and legal tools to act on the territorial evidence they hold.

International experience suggests that partial decentralisation of zone fiscal revenues to host communes significantly improves zone performance: when local governments receive a share of corporate taxes and payroll taxes generated within their zones, they have a direct incentive to resolve investor-blocking administrative barriers and to lobby for infrastructure improvements (Akinci & Farole, 2011; UNCTAD, 2021). Algeria's current arrangement provides no such incentive to the Wilaya of Setif or to the Commune of Ouled Saber: all fiscal returns from any eventual zone activation accrue to the central government, while the local costs of zone underperformance — elevated unemployment, foregone commercial activity, degraded public services — are borne locally.

7. Policy Recommendations

Based on the evidence and analysis presented in this article, four evidence-based policy recommendations are formulated, structured according to the stages of the PIM cycle and the fiscal governance literature (Arif & Kharchi, 2026b).

Recommendation 1 — Mandatory Ex-Ante Investment Appraisal for Industrial Zone Designations. Any new industrial zone designation or significant extension of existing zones should require a formal demand-side feasibility study documenting: (i) a pre-registration pipeline of investor commitments; (ii) a zone-specific employment projection modelled on comparable zone densities; (iii) a fiscal return estimate covering projected tax revenues and social contributions over a ten-year horizon; and (iv) an independent review by a body distinct from the approving ministry. This function corresponds directly to the appraisal and independent review stages identified by Rajaram et al. (2014) as the weakest links in Algeria's PIM chain.

Recommendation 2 — Zone Activation Performance Monitoring Framework. Each industrial zone should be required to publish annual performance reports tracking enterprise activation rate, employment generated per hectare, and total fiscal revenues attributable to zone activity. Zones failing to achieve a 40% activation rate within five years of designation should trigger an automatic inter-ministerial review with binding authority to either remediate identified barriers or reallocate the underperforming land to alternative uses. The Ouled Saber zone, which has been inactive for a decade, is an immediate candidate for such a review.

Recommendation 3 — Partial Decentralisation of Zone Fiscal Revenues. A proportion (recommended at 10–15%) of corporate tax (IBS) and payroll tax (IRG) revenues generated by enterprises operating within industrial zones should be allocated to the host commune's budget. This reform requires legislative amendment to Algeria's fiscal equalisation framework but is fiscally neutral at the national level; it is an incentive reallocation, not a revenue reduction. The expected consequence, consistent with international evidence, is a measurable increase in commune-level responsiveness

to investor obstacles and a reduction in the administrative delays that currently suppress activation.

Recommendation 4 — Open Data Publication of Commune-Level Fiscal and Investment Statistics. The 2025 Wilaya Statistical Yearbook is an exceptionally detailed primary source, but it is not published in open-data format, limiting the ability of researchers, investors, civil society organisations, and subnational policymakers to use it for benchmarking and accountability purposes. Annual publication of commune-level employment, industrial zone performance, and public investment data in a machine-readable open format — consistent with Algeria's digital economy commitments and the principles of the Open Government Partnership — would significantly reduce information asymmetries in the investment environment and enable the academic benchmarking on which evidence-based reform depends.

8. *Conclusion*

This article has demonstrated that Setif Wilaya — one of Algeria's designated industrial development poles — presents a textbook illustration of public investment without commensurate accountability mechanisms. The empirical record is unambiguous: four industrial zones developed at public expense record an aggregate activation rate of 55,8%, with the flagship Ouled Saber zone at 3.7%; the combined industrial and activity zone estate (2,455 ha) has an activation rate of 40.9%, leaving approximately 1,451 hectares of serviced land idle; and the wilaya's labour market records a mean unemployment rate of 19.1% with extreme spatial heterogeneity — a coefficient of variation of 0.42 across 60 communes — that is largely explicable by proximity to, or distance from, the few operational industrial facilities.

The Labour Market Stress Index constructed for all 60 communes provides a replicable diagnostic instrument that is both robust to alternative weighting schemes and interpretively rich: the near-perfect spatial correlation between LMSI scores and industrial zone proximity confirms that the labour market geography of the wilaya is fundamentally shaped by the distribution of formal industrial activity, and that the accountability failure in zone management has direct and measurable consequences for household welfare and territorial inequality.

The theoretical interpretation is equally clear. The Setif case exhibits the hallmarks of both the Andrews-Pritchett-Woolcock capability trap — institutional form without substantive implementation capacity — and the Bardhan-Mookherjee dual accountability deficit, in which central authorities lack local intelligence while local authorities lack fiscal authority. The policy architecture that produced the Ouled Saber failure — centralised zone designation without demand-side appraisal, no performance monitoring, no local fiscal stake in outcomes — is the same architecture

governing industrial zone development across the Eastern Highlands and, by extension, much of Algeria's non-metropolitan territory.

This article's contribution to the tax policy and accountability literature is threefold. It provides the first English-language commune-level empirical analysis of Setif's labour market, drawing on a primary source of unusual granularity. It introduces the LMSI as a replicable composite instrument for intra-provincial labour market diagnostics applicable to comparable contexts across North Africa and the broader MENA region. And it frames industrial zone underperformance explicitly as a fiscal governance failure — a public investment that has not delivered the tax revenues, employment, and social contributions that justified its capital cost — rather than merely as an economic development shortfall. Future research should extend this analysis as successive yearbook editions become available, enabling panel analysis of LMSI dynamics and the identification of policy-attributable changes in activation and employment outcomes.

The fundamental insight is simple but consequential: in a context of fiscal pressure and competing development priorities, accountability in public investment is not a bureaucratic formality. It is the mechanism by which states learn whether their expenditures are delivering intended returns — and the absence of that mechanism is itself the most costly expenditure of all.

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