Jordan's Structural Unemployment Problem

Realigning Incentives and Improving Employment-matching

Report

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EXECUTIVE SUMMARY

Jordan faces a perplexing economic situation: a highly educated workforce paired with soaring unemployment rates. Despite its strong education system and high literacy rates, the country grapples with a youth unemployment crisis that far surpasses global averages. One of the root of this problem lies in the overwhelming preference for public sector jobs, a sector that is ill-equipped to accommodate the surging influx of educated young Jordanians. This skewed preference leads to educational paths that misalign with market demands, funneling highly educated individuals into low-skill jobs or unemployment. This chronic issue detrimentally affects both the economic vitality and social fabric of Jordan.

Our analysis reveals that past policies in Jordan have been the root cause of skill mismatches and unemployment, largely due to their distorting effect on incentives. To sharpen the focus of our policy recommendations, we introduce an empirical analysis that is pioneering in the Jordanian context. Utilizing a Vector Autoregressive (VAR) model, we assess the relative impact of institutional and economic factors on unemployment. This model posits that all variables are influenced by their own historical data, as well as by the historical and current data of all other variables. Our findings, presented via Cumulative Impulse Response Functions (CIRFs), validate the conclusions drawn from our descriptive analysis.

The asymmetric impact of institutional factors across the two model specifications we undertake further corroborates the role of distorted incentives, showing that outcomes depend on the degree to which different groups in the labor force respond to these incentives, such as through their educational choices.

Informed by these findings, we propose a set of policies that tackle specific contributors to Jordan's unemployment. A first policy-set focuses on improving public search-and-match institutions to realign expectations with private sector demand. Secondly, we propose modifications to Jordan's public sector hiring practices to eliminate the gap between perceived and actual public sector demand. Finally, we suggest measures to address inconsistencies between skillformation and skill-demands.

Based on our findings, we recommend:

1.   Optimize public employment services to improve provision efficiency, re-alignemployment expectations, and increase employer participation.

2.   Encourage the establishment of new private high-skill jobs to re-align incentives for high-skill workers

3.   Replace rolling applications for public sector jobs with needs-based applicationprocedure to eliminate inappropriate demand signaling, thus re-align employment expectations and educational investment.

1. THE JORDANIAN LABOR MARKET ENVIRONMENT

1.1. Policy Context

When tackling structural unemployment, high quality labor market institutions play a pivotal role in promoting new and sustainable job positions. The legal framework governing labor relationships in Jordan exhibits a considerable level of modernity. It displays well-established, all-encompassing social security provisions, laws legitimizing labor unions, and modern contract-making legislation [1]. There is, however, room for improvement. No mention of collective bargaining is currently made in the labor code, and little to no amendments were made to regulate more modern job types, such as remote workers and third-party contractors [2].

The Jordanian Government is aware of the need to adapt its legal framework to an everchanging world. Indeed, Jordanian authorities have increasingly prioritized job creation and continue to modernize Jordan's employment policy to create more sustainable employment [3]. In the last decade, the National Employment Strategy (NES) represented the main effort toward a more sustainable labor market. The initiative used an integrated approach, examining investment, fiscal and monetary policies, vocational training and education, and social welfare through the lens of employment. To better take on the employment-challenge, the NES established short, medium, and long-term goals.

These were [4]:

Short-term (2014)	Start absorbing unemployed personnel into the workforce by expanding credit access, curtailing public sector employment, and reevaluating current active labor market programs
Medium-term (2017)	Stimulate better skills matching through school-to-work transition programs, and foster SME growth by expanding social security coverage
Long-term (2020)	Increase workers' productivity through human capital development and foster economic growth by adopting sustainable fiscal, monetary, and investment policies

At present, the NES is widely praised for identifying Jordan's labor market challenges and creating a roadmap indicating how these challenges should be addressed. Concerning

effectiveness, however, the implementation of the NES-strategy proved problematic for a number of reasons, such as a lack of efficient resource allocation, frequent changes in government, and the NES adapting to neither the Syrian refugee crisis nor the COVID pandemic. Concurrently, the Technical and Vocational Education and Training Fund represented a significant human-capital-oriented policy, aiming to fund initiatives to educate and train the Jordanian labor force. Like the NES however, the initiative fell victim to poor resource allocation and corporatism, with a great part of the funding allocated to the National Employment and Training company administered by the Jordanian armed forces. Further, due to exceedingly high costs of training per worker and little employer satisfaction, the program failed to significantly contribute to the further education of the labor force in a sustainable way.

1.2. Labor Market Composition

To inform the later theoretical and empirical analyses, a brief characterization of the Jordanian labor market is useful, given the particular distribution of the workforce. Firstly, Jordan displays an exceedingly high share of informal workers at 51.6% of the total workforce [5]. This is particularly relevant when analyzing the impact of labor legislation on workers, as more than half the workforce is ex-ante excluded from the protection of the law and enforcement of regulation. It furthermore indicates that excessive bureaucracy and lack of flexibility affect employment dynamics in the country, reinforcing the movement into informality. Within this context, it should be stated that unemployment in Jordan is relatively high and persistent, unemployment is structural, As a result, the labor market fails to clear; that is, there is a mismatch between the skills of job seekers and the requirements of available jobs.

Another relevant aspect is the distribution of the workforce throughout sectors of the economy. Similar to neighboring MENA countries, Jordan's government employs most of the public workforce in administrative and defense positions (around 27% in 2020). The second biggest employer is wholesale & retail trade at 14.4%, followed by education at 12.6%, manufacturing at 10%, transportation & storage at 6.2%, human health & social work at 5.5%, construction at 4.8%, and finally accommodation & food at 3% [6]. The Jordanian labor market clearly depends heavily on public labor demand, which as discussed later, induces a labor force overqualified in attainment but mis-qualified for private sector demand, thus flows into low-skill occupations

Due to the workforce's excessive focus on public employment, non-Jordanian labor tends to fill the gap left by working in the sectors not supplied by their native counterparts. Indeed, the number of non-Jordanian workers is the highest in manufacturing, followed by agriculture, construction, and other production activities. This is almost the inverse of the trend observed amongst Jordanian labor, hinting at the fact that migrant workers are attracted to industries "forgotten" by Jordanians. This tendency is particularly pronounced with respect to non-educated migrant workers, as the highly educated Jordanian labor force (46% of those employed have a high education level, compared with 24% with a low education level) tends to occupy positions in the public sphere and retail, avoiding occupations such as manufacturing and agriculture [7]. Here, one can also argue that the private sector pays "low" wages taking advantage of easy entry of migrants and labor surplus conditions of Jordanians.

The domestic demand for highly skilled workers is, however, insufficient to accommodate the increasing volume of young and newly educated workers, leading many young workers to seek employment in neighboring Gulf-countries, or to accept low-skill jobs [8]. Yet, even accounting for these labor flows, demand for educated workers fails to accommodate the increasing supply. So much so, that young workers increasingly exhibit the highest unemployment rates throughout the workforce, surmounting to almost 40% in 2022 [9].

2. THE JORDANIAN SOCIAL CONTRACT AND UNEMPLOYMENT

2.1. Emergence of Institutional Drivers of Unemployment

The following discussion delves into the root causes of unemployment in Jordan, using an economic model by Desai, Olofsgård, and Yousef as a foundation [10]. According to this model, leaders aim to generate profits for themselves by restricting the economic activity of others, imposing a 'cost' on private businesses. While this strategy can be profitable for the rulers, it often disadvantages certain societal groups. These imposed costs make the general public more likely to oppose such policies. Consequently, these profit-generating policies can only succeed if they don't meet resistance from the public or influential groups. To prevent this resistance, leaders "compensate" specific sectors based on their political influence. This usually manifests as an unspoken agreement, the Compensatory Social Contract (CSC), where the government provides benefits to offset the economic restrictions it has imposed [11].

Specifically, compensation is dispensed through a combination of direct and indirect monetary transfers, as well as regulatory actions and policy measures [12]. These schemes take different forms but generally work to alter market conditions or distributive systems, channeling compensation into corporate profits, employee salaries, and social benefits [13; 14]. It's important to note that the amount of compensation needed varies depending on the political influence of specific economic groups. This leads to asymmetric adjustments in market environments and redistribution mechanisms, causing disparities in the treatment of various market participants. Such imbalances unintentionally contribute to rising unemployment by creating skewed preferences, misleading market signals, and perverse incentives.

2.2 Jordan's Economic Policies

Jordan's post-independence approach to economic policy relied extensively on stateintervention [15]. This reflected the development approach of its geographical neighbors, chief amongst them Turkey, and thus required such a compensatory social contract. Indeed, analyses generally agree that at least during the 1950-70s, Jordanian governance is characterized by it [16; 17; 18; 19]. A key institution for the distribution of compensation was the labor market, where distribution occurred through three broad mechanisms.

First, the Jordanian government launched a comprehensive public employment program, aimed not only at job creation but also at sustaining its interventionist policy agenda. Within this framework, compensation was structured to include salaries, benefits, and job security [20; 21]. Next, the state significantly expanded educational opportunities, thereby broadening the pool of candidates eligible for public sector jobs [22]. Lastly, the government implemented regulations on business and labor, which served both as integral components of its development approach and as means for allocating compensation to various economic actors.

By instating these distribution methods, the government created imbalances in economic institutions. These distorted incentives, signals, and expectations, which, in turn, harmed the economy's ability to create jobs and absorb labor. While the specific problems created by these institutions have changed over time, the negative impact on outcomes has remained consistent. [23]. These imbalances are the root cause of poor labor market outcomes, and we provide evidence to support this. Our evidence is especially important because most studies on Jordan's labor issues rely on two main sources: regional MENA data and Jordan Labor Market Panel Surveys (JLMPS). While these sources offer valuable insights and inform much of our work, they have their limitations: Jordan's situation is not a good representation of the average conditions in the MENA region [24;25]and JLMPS data is only available from 2010 to 2016. Where possible, we use Jordan-specific data generally available from at least 2000 to add nuance to that evidence.

2.3 Manifestations and Persistence of Unemployment Drivers

2.3.1 Public Sector Employment

The first proximate driver of adverse labor market outcomes originates from the characteristics of public sector employment. Essentially, the way compensation is distributed in public jobs creates disparities in several aspects of job quality, including pay, job stability, weekly workload, and perceived accountability [26;27;28]. This disparity fuels a preference for public sector roles among both current workers and potential future workers who have not yet entered the labor market [29], leading to several negative consequences.

Firstly, the general preference for public sector jobs means that demand for these positions outstrips supply. To maintain political support, the government ensures that higher compensation levels are preserved. As a result, there is no effective price mechanism to naturally reduce the number of surplus applicants by eliminating abovemarket pay rates.

The ongoing presence of these higher compensation levels [30], coupled with consistent hiring rates [31], indicates that the demand for public sector employment remains unmet. Indeed, the initial phase of large-scale public-sector employment under the Compensatory Social Contract (CSC) created enduring expectations for similar job opportunities, even after the contract's effectiveness waned [32]. As a result, workers not only persist in applying for roles in the public sector but, enticed by the associated perks, are often willing to delay their search for alternative career paths, effectively putting themselves in a queue for these coveted positions.

Fig. 1 Excess Public Applications cumulative, benchmark: 2000 = 0, 2000-2015
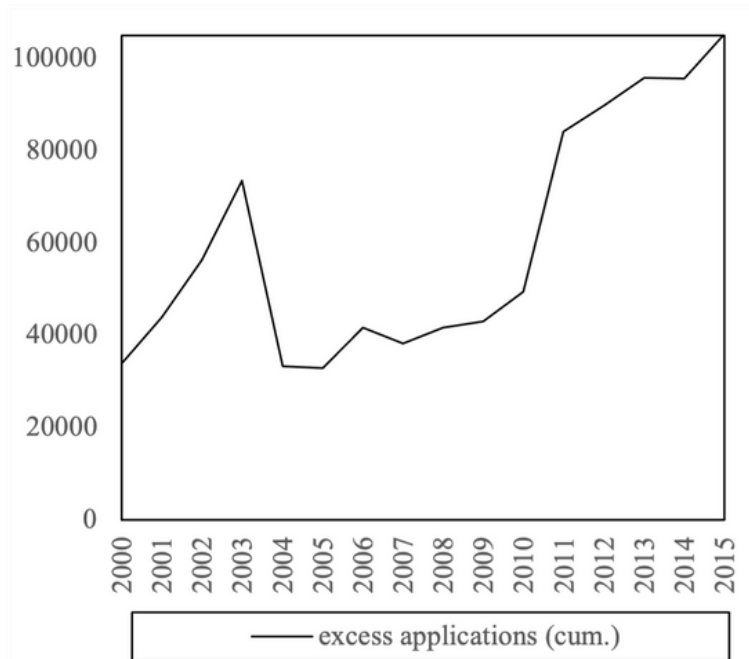
Source: Constructed from 'Annual Report' statistics (CSB, 2010, 2011, 2012, 2013, 2014, 2015)

Notes: Appl.: Cum. appl. ever; Appointed: Cum. appointm. starting in 2000; Excess Appl.: Cum. appl. less cum. appointm. (both bm: 0 in 2000)

Indeed, multiple analyses corroborate that a significant portion of unemployment is intentional, particularly among new entrants to the labor market and those with higher educational attainment. These are the groups most inclined to hold out for publicsector employment [33;34;35]. Data from the Civil Service Bureau further substantiates this trend. Figure 1 illustrates a substantial increase in the backlog of applications for civil service positions, adjusted for actual hiring rates. From 2000 to 2015, these excess applications surged by 210 percent. This propensity to wait in line has notable implications: it prevents

a segment of highly educated workers from entering the job market, gaining valuable experience, and accessing job-specific training that would enhance their competitiveness. This has particularly adverse effects on first-time job seekers, who remain less competitive compared to earlier cohorts [36].

A secondary effect of compensation via public employment pertains to the availability of capital to finance labor market policy. Specifically, Between 2007 and 2016, the average wage premium is estimated to have increased by 15 percentage points, reaching 21 percent [37]. Indeed, even controlling for education, job experience, and thus the skill-set differentials both imply, public sector compensation exceeds private sector compensation by up to 17% [38].

Fig. 2 Government Expenditure on Public Employment
percent of total expenditure, 2000-2022
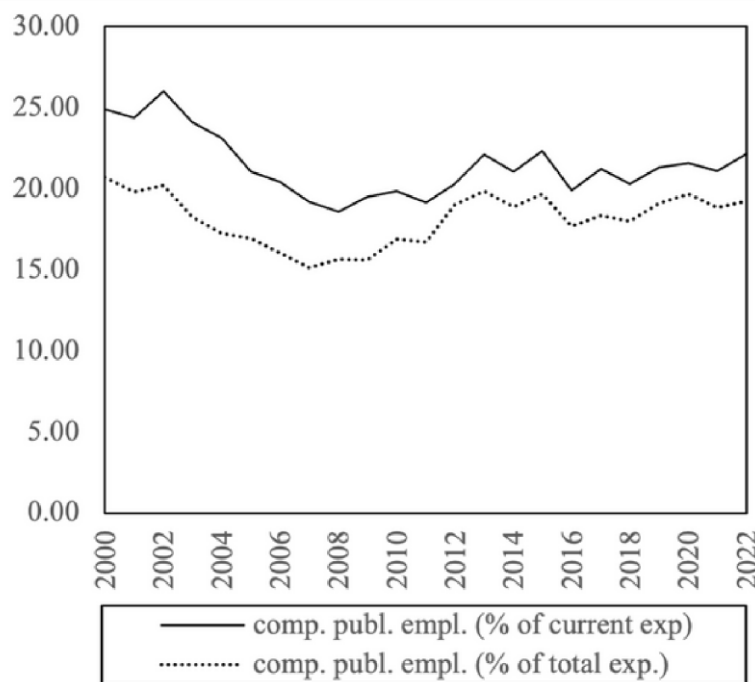
Source: Constructed from Ministry of Finance 'General Government Finance Bulletins' (June 2004, 2009, 2013, 2017; August 2010; March 2023; May 2006) **Notes:**
a) current exp. excludes capital compensation
b) both include wages, salaries, allowances, social security, excluding military-related and public employment pension obligations

As depicted in Figure 2, when viewed from the lens of capital availability, public-sector compensation accounts for over one-fifth of total governmental spending from 2000 to 2022. Importantly, the Ministry of Finance Bulletins [39], which serve as the primary data

source, do not break down military and social-benefit expenditures. Consequently, it's unclear what portion of these categories is allocated to current or former public employees. However, it's worth noting that the bulk of recent social benefits spending is dedicated to meeting public-sector pension obligations. As a result, the actual cost of public employment to the government could potentially be double what Figure 2 suggests [40].

Cross-sectional estimates for 2018 confirm this trend in government expenditure [41]. The sheer magnitude of that expenditure is clearly a constraint on capital provision for effective (labor) policy. The perceived availability of attractive public sector jobs also contributes to a second set of adverse effects.

2.3.2 Inefficient Human Capital Investment

Fig. 3 Population with Tertiary Education
percentage of population, 2000-2022
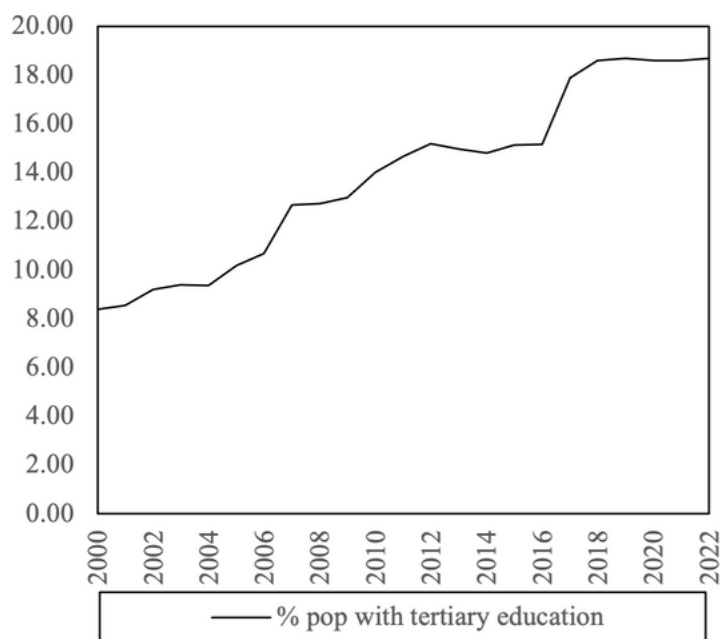
Source: Constructed From 'Employment and Unemployment' statistics (Dep. of.Stat, n.d.-a)
Notes: includes Jordanians age 15+

Like other countries that throughout some period in their history are characterized by CSC-governance, educational investment in Jordan during that period was disproportionately large for its developmental level [42]. Consequently, mean years of schooling increased by more than 4,5 years between 1980 and 2010 [43]. By international comparison, that is the 9th largest increase over that time frame globally. The proportion of tertiary educated individuals in the Jordanian population increased from less than one in ten, to almost one in five citizens (see Fig. 3). Gross enrolment rates also increased substantially, especially in tertiary education where they rose from 7 to 40 percent after 1970 [44]. However, spending levels have not been maintained after CSC-dissolution. By 2018, Jordanian education expenditure is neither on par with its geographical, nor income-level neighbors [45].

In addition, it's vital to emphasize that similar gains in educational quality are not evident [46; 47]. For instance, in international tests, 8th graders (approximately age 14) consistently underperform compared to global standards. Between 1999 and 2007, for example, 38–39

percent consistently failed to meet the lowest benchmarks in elementary mathematical skills [48]. When accounting for the content taught, as measured by standardized international tests, effective years of schooling actually decreased from 7.9 to 7.7 between 2010 and 2020 [49; 50]. In essence, the increase in educational attainment and years of schooling did not result in the quality-based skill development typically associated with such gains. It is worth highlighting that the enduring inefficiency in distribution policy—both in educational spending and in the provision of social benefits through public employment premiums—indicates the resilience of the CSC mechanics [51].

This situation, combined with the ongoing preference for public employment, leads to at least three types of adverse labor market effects. First, there is a sustained, misguided focus on educational investment among successive cohorts in Jordan's labor market, both in terms of attainment levels and chosen subjects. As competitiveness for public sector jobs is partly based on educational attainment, the focus on public employment drives this type of investment. State investments, particularly in access to education, further enable this behavior [52].

Second, the labor force's skills do not align with private sector demands, particularly in the subjects of their degrees. Notably, sectors identified as having the highest growth potential are precisely those where the required skills are not reflected in popular degree choices [53].

Third, limited or even regressive improvements in educational quality mean that newer cohorts entering the labor market lack a competitive edge over older ones in both public and private sectors [54;55]. In fact, older cohorts, having gained experience or lowered their compensation expectations, are comparatively more advantaged."

2.3.3 Insufficient Job Creation

Fig. 4 Labor Force vs. Job Growth percent, benchmark: 2007 = 0%, 2007-2021
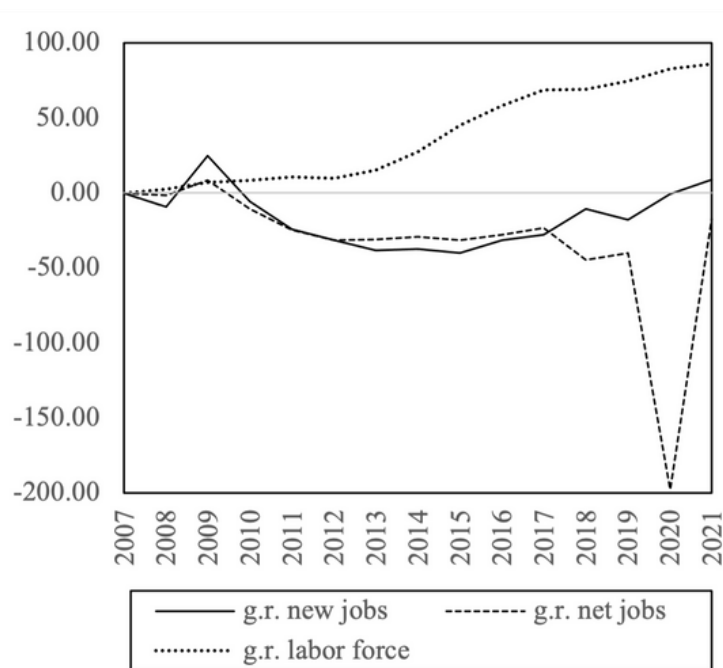
Source: Constructed from 'Job Creation' statistics (DoS, n.d.-c) and labor force statistics (World Bank, n.d.-b)

Systemic issues in Jordan's labor market, notably in public employment and educational investment, are further exacerbated by the regulations governing business and labor. This confluence adversely affects job creation. Following the CSC era, the scale of public employment contracted, but the private sector failed to adequately absorb the displaced workers [56; 57]. As indicated in Fig. 4, the rate of private sector job creation has weakened in comparison to the expanding labor force [58; 59; 60]. While the size of the labor force nearly doubled during this period, job creation rates have generally waned since 2007. Remarkably, these rates only returned to 2007 levels in 2020, a rebound likely attributable mainly to the restoration of jobs lost temporarily due to the COVID pandemic. These enduring trends can be traced back to Jordan's developmental strategy and social contract from the 1950s to the 1970s.

During the contract period, compensation was allocated not only through avenues of public employment but also through asymmetric business regulations [61; 62]. When the CSC was dissolved, the focus of compensation distribution shifted towards regulatory mechanisms in the private sector, gaining greater prominence [63; 64; 65].

Both before and after this shift, such regulations placed considerable financial burdens on businesses, thus hindering their operational efficiency and creating systemic roadblocks to job creation. Survey data underscores the persistence of these obstacles; employers consistently identify both labor market and business regulations, as well as inadequate workforce skills, as the main impediments to efficient business operations [66; 67; 68]. It's worth noting that during the CSC era, regulations governing the private sector may have

unintentionally reinforced the appeal of public sector jobs by suppressing the growth of wages in the private sector, making it harder to narrow the compensation differential.

Second, despite the dissolution of the CSC, a state-led approach to economic growth remained in place at least until the 1980s and continued to influence policy attitudes thereafter [69; 70]. In this setting, the large-scale rollout of extensive social security policies for the private sector, along with biased labor market regulations, continues to obstruct job creation [71; 72]. Specifically, Jordanian labor laws make it challenging to lay off redundant employees [73; 74]. This has a twofold impact. Firstly, it discourages employers from hiring broadly, due to the anticipated costs of terminating excess staff [75]. Secondly, it amplifies the appeal of public sector jobs, as employers can sidestep these costs by opting for temporary or informal hiring, which is not subject to the same regulations. This approach, however, diminishes employment stability and consistency—factors highly valued by Jordanian workers and generally offered in public employment [76; 77; 78]. Concurrently, lingering compensation premiums in public employment sustain elevated expectations among the workforce, thereby diminishing the private sector's demand for labor [79].

Such regulations particularly impair Small and Medium-sized Enterprises (SMEs), which are often the most economically innovative and dynamic players in the market [80; 81]. This not only stifles the emergence of industries that could generate and signal a demand for educational focus on more economically productive subjects [82], but it also exacerbates the already declining rate of job creation, disproportionately affecting those with the highest levels of education. Figure 5 displays two key metrics: the percentage of newly created jobs requiring higher-level skills often associated with tertiary education (classified under ISCO 1-3), and the percentage of these jobs that are secured by Jordanians with tertiary educational levels (classified under ISCED 5-8). From 2007 to 2021, Jordanians with higher education levels secured, on average, only one-third of such newly created jobs. Although there has been an uptick in this trend, increasing from less than 27% to over 40%, the share of total jobs created for this highly educated segment has not exceeded one-third post-2010. Significantly, the remaining two-thirds of job creation is predominantly in occupations requiring lower skill sets [83].

Fig. 5 High-Skill Job Creation: ISCO 1-3 & ISCED 5-8 New / Net Jobs
percent, 2007-2021

45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00

2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021

——— ISCO 1-3 new jobs (%, total)
··········· ISCED 5-8 new jobs(%, Jord.)

Source: Constructed from 'Job Creation' statistics (DoS, n.d.-c)

Notes:
a) includes Jordanians age 15+
b) ISCO 1-3 are individuals in occupations requiring skill-complexity associated with tertiary education; ISCED 5-8 are individuals who obtained tertiary education (Eurostat, n.d.)
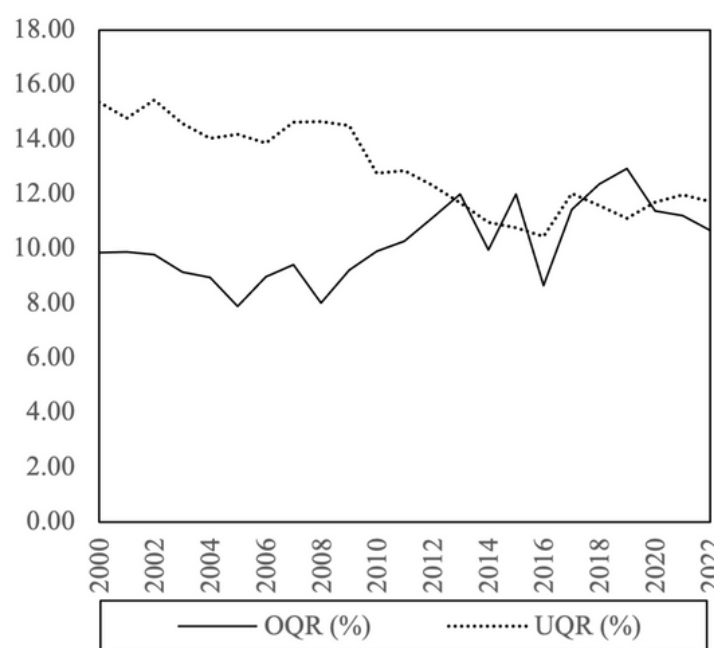
In other words, despite the fact that the proportion of tertiary educated individuals in the labor force almost doubled, the creation of jobs matching their skill-supply in demand has not only stagnated, but even amongst tertiary educated individuals that are employed, an increasing proportion works in occupations that do not require their skills (an argument we advance next).

2.4 Outcomes: Mismatch and Unemployment

In combination, Jordan's CSC governance at least until the 1980s generated persistent, adverse labor market institutions. These institutions in turn produced two detrimental labor market outcomes that are the key focus of our empirical analysis and policy recommendations. First, public sector compensation premiums, asymmetric public spending on education, and private sector regulation have clearly induced multi-faceted skill-mismatch. They have induced over-investment in tertiary education that cannot be absorbed by the public sector demand. Second, investment is targeted to satisfy perceived public sector demand, and is thus inconsistent with private sector demand of established industries, as well as in particular emerging industries with the largest labor absorption potential.

.Finally, demanded skill-quality is insufficient for market requirements, because public spending on education generates access gains without commensurate quality increases.

Fig. 6 Comparative Ratios of Over-Qualification and Under-Qualification for New and Net Job Positions percent, 2000-2022

Due to constrained data availability and the multi-faceted nature of skill mismatch, quantifying this issue poses challenges. Nevertheless, we've devised an innovative indicator tailored to the Jordanian labor market, adapting the methodology from Eurostat [84] to suit available data. Figure 6 illustrates two key metrics: the OverQualification Ratio (OQR) and the Under-Qualification Ratio (UQR). The OQR captures the share of the workforce with tertiary education who are employed in roles that don't necessitate such education, signifying a downward mismatch. Conversely, the UQR quantifies the share of individuals with less than tertiary education who are in roles requiring such education, indicating an upward mismatch. Excluding data post2019 due to likely distortions from the pandemic and the Ukraine war, we observe a consistent decrease in upward mismatch from 15 to 11 per 100 employed. On the flip side, downward mismatch initially declines until 2008 but then rises from 8 to 13 per 100 employed. These patterns suggest that unfavorable labor market institutions are impacting those with and without tertiary education in an asymmetrical manner.

Fig. 7 Comparative Unemployment Rates Among NonTertiary and Tertiary Educated Individuals.

percent, 2000-2022
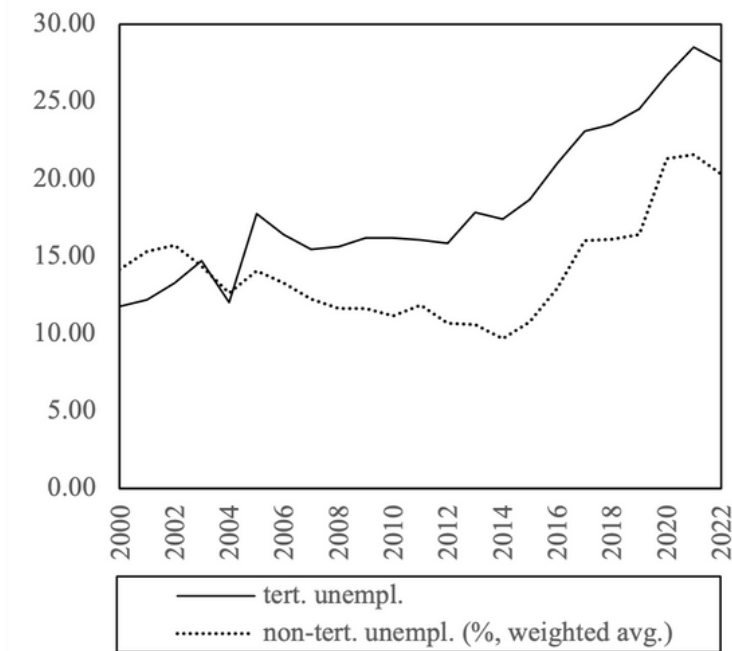
Source: Constructed From 'Employment and
Unemployment' statistics (DoS, n.d.-a)
Notes: Includes Jordanians age 15+

The same asymmetry is evident in unemployment rates, as illustrated in Figure 7. Before 2003, unemployment among those with non-tertiary education actually surpassed that of those with tertiary education. However, starting in 2004, unemployment rates for individuals with tertiary education began to substantially outpace those with nontertiary education. In fact, the latter saw a decline in unemployment until 2014. Compared to the year 2000, unemployment rates for the non-tertiary educated segment increased by 43.5 percent, while rates for the tertiary educated soared by 134.4 percent. It's crucial to highlight two concurrent developments. First, over this same time frame, the proportion of the labor force with tertiary education grew by approximately 10 percent. Second, the overall labor force itself has consistently expanded, indicating that the population of tertiary-educated individuals has increased more rapidly than those without tertiary education.These developments, specifically the uneven levels of occupation-attainment mismatch and unemployment between nontertiary and tertiary educated workers, serve as indicators of both the limitations in labor absorption, skill development, and job creation, as well as the institutional factors that condition them. However, much of our understanding is based on observational analysis, data trends, and quasi-empirical evidence, particularly analyses specific to Jordan (e.g., Assaad, 2014). More critically, the precise impact—both in terms of significance and direction of effects—of enduring Jordanian CSC institutions has yet to be empirically examined. Empirical analysis allows us to isolate the most influential factors, identify those that are inconsequential, and formulate a more coherent interpretation of the available data. This, in turn, enables us to unrav el the intricate dynamics behind Jordan's structural unemployment, thereby allowing for the

development of targeted, plausible, and effective policy solutions to ongoing employment challenges.

3. EMPIRICAL METHODOLOGY

We employ a Vector Autoregressive (VAR) model, an expansion of autoregressive models to capture the possible interdependency among variables. That is, we assume that all variables simultaneously influence each other, with no distinctly dependent or independent factors. In a VAR model, each variable's current value is expressed as a function of its past values as well as the past values of all other variables in the system, which allows simultaneous analysis of multiple variables and their interactions over time. The overall form of the VAR model with p lags is:

$$Y_t = c + A_1 Y_{(t-1)} + A_2 Y_{(t-2)} + \ldots + A_p * Y_{(t-p)} + \epsilon_t$$

Where Y_t is a vector of endogenous variables at time t; c is a vector of intercept terms, A_1, A_2,…, A_p are coefficient matrices capturing the lagged effects of the variables on each other, and ϵ_t is a vector of error terms. The VAR then estimates the coefficient matrices and the intercept term. For our purposes, the focus is decomposing the variance observed in all relevant variables to discover how much variation is caused by the additional variables in the model. The VAR model is a more robust and meaningful estimation method because macroeconomic variables are normally highly interdependent and may suffer from endogeneity [85].

3.1 Variables and Summary Statistics

Prior to estimation, it's crucial to have a comprehensive understanding of the variables involved, including their sources and descriptions. For this purpose, a detailed list of all variables is available in Appendix Table 1. We focus primarily on the World Bank's Good Governance institutional indicators, as our previous discussion has established that the enduring issue of unemployment in Jordan is deeply tied to governmental practices and regulatory frameworks governing labor and business.

Table 2 in Appendix presents summary statistics to provide a clearer understanding of the range and magnitude of each updated coefficient, obtained after incorporating the observed data into the Vector Autoregressive (VAR) model. All institutional indicators range from -2.5 to 2.5, with higher values indicating a better quality of the institutional dimensions captured by the indicator. Another crucial aspect of the analysis involves decomposing the influence of institutional factors on our novel Over-Qualification Ratio (OQR) and Under-Qualification Ratio (UQR) mismatch indicators. This bridges the micro- and macro-economic dimensions of our analysis. While respective coefficients are omitted from Table 1, we incorporate further significant control variables into the estimations, such as inflation, export-import rates, and the value-add share of medium and high-tech manufacturing as a proxy for technology.

Although these variables exhibit minimal direct impact on unemployment, their inclusion is valuable for controlling additional macroeconomic factors and trends not captured by institutional and mismatch indicators. The selection of relevant lags is determined using the Schwarz-Bayesian Information Criterion (SBIC), and the Augmented Dickey-Fuller test (ADF) is performed on all variables to test for nonstationary time trends. Variables displaying a random walk are subsequently firstdifferentiated to create a stationary time trend, enabling us to estimate the Vector AutoRegression (VAR) model with Mixed Integration Orders.

We undertake two main estimations: The first focuses on tertiary unemployment as the main variable of interest, along with the Over-Qualification Ratio (OQR). The second centers on non-tertiary unemployment as the primary variable of interest, paired with the Under-Qualification Ratio (UQR). The objective is to capture the dynamics between a group's unemployment rates and the degree of mismatch between their job positions and skill levels. Since the overall unemployment rate doesn't adequately represent different skill levels, results could be biased if general unemployment rates were applied. This differentiation also allows us to ascertain whether institutional variables exert asymmetric effects on non-tertiary and tertiary unemployment rates. Apart from unemployment rates and mismatch indicators, both specifications are methodologically identical and include the same variables and lags.

3.2 Cumulative Impulse Response Functions

To make the interpretation of the model's results more intuitive, we opt to generate Cumulative Impulse Response Function (CIRF) based on the two VAR model estimations performed. The CIRFs have the advantage of showing how the impact of a shock or event on a variable accumulates through time. In a system where variables are interdependent, a shock in one variable can impact others, creating a ripple effect. The CIRFs allow us to study precisely how shocks evolve and accumulate over time, similar to a domino effect. This way, we can better understand the short-term and long-term effects on unemployment of a sudden change in a parameter, i.e. institutional quality.

Although we control for the previously discussed additional variables, CIRF estimates focus on institutional and mismatch variables, as their impact is our primary interest. The results are shown in Fig. 8 and Fig. 10, for the tertiary and non-tertiary unemployment specifications respectively. The corresponding accumulated effects of the shocks are displayed for eight steps, that is, until 8 time-periods after the shock. The vertical axis represents the magnitude of the accumulated shock to unemployment.

For our purposes however, the general direction of the shock is more relevant than its magnitude, because the interpretation of the magnitude also depends on the nature of the variables being discussed. We further display the resulting coefficients of our VAR Model estimation in Tables A.1-2 (see appendix).

3.4. Empirical Results

3.4.1 Unemployment of Tertiary-Educated

Fig. 8 shows that the Over-Qualification Ratio (OQR) has a strong positive impact on tertiary unemployment. This underscores that a significant number of highly educated workers struggle to find jobs that match their skills, leading to increased unemployment over time. This trend occurs because the supply of highly educated workers exceeds the demand, even for jobs with lower educational requirements. These findings are consistent with our earlier descriptive analysis in Section 2, which indicated that young adults prefer public sector roles due to signaling issues. However, due to limited demand in the public sector and a skills mismatch with private sector needs, workers either settle for roles that don't fully use their abilities or remain unemployed, ultimately accepting less skill-intensive positions in the long term.

Fig. 8 CIRF Specification I: Tertiary-Level Unemployment
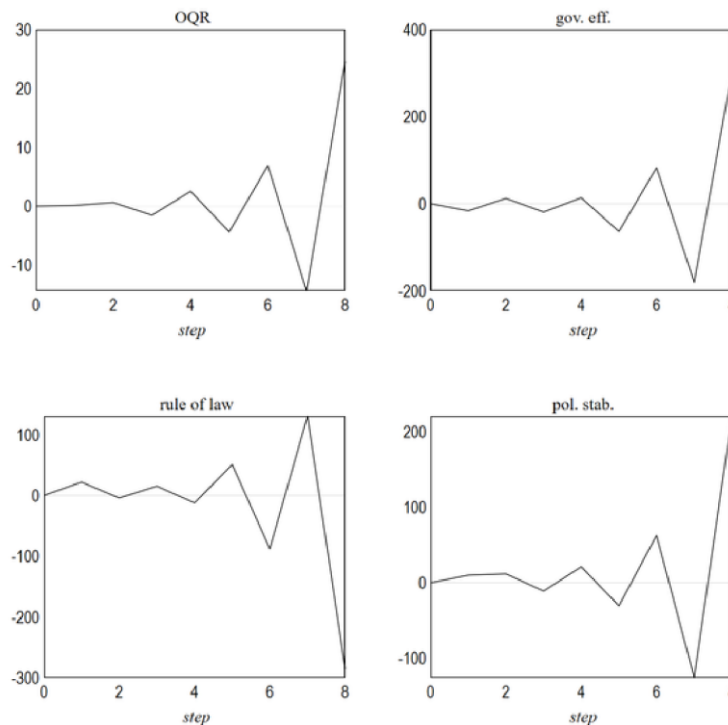
Source: Unemployment and   OQR/UQR constructed from DoS (n.d.-a); Institutional variables from World Bank (n.d. -b); Economic control variables from World Bank (n.d.-d)

Furthermore, the positive impact of the "Government Effectiveness" indicator on unemployment supports our argument. The indicator measures the effectiveness of public services and the extent of their credibility in society [93]. Naturally, the quality of public service is linked with the conditions and incentives offered to public workers. This means that higher effectiveness makes public sector jobs more attractive. Consequently, a higher indicator score increases the desire for public sector employment, leading to more voluntary "queuing" unemployment. As for the impact of "Rule of Law," the expected

negative long-term effect is observed. This indicator reflects how much people trust and follow societal rules, as well as the quality of contract enforcement and property rights [94]. A rise in this confidence should encourage more participation and investment from both employees and employers, thereby reducing unemployment.

Fig. 9 Correlation Political Stability vs. Public Employment

2002-2020
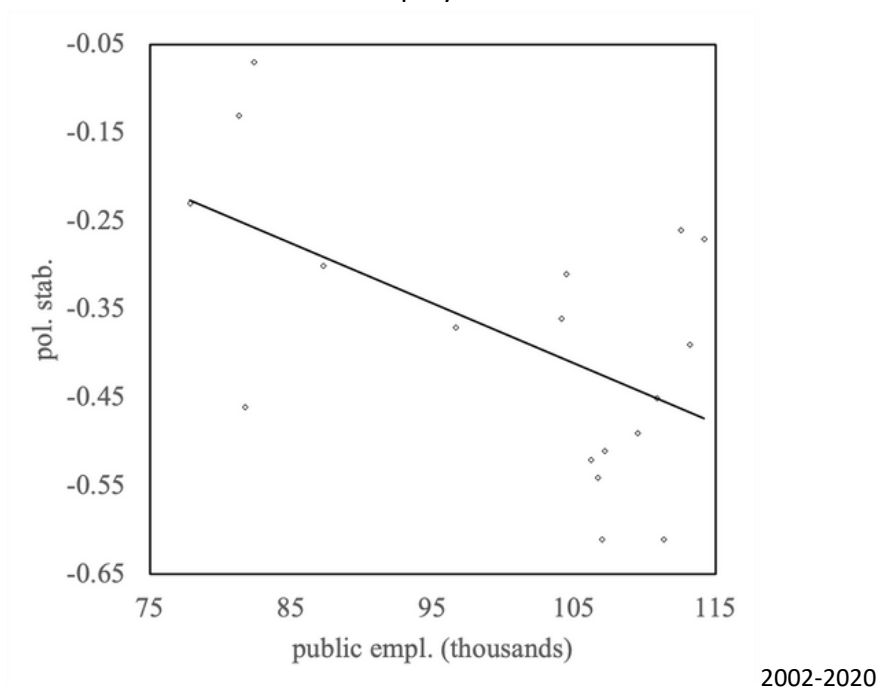
Source: Constructed from 'Employment in Establishment' statistics (DoS, n.d.-b)

Notes:
a) 2006 is excluded.
b) Including public administration, defence andcompulsory social security

Regarding "Political Stability," the CIRF reveals an intriguing trend: an improvement in political stability leads to an increase in unemployment. Given that this indicator measures perceptions of governmental and institutional stability, as well as the absence of violence and terrorism, one might expect that higher stability would correspond with lower unemployment rates. Yet, the observed relationship could be attributed to the enduring features of CSC institutions. As previously outlined, the educated labor force gravitates toward public sector jobs, leading to a higher supply of labor than there is demand for such positions. Additionally, a decline in stability tends to increase the demand for military personnel and high-skilled roles in administrative sectors. Since public employment accounts for a significant share of overall employment, it seems plausible that tertiary unemployment might rise when political stability improves, and government labor demand declines during stable periods. Supporting this hypothesis, recent data suggest a negative

correlation. In Fig. 9, we juxtapose the number of workers in public administration and defense roles with the political stability indicator for the years 2002-2020. A negative correlation is evident in the line of best fit, with a correlation coefficient of -0.554.

3.4.2 Non-Tertiary Unemployment

Fig. 10 CRIF Specification II: Non-Tertiary Unemployment
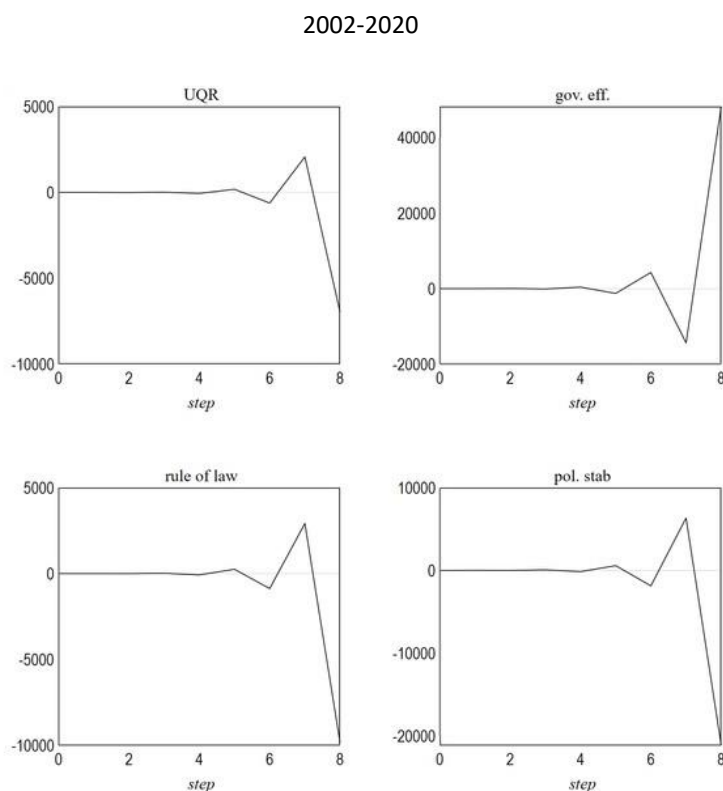
2002-2020

Source: Unemployment and OQR/UQR constructed from DoS (n.d.-a); Institutional variables from World Bank (n.d. -b); Economic control variables from World Bank (n.d.-d)

The dynamics observed with respect to tertiary educated labor change considerably in the specification for non-tertiary unemployment (see Fig 10). In contrast to the relationship between tertiary unemployment and OQR, a significant shift in the UQR has a negative long-term effect on non-tertiary unemployment. This reflects our proposition of CSC persistence, specifically with respect to educational investment. The inappropriate skill-investment by tertiary educated individuals means that because they do not satisfy private sector skill-demand, employer-expectations adjust downwards, at which point less educated labor is comparatively cheaper and thus increasingly occupies jobs it is hypothetically underqualified for. In other words, mismatch is increasing in employment (i.e., decreasing in unemployment).

Similarly, a sudden change in government effectiveness positively influences unemployment, echoing the dynamic previously discussed concerning upward mismatch. An improvement in government effectiveness ultimately results in highly educated, unemployed workers seeking lower-skill jobs. Consequently, this group now competes with less skilled workers for the same job positions, increasing unemployment among both tertiary and non-tertiary workers over the long term. This effect is likely exacerbated by the negative influence of business and labor regulations on the creation of high-skill employment opportunities, further reinforcing the persistence of CSC.

Moreover, the positive impact of government effectiveness is probably linked to the substantial size of Jordan's informal economy. As discussed in Section 1.1, approximately half of Jordan's labor force is employed in informal roles, which are often associated with lower skill levels. Production in the informal economy is not necessarily illegal, but it is often partially or wholly concealed to evade taxes, social security contributions, or regulation. Frequently, employees choose informal employment to sidestep cumbersome bureaucracy and taxation, which would otherwise render their employment unprofitably costly. Therefore, enhancements in government effectiveness, especially through recent initiatives aimed at expanding regulation to the informal sector to improve tax revenues, may contribute to rising unemployment. The positive impact of a significant shift in the government effectiveness indicator likely mirrors these dynamics.

A significant shift in the rule of law indicator, conversely, has a negative long-term impact on both tertiary and non-tertiary unemployment. This suggests that greater confidence in the government's capacity to enforce contracts and protect private property rights benefits workers across all skill levels. Unlike the case for tertiary unemployment, an abrupt variation in political stability exerts a negative effect on nontertiary unemployment. This is likely due to two main factors.

First, demand for low-skill workers increases less during periods of national and international tension compared to the demand for high-skill workers, as roles in public administration and the military generally require higher educational qualifications. Second, the impact is negative (i.e., employment increases when stability rises) because elevated levels of political stability are not only beneficial but essential for economic activity in the private sector, where the majority of low- and middle-skilled workers are employed.

In summary, the estimation results affirm the critical importance of institutional factors in shaping the structural unemployment landscape in Jordan. Persistent CSC mechanisms in

the labor market skew educational incentives and preferences toward public employment, resulting in high levels of voluntary unemployment among skilled workers, also known as queuing. These distortions make the skill profile of the educated labor force ill-suited for private sector needs. This leads to a lack of high-skill job creation and heightened competition for middle- and low-skill jobs between educated and less-educated workers, as well as occupational mismatches, all contributing to escalating unemployment. To address these issues in the short to medium term, viable solutions involve targeted improvements in both public and private employment dynamics. Overhauling the underlying institutions will be a challenging, long-term endeavor. As such, we recommend policies aimed at specific elements within this institutional framework, which have the potential to catalyze meaningful change in Jordan's economy and assist in the long-term institutional transformation.

4. POLICY RECOMMENDATIONS

Recommendation 1: Optimize public employment services to improve provision efficiency, re-align employment expectations, and increase employer participation.

The Ministry of Labor has long been aware of the strong preference for public employment, the limitations of the public sector to meet this demand, and the need for private sector job creation. As a result, labor market policy has been explicitly formulated to address these issues [95]. The Employment Directorate under the Ministry of Labor has consistently demonstrated commitment by enhancing the availability of public employment services [96]. They offer a range of services such as training programs, career and job-search counseling, and labor market intermediation, most recently facilitated by the digital employment platform Sajjil. These services are accessible both online and at the directorate's physical locations across Jordan's twelve governorates [97]. In 2019, the platform successfully matched nearly 18,000 unemployed individuals with jobs and maintained strong performance by facilitating over 10,000 matches in 2020, despite the pandemic. While there have been increases in service provision and staff at the directorate, there are areas where Public Employment Services (PES) can still be improved. To this end, we suggest three specific policies aimed at optimizing the impact of these services.

1.1 Expand and Target Career Counseling Services

Firstly, we recommend allocating a larger proportion of staff from the Employment Directorate, who are responsible for Public Employment Services (PES), to focus on career counseling services. As it stands, these services are scarcely offered and are considered auxiliary due to limited resources [98; 99]. We suggest that these counseling services be specifically aimed at youth and those entering the labor market for the first time. Currently, the focus of counseling is primarily on low-skilled labor [100]. However, youth are particularly vulnerable to unemployment [101], have grown significantly in number in

recent years, and are more likely to wait for public sector jobs despite the scarcity of such positions [102; 103]. By targeting counseling to this demographic, individuals who have not yet entered the labor market can better align their educational investments with private sector demands. This approach also provides critical information about existing labor demand to both first-time and future labor market entrants, helping to recalibrate expectations about job opportunities and compensation. As a result, targeted career counseling has the potential to reduce unsuitable voluntary unemployment and misguided educational investment, while also challenging unproductive societal expectations about public employment.

Naturally, this recommendation necessitates significant changes and capacity building within the Ministry of Labor (MoL), and it also relies on trust in MoL's employment platforms, which currently rank lowest among job search methods.

1.2 Eliminate In-Person Verification

Secondly, we suggest revising the process for firms to register job vacancies on the MoL's digital employment platform. Currently, firms generally cannot directly add vacancies to the platform. Instead, the MoL's Employment Directorate staff collect this information through in-person visits [104]. We propose eliminating the requirement for in-person collection of vacancy information, allowing firms to upload this data directly to the platform. The form currently used by MoL staff for in-person data collection [105] could be digitized and integrated into the platform. To ensure the validity of the posted vacancies, random physical inspections could be introduced, thereby reducing both the time cost for employers and the human resource costs on the MoL side. This change would free up MoL staff to focus on other higher-impact PES services, such as counseling.

Special consideration in this context should be given to initiatives like the Jordan Support to Private Sector Employment and Skills [106]. As registration is a requirement for firms to, for example, receive temporary employment subsidies through the program [107], in-person vacancy verification should be restricted to firms participating in such projects. However, these specific verifications need not be carried out by the already stretched Employment Directorate staff. Since the MoL's Inspection Directorate performs in-person Occupational Health and Safety (OHS) inspections [108] for firms in the project, these inspections could serve to verify job vacancies.

1.3 Enhance Visibility

Fig. 11 Methods of Job Search Among the Unemployed percent, 2000-2016
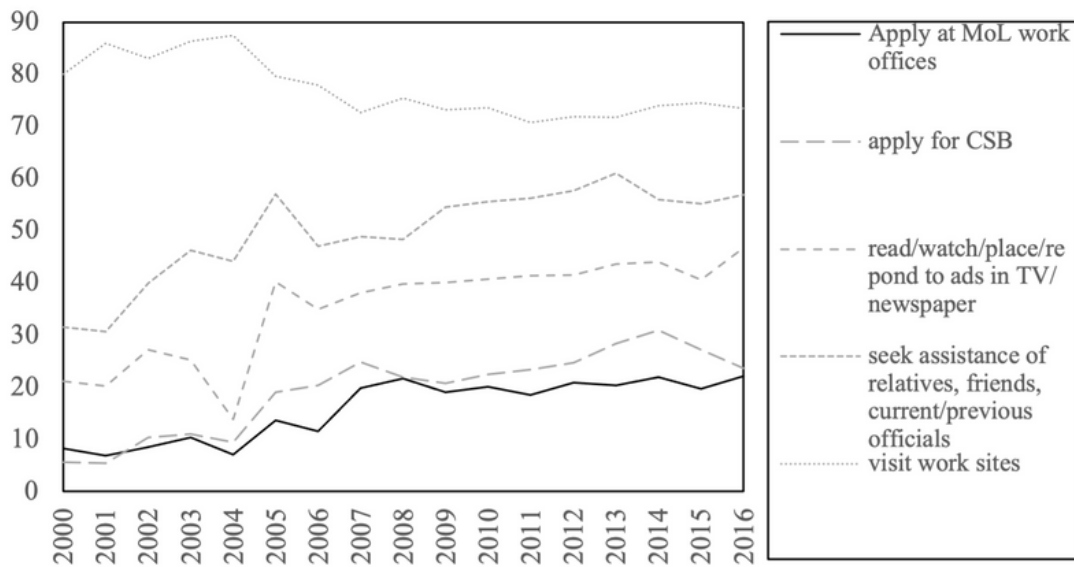
Source: Constructed from 'Employment and Unemployment' statistics (DoS, n.d.-b)
Notes: Post-2016 not incl. due to change in DoS Survey that make impossible comparability

Thirdly, we recommend investing in campaigns to promote Public Employment Services (PES), particularly emphasizing the enhancements proposed in sections 1.1-1.2. These strategies aim to optimize the efficiency and impact of PES. According to Department of Statistics (DoS) surveys, as illustrated in Figure 11, fewer than one in five unemployed Jordanians utilize PES. In fact, it ranks as the least employed method for job searching among Jordanians. This indicates either a lack of awareness or skepticism about the utility of these services. To maximize the impact of PES, raising public awareness about the availability and accessibility of these services is vital.

Two critical factors determine the effectiveness of the preceding policy recommendations. First, the Employment Directorate under the Ministry of Labor is currently understaffed for the volume of services it provides, with only 88 staff allocated to PES [109; 110]. To deliver existing services more efficiently and implement the proposed policies, a substantial staff expansion is necessary. Second, Jordan's labor market policies often lack systematic Monitoring and Evaluation (M&E) services [112; 113]. For more effective policy implementation and subsequent adjustment, we recommend that registered employees and employers receive periodic follow-up forms via the digital employment platform. This approach not only facilitates data collection for future adjustments but also underscores the government's commitment to these services.

Pastel Analysis

We deem the recommendations as **politically feasible** as they support Jordan's 2030 Economic Modernization Vision.

It is important to note that the proposal 1.1 will require an increase in staffing across the Employment Directorates to realize its potential (see economic feasibility). While this factor could complicate the **administrative** execution of the recommendation, we are optimistic that within the context of the government's Economic Modernization Vision, a successful implementation is attainable.

The policies are socially feasible, as they explicitly aim to improve employment prospects and, consequently, living standards. Additionally, proposal 1.2 will gain high visibility once implemented, proposal 1.3 will ensure initial visibility, and the complementary proposal for digital follow-ups will demonstrate the government's commitment to public employment services. Therefore, these policies are highly likely to garner popular support.

The recommendation is **technologically feasible** since the digital infrastructure required for proposal 1.2 already exists in the form of the employment platform Sajjil, only minor adjustments are necessary to digitize the form currently used for in-person retrieval of vacancy information. Likewise, counseling services have already been conceptually designed but currently lack the necessary funding and staffing for implementation (see economic feasibility).

Given recent improvements in tax revenue collection, substantial investment in the National Employment Program, and the urgency for improved labor market conditions, we find the proposed policy **economically feasible**, if part of the improved budget is allocated to expanding Employment Directorate staff for the implementation of proposal 1.1. Additionally, proposal 1.2 will free up staff and resources, thus aiding in the funding of proposal 1.1. Over the medium term, proposal 1.2 is likely to contribute to the financing required for proposal 1.1 by specifically improving formal employment and, consequently, tax revenue.

The policies are **legally feasible,** as they would not infringe on labor laws. However, it is advisable to review current international cooperative efforts to ensure that the policies do not interact with the terms and conditions of those initiatives in ways that could be undesirable.

Recommendation 2: Encourage the establishment of new private high-skill jobs to re-align incentives for high-skill workers.

Effective adjustment of labor market incentives is crucial for mitigating elevated unemployment rates among well-educated workers, especially given an overdependence on public sector employment. To tackle this issue, a dual strategy is essential: realigning workers' career expectations while simultaneously broadening the accessibility of high-skill roles in the private sector. At present, many well-educated job seekers exhibit skill sets

misaligned with private sector demands, often leading them to accept positions beneath their educational level. This mismatch aggravates the unemployment situation, as previously discussed.

The Jordanian government has already made significant strides in recognizing and addressing the need for more opportunities in the private sector, particularly in skillintensive fields. Case in point, the ICT sector has seen a growth of over 19% in employment within the past three years [114]. Further bolstering optimism, the Economic Modernization Vision announced in June 2022 outlines a decade-long plan coauthored with the private sector to propel technology-centric economic expansion.

Jordan also provides a conducive environment for international businesses by offering multiple fiscal and regulatory incentives, widespread availability of credit to nationals and foreigners alike, access to over 30 Free Trade Zones, and existing free trade agreements with major economic players like the US and EU. While the infrastructure for skill-intensive industries to flourish is established, challenges remain, particularly for young graduates transitioning from academic life to the workforce, hindered by an insufficient focus on practical skills and application. We are suggesting two focused policy initiatives to remedy the dearth of skilled jobs in the private sector and realign academic curricula to meet market demands.

2.1 Industry-Academia Collaborations

Jordanian youth encounter a myriad of obstacles that hamper their full integration into the labor market, the most pressing of which are inadequate work experience and practical skills [115]. Employers in Jordan are often reluctant to hire new graduates, largely attributing their hesitance to this skills gap [116]. A pragmatic solution to this quandary is the formation of industry-academia collaborations aimed at mutual exchange of specialized skills and field experience. Previous initiatives like the Factory for Faculty (FFF) program validate the efficacy of this strategy, despite hurdles such as minimal awareness within the private sector, scarce funding, and diverging operational frameworks between academia and industry [117].

To expedite the scaling of such collaborations, we recommend augmenting government funding through programs like the Industrial Scientific Research and Development Fund (IRDF), the National Fund for Enterprise Support (NAFES), and the National Centre for Research and Development (NCRD). Concurrently, the establishment of a dedicated governmental agency could facilitate matches between private firms aspiring for technological advancements and academic experts keen on solving practical challenges. This agency would have the latitude to collaborate with a broad spectrum of educational institutions, thereby extending the reach of such programs to a national scale and catering to diverse regional needs.

Elevating awareness within the private sector is pivotal for the triumph of these collaborations [118]. The agency would serve as an efficient conduit between academia and industry, aiding partnerships while upholding minimum quality criteria to ensure their effectiveness. The enactment of this policy could potentially catalyze corporate adoption of innovative methods, contributing to the proliferation of high-skill job roles over time.

2.2 Industry-Academia-Student Synergies

Traditional industry-academia programs often neglect to involve students, missing a golden opportunity to enhance the employability of future graduates while also supplying businesses with avant-garde research and techniques. Our proposal advocates for student inclusion in these partnerships with a focus on innovation and corporate advancement.

Rather than mere spectators, students would actively engage in decision-making processes and be responsible for generating actionable solutions to pressing issues faced by the private sector. They would evaluate the feasibility of these solutions and collaborate with companies for effective implementation. Success in this venture would serve a dual purpose: elevating the technological proficiency of firms and preparing future workforce entrants, ensuring a more seamless transition into highskill roles in the private sector.

Pastel Analysis

We deem the recommendation **politically feasible**, given the current efforts of the Jordanian Government to improve technological standards and increase youth employability through initiatives such as the National Youth, Technology and Jobs Project. This initiative is spearheaded by the Ministry of Digital Economy and Entrepreneurship (MODEE) in collaboration with the World Bank [119].

Considering the success of past programs like the FFF, expanding industry-academia partnerships to include students should face minimal obstacles, making it **administratively feasible**. One potential issue could be the need for new administrative guidelines to create an agency responsible for matching firms with researchers.

The recommendation doesn't impose any limitations on other employment types but acts as a catalyst for private-sector employment and modernization, suggesting it would face little social disapproval. Given the significant impact of youth unemployment on both the young population and wider Jordanian society, we find the recommendation to be **socially feasible**.

Both the private and academic sectors already possess the know-how and technical skills to implement such an initiative, which makes the recommendation **technologically feasible**.

Funding avenues already exist through programs such as the IRDF, NAFES, and the NCRD. Furthermore, the financial requirements for the recommendation are likely to be minimal, especially once the matching agency has successfully connected partners. This makes the recommendation **economically feasible**.

Previous government initiatives set a precedent that makes the policy **legally feasible**. While challenges may arise in the creation of a new governmental agency for the purpose of matching researchers and firms, we view the recommendation as aligned with existing labor laws and regulations.

Recommendation 3: Replace rolling applications for public sector jobs with needs-based application procedures.

Fig. 12 Public Sector Hiring vs. Proportion of Unemployed Seeking Public Employment percent, 2000-2015
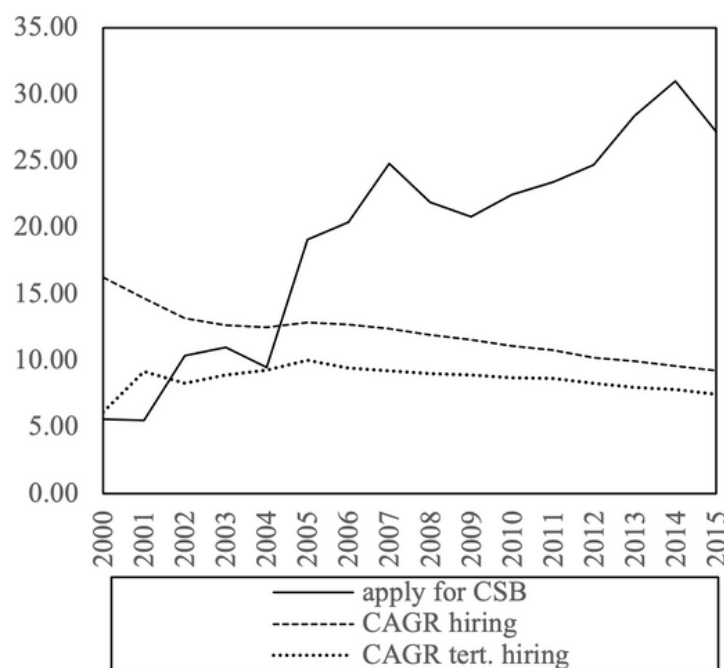
Source: Constructed From 'Employment and Unemployment' statistics (DoS, n.d.-a) and 'Annual Report' statistics (CSB, 2010, 2011, 2012, 2013, 2014, 2015)

The adjustment of labor market incentives, particularly employees' expectations, requires more than just the accessibility of high-skill private sector employment. It also necessitates correcting the mechanisms that lead to such inappropriate expectations, especially concerning public employment. Indeed, Jordanian employees not only prefer public sector jobs (as detailed in section 2.2.1) but also believe there is a demand for their labor. Figure 12 displays the proportion of the unemployed Jordanian population that applies to the Civil Service Bureau (CSB), which manages public employment [120], as a means of job-seeking.

It also shows the compound growth rate of total and tertiary employees hired in the public sector. Since 2000, the proportion of the unemployed applying for civil service roles has increased fivefold. This indicates both a relative and absolute growth (given the rise in unemployment over this period) in the number of unemployed individuals who consider public employment a viable option. This perception and subsequent behavior are clearly not motivated by actual civil service labor demand, as this has been declining over the same period. Instead, it aligns with demand signals induced by the current public sector application procedure.

Specifically, civil service hiring does not operate on a needs-basis; applications are accepted on a rolling basis and are not tied to specific jobs or qualifications [121]. This practice, combined with the prevalence of compensation premiums that exceed market rates, encourages queuing and crowds out private employment opportunities [122].

Such inappropriate signaling is particularly detrimental to highly educated individuals and needs remediation for two main reasons. First, the growth in hiring of tertiaryeducated individuals in the public sector is declining even more than overall hiring, as Figure 12 demonstrates. Second, individuals with tertiary education, having made substantial educational investments, are more willing to postpone employment to wait for preferred public-sector positions [123].

To eliminate the inappropriate signaling and the inefficient behavior and preferences it engenders within the labor force, we propose the following policy.

3.1 Need-Based Public Job Application

We propose a revision to the CSB's application procedure. Specifically, we recommend discontinuing the practice of accepting applications on a rolling basis. Instead, applications should only be accepted based on specific vacancies. This approach could take two forms: either cease accepting applications as soon as a sufficiently suitable candidate is found or accept applications over a pre-specified period (e.g., one month) and then identify the most suitable candidate, rejecting all other applications. Additionally, the substantial backlog of current standing applications should be reevaluated for current openings, and all remaining applications should be discarded. This step not only helps in re-aligning expectations about future public-sector employment but also funnels the currently intentionally unemployed population into the private sector.

Another significant factor contributing to public-sector preference is the social prestige commonly associated with such jobs. We recommend launching social marketing campaigns, akin to those successfully implemented in Jordan on health issues [124], to elevate the prestige of private-sector employment, especially emphasizing its societal value. Lastly, it's evident from the preceding discussion, and the analysis in Section 2.2.1, that eliminating compensation premiums is also critical for re-aligning employment

preferences. While initiatives to align with market rates are in development [125], these will likely take effect in the medium to long term and will require continuous adjustments to keep pace with changing economic conditions that affect market compensation. Consequently, our proposed reform to the application procedure offers a more immediate solution in conjunction with such long-term policies.

Pastel Analysis

We deem the recommendation **politically feasible**. The recommendation aligns well with current governmental projects aimed at boosting private-sector employment. This would likely generate political goodwill and support, as it complements rather than contradicts existing strategies. Moreover, by improving labor allocation and job market efficiency, the proposal would likely resonate with a broad spectrum of stakeholders, thereby garnering more political backing.

The recommendation is **administratively feasible.** The recommendation simplifies the administrative process by eliminating the need for constant re-evaluation of standing applications. This leads to less administrative burden and could free up staff to focus on other critical tasks. Essentially, the policy is designed to make the existing process more efficient, making it easier to implement from an administrative standpoint.

The recommendation is **socially feasible**. The proposal includes a social marketing campaign aimed at shifting public perception about private-sector employment. By laying the groundwork through this campaign, it increases the likelihood of social acceptance. The campaign would help dispel myths and remove stigmas, making the policy more palatable to the general populace.

The recommendation is **technically feasible**. With existing digital infrastructure through the CSB, only minor adjustments would be needed to implement the policy. This makes the technical aspects less daunting. Given that the core systems are already in place, the risk associated with technological implementation is minimized.

The policy is **economically feasible** because it calls for a more efficient use of existing resources. By streamlining the application process, it reduces administrative costs in the long run. Additionally, any initial costs for modifying existing systems or reevaluating standing applications are likely to be offset by the efficiencies gained, making the proposal economically sustainable.

We find the recommendation **legally feasible**. The recommendation does not appear to contravene existing labor laws, making it legally sound. It aligns with broader governmental goals and existing legislative frameworks, reducing the risk of legal complications down the line.

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A P P E N D I X

Table 1. Variables

Variable	Name	Source
pol. stab.	Political stability	World Bank Good Governance Indicators [86]
gov. eff.	Government effectiveness	World Bank Good Governance Indicators [87]
nter. unemp.	Non-tertiary unemployment rate (weighted mean)	Own Construction from DoS data [88]
ter. unemp.	Tertiary unemployment rate	DoS [89]
OQR	Overqualification rate	Own Construction from DoS data [90]
UQR	Under-qualification rate	Own Construction from DoS data [91]
rlaw	Rule of law	World Bank Good Governance Indicators [92]

Table 2. Summary Statistics

Variable	N	Mean	SD	Min	Max
pol. stab.	23	-0.343	0.214	-0.760	0.08
gov. eff.	23	0.117	0.0798	-0.30	0.24
nter. unemp.	22	13.81	3.178	9.685	21.57
ter. unemp.	22	17.93	4.711	11.76	28.50
OQR	22	10.19	1.417	7.892	12.92
UQR	22	13	1.623	10.45	15.44

rlaw	23	0.285	0.0968	0.06	0.47

Table 3. VAR Coefficients for Non-Tertiary Unemployment

VARIABLES	(1) Non-Tertiary Unemployment	(2) UQR	(3) Government Effectiveness	(4) Political Stability	(5) Rule of Law	(6) Tech	(7) Inflation	(8) ExportImport
nter. unemp. d = L.	-1.479***	-0.814***	0.00431***	-0.000832***	-0.135***	-2.278***	-1.217***	8.311***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
nter. unemp. d = L.	-0.891***	-0.672***	-0.112***	0.247***	-0.109***	-1.347***	-2.789***	6.011***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
UQR = L.	-0.551***	0.192***	0.0487***	-0.338***	0.195***	2.672***	6.535***	-6.010***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
UQR = L.	-0.244***	0.722***	0.164***	-0.201***	0.0892***	2.699***	6.106***	0.0834***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
gov. eff. d = L.	-1.007***	2.774***	0.460***	1.265***	-0.393***	-14.44***	-14.57***	66.27***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
gov. eff. d = L.	0.664***	-8.775***	-0.518***	2.404***	-1.696***	-30.96***	-54.21***	52.76***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
pol. stab. = L.	17.24***	4.120***	-0.481***	1.287***	-0.513***	-0.370***	-28.13***	-20.16***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
pol. stab. = L.	7.830***	0.118***	-0.0796***	1.101***	-0.417***	-5.530***	-32.54***	-9.501***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
rlaw = L.	0	0	0	0	0	0	0	0
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
rlaw = L.	-2.326***	0.0875***	-0.323***	0.932***	0.0779***	-1.198***	-6.904***	24.05***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Constant	48.72***	7.228***	-0.301***	1.483***	-0.118***	-5.334***	-101.7***	-82.37***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Observations	16	16	16	16	16	16	16	16

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4. VAR Coefficients for Tertiary Unemployment

VARIABLES	(1) Tertiary Unemployment	(2) UQR	(3) Government Effectiveness	(4) Political Stability	(5) Rule of Law	(6) Tech	(7) Inflation	(8) ExportImport
ter. unemp. d = L.	-0.277***	-0.211***	0.0491***	0.000843***	0.0264***	1.460***	2.638***	1.434***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
ter. unemp. d = L.	0.471***	0.223***	0.0144***	0.106***	0.0185***	1.967***	3.042***	3.349***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
OQR = L.	0.125***	-0.501***	0.0211***	0.108***	-0.0341***	0.619***	1.169***	4.250***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
OQR = L.	0.720***	0.144***	0.0117***	0.0229***	0.0425***	0.894***	0.116***	-3.136***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
gov. eff. d = L.	-16.22***	-7.281***	0.313***	0.0657***	-0.263***	-16.76***	-3.077***	75.24***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
gov. eff. d = L.	0	0	0	0	0	0	0	0
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
pol. stab = L.	10.02***	4.336***	-0.334***	1.171***	-0.714***	6.203***	6.116***	45.50***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
pol. stab = L.	4.633***	2.021***	-0.153***	-0.0556***	-0.287***	-10.68***	-31.19***	-17.84***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
rlaw = L.	21.87***	-0.662***	0.238***	-0.134***	0.986***	17.45***	19.41***	-51.09***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
rlaw = L.	-6.785***	-12.22***	0.139***	1.046***	-0.764***	-16.04***	-25.36***	52.51***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Constant	-6.485	46.82	-1.887	-2.773	-1.524	-59.28	-105.4	37.09
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Observations	16	16	16	16	16	16	16	16

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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