A Wartime Labor Market: The Case of Ukraine

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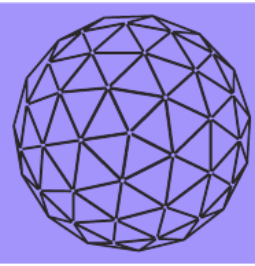


Wars and Labor Markets

- wars severely disrupt labor markets and data availability
- little is known about the workings of labor markets during a war
- unique digital platform still collecting data despite full-scale invasion

this paper provides micro analysis of labor markets during wartime

Findings

- massive shocks to labor supply and demand
- large reallocation across regions and sectors
- surprising resilience in matching efficiency due to:
  - remote work
  - wage flexibility
  - recruitment policies flexibility

Outline

- main results
  - large supply and demand shocks
  - significant reallocation
  - strong resilience of matching efficiency
- three notes of caution
  1. measurement
  2. coverage
  3. institutional constraints
- policy implications

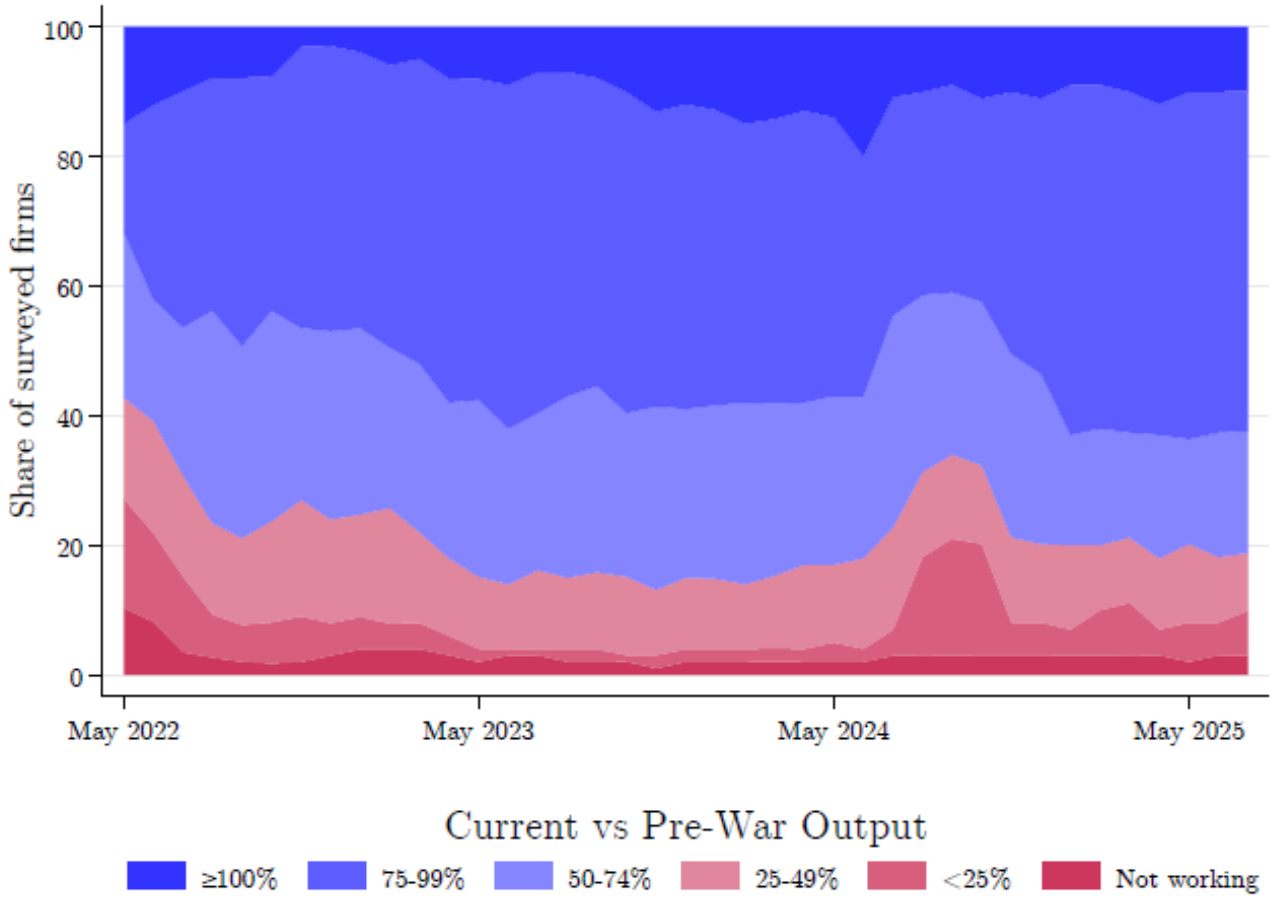
Supply Shock

Shock Component	Est. Loss	% of Labor Force
Refugees (in LF)	2.81 mln	
Mobilization (in LF)	0.54 mln	
Casualties (in LF)	0.03 mln	
Total Supply Shock	**-3.38 mln**	-22%

Table: Estimates of Labor Supply Shocks 2025

- one of largest labor supply shock in modern history
- driven mostly by massive migration (5.7 millions refugees)
- shock large and persistent

Demand Shock



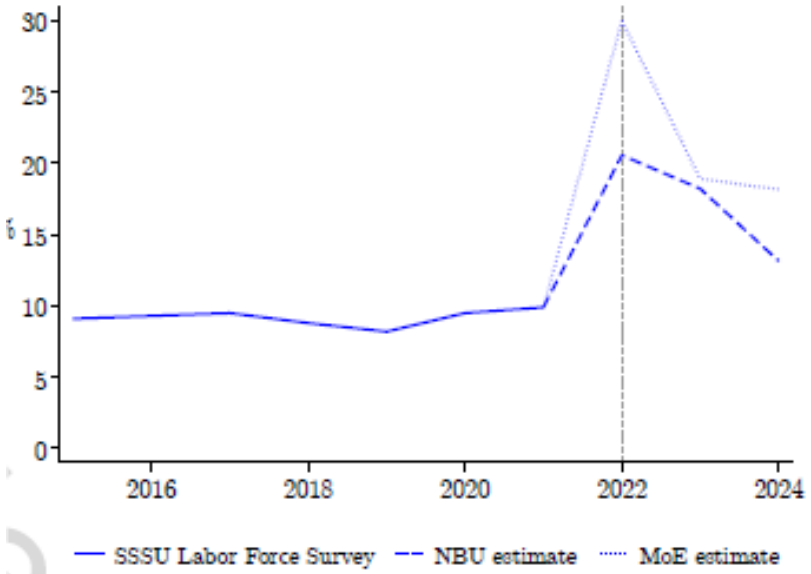
- first months 10% of firms halted, 30% at half capacity or less
- initial collapse partially reversed over time

Reallocation

In addition to aggregate shocks, major reallocation shock across various margins:

- regions: firms and workers move away from frontline
- sectors: from consumer services to military related
- private to public and formal to informal

Labor Market Dynamics



(b) Unemployment rate

In spite of massive shocks and reallocation:

- after a sharp increase, aggregate unemployment was largely reabsorbed
- labor productivity returned to prewar levels

Matching Efficiency

to understand source of aggregate resilience estimate Cobb-Douglas matching function using monthly Work.ua data

$$
\begin{aligned}
M_{rct} &= A_{rct} \cdot U_{rct}^{\alpha} \cdot V_{rct}^{\beta} \\
\log A_{rct} &= \kappa + \gamma \cdot Post_t + \delta_r + \theta_c \\
\log M_{rct} &= \kappa + \alpha \log U_{rct} + \beta \log V_{rct} + \gamma \cdot Post_t + \delta_r + \theta_c + \epsilon_{rct}
\end{aligned}
$$

- M: New matches
- A: Matching efficiency
- U, V: Stocks of resumes and vacancies
- $Post_t$: Indicator for period after Feb 2022
- region (δ_r) and category (θ_c) Fixed Effects.

Key Results: Resilience Amidst Chaos

1. CRS matching technology: cannot reject $\alpha + \beta$ equal to 1
2. Matching Efficiency: γ negative and significant, implies moderate decline of 15%
   - compare to Great Recession in US (efficiency dropped 25%)
   - Western regions saw almost no decline (4-8%).

Mechanisms preserving matching efficiency:

- flexibility in wages: real wages adjusted downward initially
- flexibility in recruiting:
  - surge in remote work
  - women entering male occupations (e.g., logistics, mining)

Is matching efficiency overstated?

Three main reasons to be cautious:

1. measurement issues
2. concerns about selection: sectors, firms
3. institutional changes

Reason 1: Measurement

The number of matches per period is recovered from the following stock-flow identity:

$$M^V_{rct} = V_{rct} + inflow^V_{rct} - V_{rct+1}$$

- M^V_{rct}: new matches in region r, category c and month t
- V_{rct}: stocks of vacancies in region r, category c and month t
- $inflow^V_{rct}$: number new vacancies in month t
- matches are recovered from vacancies that disappear from the dataset from one month to the next

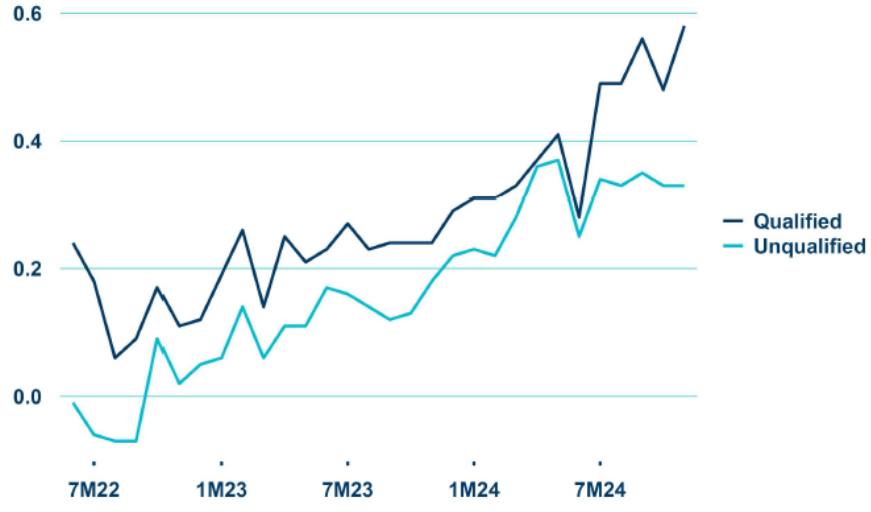
implicit assumption:

vacancies are either filled or keep on been posted

Is this Assumption Plausible?

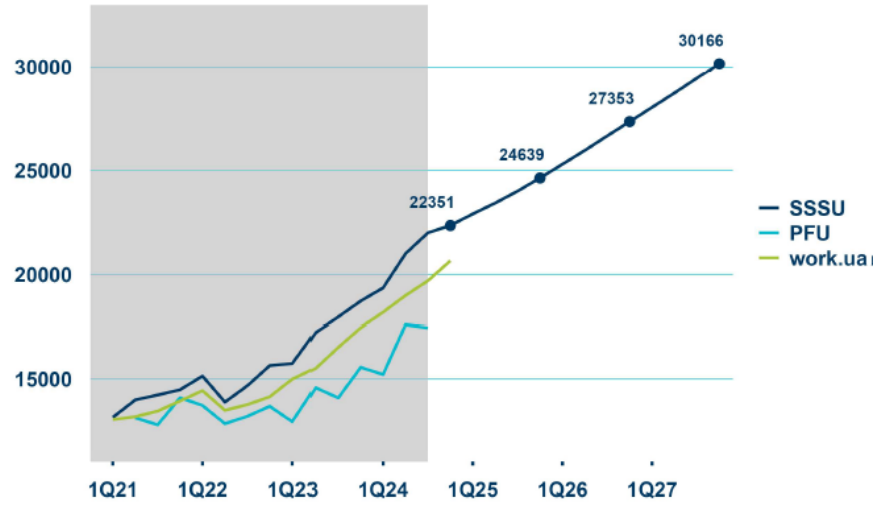
- postings may close for budget changes, cancellations, relocation
- especially during the war (uncertainty, disruptions)
- this approach can overstate matches

Figure 22: Index of recruitment challenges



Source: IER, KSE Institute

Figure 23: Nominal wage, UAH



Source: Ukrstat, work.ua, PFU, KSE Institute

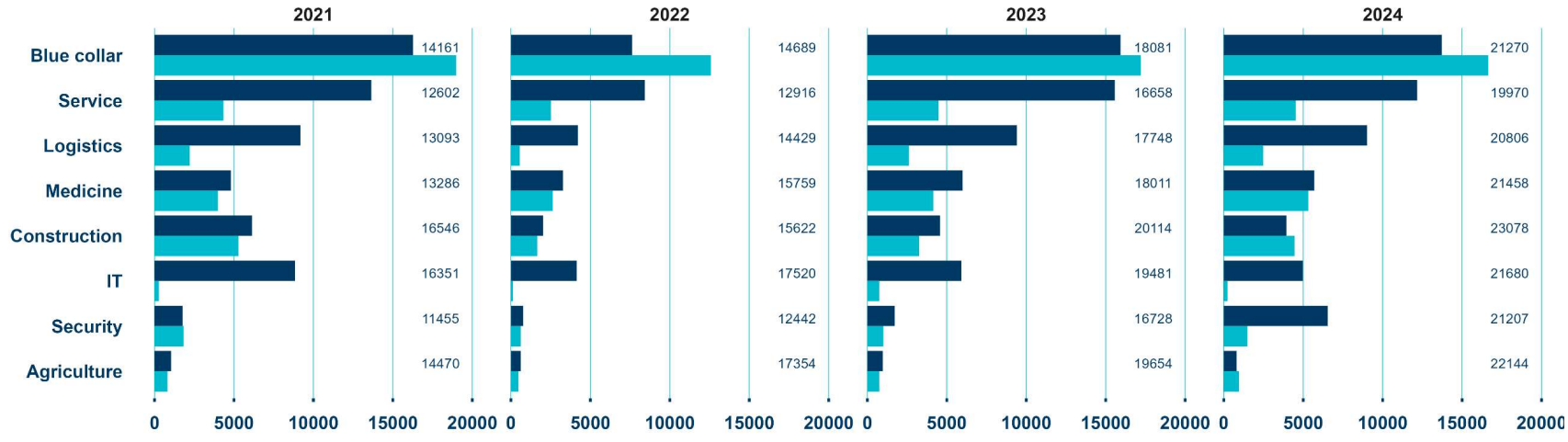
- index of recruitment challenges by the IER is at peak levels, especially for skilled workers
- significant upward pressure on wages

Reason 2: Selection Issues

Matching efficiency may be overstated because of composition bias

- State Employment Service data: placement flows did not recover
  - number of job placements per month
  - number of individuals who exit unemployment by finding a job
- SES and Work.ua cover different segments of economy

Figure 24: Vacancies, amount for work.ua and SES; Average wage, UAH for work.ua



Source: SES, Work.ua, KSE Institute

Sectoral Composition Bias

- Work.ua sample coverage is skewed toward:
  - formal firms
  - white-collar, IT, services
  - digitally connected workers
  - firms able to operate remotely
  - less exposed regions

  $\rightarrow$ this segment recovered quickly $\rightarrow$ matching looks resilient

- SES sample coverage captures:
  - blue-collar occupations
  - construction, manufacturing, logistics
  - workers with lower digital access
  - displaced, vulnerable workers
  - frontline / heavily affected regions

  $\rightarrow$ this segment did NOT recover $\rightarrow$ matching deteriorated

Firm Survival Bias

Matching efficiency may be also overstated because of firm survival bias

- work.ua captures only firms that survived the initial war shock
  - firms that closed, paused activity, moved informally disappear from dataset
- matching efficiency mechanically overstated
  - inefficient or highly exposed firms exit the sample, remaining firms are those able to match workers even during wartime
- SES patterns support this bias:
  - Work.ua matching appears resilient, SES shows persistently weak placements as vulnerable firms (missing from Work.ua) experience lower matching efficiency

Reason 3: Efficiency under Martial Law

- matching resilience partly reflects emergency labor rules
  - simplified contracts (Law 2434-IX)
  - suspended inspections (Order 303)
  - extended hours, relaxed overtime/hazard rules
  - lifted gender-based job bans
- these measures raise short-term efficiency but lower protection
  - faster hiring and redeployment
  - lower administrative frictions
- historical parallels show similar patterns.
  - WWII Britain, post-war Korea, Israel 1970s
  - Rapid reallocation under suspended regulations

Key policy question:

which wartime flexibilities can inform better future labor policy, and which must be reversed to restore essential protections?

Closing some gaps, widening others

- the war broadened participation for some groups
  - women entered previously male-dominated sectors
  - older workers rejoined the labor force
  - displaced persons took up remote and part-time jobs
- but regional and sectoral divides deepened.
  - western regions and cities absorbed most displaced labor.
  - frontline areas and infrastructure-dependent sectors stagnated.
  - resilience concentrated where firms had capital, connectivity, and safety.
- Policy implication:
  - Reconstruction must bridge these new divides and ensure that opportunity extends beyond the surviving core of the economy.

Looking forward

- convert wartime flexibility into sustainable, fair labor practices
  - retainproductive simplifications and women's access to new occupations, while restoring core safety and inspection systems
- rebuild an inclusive labor market across regions
  - strengthen local employment services and create the conditions for IDPs and migrants to return and reconnect with local economies
- invest in human capital and the next generation
  - expand skills programs and rebuild schools, transport, and community institutions that shape long-term opportunities and aspirations.

Conclusion

major contribution:

- precious window on resilient parts of Ukraine's wartime labor market
- clear signs of adaptability through wage flexibility and digital matching

analytical challenge:

- matching efficiency likely concentrated in safer regions and sectors

policy implications:

- retain adaptable practices (remote work, women's expanded roles)
- rebuild core protections
- extend recovery to lagging groups and regions