Migration and Employment Interactions in a Crisis Context
the case of Tunisia

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Motivation

• High and persistent unemployment rates, especially for highly educated youth

• Significant migration to Western countries and MENA oil exporting countries

• The global crisis worsened the labor market situation

• Migration is increasingly selective

• The global crisis worsened this context
Research Objectives

- Better understanding of migration’s effects on the sending country’s labor market
- Analysis of migration-employment interactions in a general equilibrium model
- Impact of remittances on labor supply
- Experiment with the global crisis in host countries followed by a revolution in the home country.
Migration effects on domestic labor supply

- Impact depends on skill composition and substitutability or complementarity (Hanson, 2010)
  - Mishra (2007) - The decrease in the Mexican labor supply between 1970 and 2000 due to emigration increased the wage level by 8%
  - Aydemir (2007) - Relative wage increase for medium skilled and decrease for low skilled due to skill composition of Mexican emigration
Migration effects on domestic labor supply

- Remittances and their impact on participation rates
  - Remittances decrease non-migrants labor supply and increase their leisure (Funkhouser, 1995, Rodriguez, 2001), Kim, 2007)
  - Remittances increase the probability to be involved in self employment, non-wage employment or involved in higher education (Yang, 2008, Lokshin, 2009)
Migration effects on domestic labor supply

- Impact of migration on expected return to education
  - Positive externality on non-migrants through skill-premium increase and incentives to invest in education (Mountford, 1997, Stark, 1997)
  - The migration-education nexus is strongly influenced by structural parameters (Dessus, 2008)
Migration in CGE literature

- Migration is considered as permanent (Dessus, 2008)
  - Baas (2012) - The outflow of remittances impacts the economy mainly through the depreciation of the real exchange rate, translating into a converse Dutch disease phenomenon
  - Bussolo & Medvedev (2008) - An increase in remittances entails a decrease in labor supply, a wage increase and a decrease in competitiveness
A Dynamic General Equilibrium Framework

- Formalization of the emigration decision, its duration and the evolution of the remittances rate
- An endogenous labor supply function which reacts to remittances
- Labor demand disaggregated by sector, skill and age
- Endogenous unemployment through a wage curve
- Modeling of the production of skills with an endogenization of transition rates between cycles
Emigration and remittances levels

- Emigration depends on relative wages, following a constant elasticity of transformation function:

\[
EMIG = al \cdot LS \left( \frac{W_{EMIG}}{W_{LS}} \right)^{sig1}
\]  

(1)

- The migrant’s utility depends also on the welfare of her family and her degree of altruism (Rapoport & Docquier, 2006). The remittance rate per migrant is as follows:

\[
RR_{lf} = gammaM_{lf} \times WEMIG_{lf} - (1 - gammaM_{lf}) \times YD
\]  

(2)

with \(gammaM\) being the altruism coefficient.
Education and the supply of skills

- Total labor force by skill driven by the population growth rate, the current stocks of students in each cycle and the performances of the education system at each level.

- We use a model developed by Fredriksson (1997) to link migration and education incentives and endogenize the transition rates from primary to secondary and from secondary to tertiary.

\[
\log \frac{TRANS_{edus}}{(1 - TRANS_{edus})} = \alpha_{trans} \times \log \frac{wmoys_{MSK} \times (1 - u_{MSK})}{wmoys_{LSK} \times (1 - u_{LSK})}
\] (3)
Local labor supply

- Consumption-leisure trade-off in a Stone-Geary utility function following Blanchflower & Oswald (1990).

\[ LS = (1 - \mu_0)LS_{\text{Spot}} - \frac{\mu_0}{W_i}(HC - \sum_{i=1}^{N} p_i c_i) \]  (4)
The production function and labor demand
Closures and dynamics

- Macroeconomic closure: exogenous households marginal propensity to save
- Foreign closure: exogenous current account balance
- Government closure: fixed tax rates (exogenous increase by 5% annually)
- Labor market closure: wage curve
- Dynamics: accumulation of capital, debt (foreign and public) and skills
  - sectoral investment varies according to sectoral rates of return,
  - debt accumulation driven by deficits,
  - skill stocks driven by demographics and education.
Tunisian context

- A young educated population
- Unemployment rate of 18.9% in 2011
  → Unemployment rate among graduates is 30.5%
- Highly educated population’s expatriation rate is of almost 21.4%
- Stock of Tunisian migrants is estimated to over 1 million → 83% living in Europe, mostly in France (40%) and Italy (25%)
Data

- 2005 Social Accounting Matrix
- Labor market data from INS
- Migration data from CARIM, DIOC-E, DM database
- Remittances and macroeconomic aggregates from BCT, IMF, World Bank
- Education data from ITCEQ, UNICEF, World Bank
- Elasticities from the literature or dynamically calibrated for base year
Comparison between baseline and actual trends in unemployment
Crisis simulation

What the situation would have been without the global crisis?

- Counterfactual scenario

- Economic growth rates forecasted by the IMF before the economic crisis and the revolution

- Variables for the shock implementation: Tunisia’s economic growth rate, the growth rate of its main partners, the savings propensity in Tunisia, the foreign wage
Macroeconomic results

Average yearly variation as compared to the reference scenario

<table>
<thead>
<tr>
<th></th>
<th>2008-2010</th>
<th>2011-2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP Growth differential p.p.</td>
<td>-2.3%</td>
<td>-3.6%</td>
</tr>
<tr>
<td>Emigration</td>
<td>-3.3%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Total investment</td>
<td>-4.7%</td>
<td>-29.5%</td>
</tr>
<tr>
<td>Loc. labour demand var</td>
<td>-0.4%</td>
<td>-3.6%</td>
</tr>
<tr>
<td>Total Unemployment p.p.</td>
<td>1.1%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Total activity rate</td>
<td>0.4%</td>
<td>1.0%</td>
</tr>
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## Results by skill

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<tbody>
<tr>
<td><strong>Number of unemployed by skill</strong></td>
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<tr>
<td>Low skilled</td>
<td>3.2%</td>
<td>12.0%</td>
<td>17.0%</td>
<td>35.6%</td>
<td>33.7%</td>
<td>37.2%</td>
<td>40.1%</td>
<td>41.5%</td>
</tr>
<tr>
<td>Medium skilled</td>
<td>2.8%</td>
<td>10.0%</td>
<td>14.3%</td>
<td>28.2%</td>
<td>27.9%</td>
<td>31.2%</td>
<td>34.1%</td>
<td>35.8%</td>
</tr>
<tr>
<td>High skilled</td>
<td>1.5%</td>
<td>5.2%</td>
<td>7.8%</td>
<td>15.5%</td>
<td>16.4%</td>
<td>18.8%</td>
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<td>22.7%</td>
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<td><strong>Emigration by skill</strong></td>
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<td>High skilled</td>
<td>-1.2%</td>
<td>-6.5%</td>
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Unemployment variation decomposition
Macroeconomic results

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Robustness analysis

Constraints on migration and remittances in order to test their role on the unemployment variation.

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<tr>
<td>Double constraint</td>
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<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
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<td>0.4</td>
<td>0.4</td>
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<tr>
<td>Constant migration</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Constant remittances</td>
<td>0.1</td>
<td>0.3</td>
<td>0.3</td>
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Conclusion

- Retrospective modeling in general equilibrium of the impact of the crisis to highlight the impact of migration on the labor market.

- We develop a novel general equilibrium framework formalizing the emigration decision and the evolution of the remittances rate.

- The simultaneity of the crisis in Tunisia and its partners worsened the employment situation through labor supply effects.

- We can clearly distinguish a difference in the results before and after the Tunisian uprising:
  - Labor supply effects are predominant in the first phase.
  - Labor demand effects take over with the Tunisian revolution
THANK YOU