Determinants and Dynamics of Forced Migration: Evidence from Flows and Stocks in Europe

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Responding to Crises Conference
26 September 2016 – UNU Wider - Helsinki
Outline

1. Motivation
2. A Naïve Model
3. Methods
4. Data
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Motivation

- Typical economic models focus on ‘push-pull’ factors of migration
  - Push factors are features of the origin country
  - Pull factors are those in the destination country
- Decision based on net present value of migration
- Trade-off between (expected) costs and (expected) benefits of migration
Motivation

• Europe currently in the midst of a ‘migrant crisis’ (BBC News; CNN; Financial Times)
• Syrian civil war major discussion point; but range of other contexts also important (UNHCR)
• Test to see if adapted versions of economic models can explain forced migration
  – Understand the push factors of the crisis
  – Understand the pull factors of ‘choosing’ destination countries
  – Understand how the ‘crisis’ may wind-down
Motivation

• Number of push and pull factors important in traditional migration literature
  – Relative economic states
    • GDP
    • Growth
    • Income
    • Employment rates
  – Quality and availability of public services
  – Partial adjustment and network effects
  – Geographic and cultural closeness
Motivation

• In case of forced migration, could be augmented by:
  – Circumstances in source countries
    • Conflict
    • Repression
  – Policies in destination countries
    • ‘Wilkommenskultur’
    • EU-Turkey Deal
    • Frontex...
A Naïve Model

• Hatton (1995):
  – Migration a decision of utility maximising individual
  – Probability of migration depends on difference in expected utility in origin (o) and destination (d):

  \[ d_{it} = \text{Eu}(y_{dt}) - \text{Eu}(y_{ot}) + z_{it} \quad (1) \]

  – where:
  * \( y_{dt} \) = income in destination country
  * \( Y_{ot} \) = income in origin country
  * \( z_{it} \) = non-economic preferences and costs of migration
A Naïve Model

• Borjas (1987) extends this basic framework to include probability of employment and availability of public services:

• Assuming logarithmic utility, Equation (1) can then be rewritten:

\[ d_{it} = \ln w_{dt} - \ln w_{ot} + \ln ps_{dt} + \ln e_{dt} - \ln e_{ot} + z_{it} \] (2)
A Naïve Model

• Our postulation:
  – Equation (2) can further be augmented to include push and full factors of forced migration

\[ d_{it} = \ln w_{dt} - \ln w_{ot} + \ln p s_{dt} + \ln n e_{dt} - \ln n e_{ot} + \ln p f_{dt} + \ln p f_{ot} + z_{it} \] (3)

  – where:
    • \( pf_{dt} \) are the pull factors in a destination country
    • \( Pf_{ot} \) are the push factors in an origin country
A Naïve Model

• As migration is dynamic, Equation (3) must hold over the current period and all future periods

• Thus, we write aggregate migration as:

\[ \ln M_{dot} = \beta (\alpha d_t^* + d_t)(4) \]

• where:
  – \( \alpha \) is the discount factor of the future
A Naïve Model

• Theoretical Predictions:
  – Ceteris paribus: worsening (improving) circumstances in an origin country will increase (decrease) migration to all destinations
  – Policies at destination that increase (decrease) costs of migration to that destination will increase (decrease) migration from all origins
A Naïve Model

• As migration is dynamic, Equation (3) must hold over the current period and all future periods

• Thus, we write aggregate migration as:

\[ \ln M_{dot} = \beta (\alpha d_t^* + d_t) \] (4)

• where:
  – \( \alpha \) is the discount factor of the future
A Naïve Model

- Giving the econometric specification:

\[
\ln M_{dot} = \mu_{do} + \mu_t + \beta_1 M_{dot-1} + \beta_2 MST_{dot} + \beta_3 X_{dot-1} + \beta_4 \Delta X_{dot} + \epsilon_{dot} \tag{5}
\]

- where:
  - \( M_{dot-1} \) = lagged migration
  - \( MST_{dot} \) = migrant stock at time \( t \)
  - \( X_{dot-1} \) = lagged control variables
  - \( \Delta X_{dot} \) = change in control variables
Methods

• Literature tends to look at:
  – Time-series (aggregated migration to single destination)
  – ‘2D Panel’ (migration from multiple origins to a single destination)
  – Recent work (e.g. Ruyssen et al., 2012) use ‘3D Panel’
    • Creates dyads of origin and destination countries
    • Empirical benefits: allows inclusion of time and dyad FEs
  – Dyads created between EU-28 and five illustrative origin countries (Afghanistan, Eritrea, Iraq, Libya and Syria)
  – Time-series runs from 2008 until 2015
    • Data presented quarterly
Methods

• Given dynamic nature of migration, FE estimator likely to be biased

• In addition to FE, multiple dynamic panel corrections used:
  – Arrelano-Bond GMM\textsubscript{FD}
  – Arrelano-Bond GMM\textsubscript{S}
  – Peseran CCE\textsubscript{MG}
Data

• Significant data requirements:
  – Dyadic migration data
  – Economic data for origins and destinations
  – Violence, fragility, repression and other political data in origin countries
  – Policy data in source countries (bilateral and multilateral)
Data

• Significant data requirements:
  – Dyadic migration data
    • First time asylum applications by origin and destination country from UNHCR
  – Economic data for origins and destinations
  – Violence, fragility, repression and other political data in origin countries
  – Policy data in source countries (bilateral and multilateral)
Data

• Significant data requirements:
  – Dyadic migration data
  – Economic data for origins and destinations
    • Pieced together from World Bank, CIA source book and authors’ estimations
  – Violence, fragility, repression and other political data in origin countries
  – Policy data in source countries (bilateral and multilateral)
Data

• Significant data requirements:
  – Dyadic migration data
  – Economic data for origins and destinations
    • Data collected from Eurostat
  – Violence, fragility, repression and other political data in origin countries
  – Policy data in source countries (bilateral and multilateral)
Data

• Significant data requirements:
  – Dyadic migration data
  – Economic data for origins and destinations
  – Violence, fragility, repression and other political data in origin countries
    • UCDP event count data; ACLED event count data; news and journalistic sources
  – Policy data in source countries (bilateral and multilateral)
Data

• Significant data requirements:
  – Dyadic migration data
  – Economic data for origins and destinations
  – Violence, fragility, repression and other political data in origin countries
  – Policy data in source countries (bilateral and multilateral)
    • Journalistic sources
Data

• Variables included:
  – Migration
    • Current migration
    • Lagged migration
    • Moving total migration
    • Lagged asylum success
  – Socio-Economic
    • GDP
    • Employment
    • Population
Data

- Variables included:
  - Conflict, Fragility and Repression
    - Conflict event counts
    - Major political upheavals
  - Policy Data
    - Changes in EU border force capacity
    - De facto changes to Dublin convention
    - External EU treaties
  - Others
    - Inverse distance between capitals of dyads
      - Used as interaction with conflict, fragility & repression and policy data
Data

• Data collected for:
  – 28 destination countries (EU-28)
  – 5 origin countries (Afghanistan, Eritrea, Iraq, Libya and Syria)
  – At quarter intervals
  – Between 2008 and 2015

• N = 3,920
Results

- Migration Variables

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1) FE</th>
<th>(2) GMM&lt;sub&gt;FD&lt;/sub&gt;</th>
<th>(3) GMM&lt;sub&gt;S&lt;/sub&gt;</th>
<th>(4) CCE&lt;sub&gt;MG&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>InMST&lt;sub&gt;doc&lt;/sub&gt;</td>
<td>0.687***</td>
<td>0.459***</td>
<td>0.482***</td>
<td>0.644***</td>
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<tr>
<td></td>
<td>(0.018)</td>
<td>(0.043)</td>
<td>(0.061)</td>
<td>(0.039)</td>
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<tr>
<td>InM&lt;sub&gt;doc/d&lt;/sub&gt;</td>
<td>0.211***</td>
<td>0.187***</td>
<td>0.181***</td>
<td>0.184***</td>
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<tr>
<td></td>
<td>(0.017)</td>
<td>(0.038)</td>
<td>(0.050)</td>
<td>(0.043)</td>
</tr>
<tr>
<td>Stay</td>
<td>0.882***</td>
<td>0.611***</td>
<td>0.600***</td>
<td>0.768***</td>
</tr>
<tr>
<td></td>
<td>(0.022)</td>
<td>(0.028)</td>
<td>(0.041)</td>
<td>(0.066)</td>
</tr>
</tbody>
</table>

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; where possible, each regression includes time dummies (not reported).
Results

- Socio-Economic Variables

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1) FE</th>
<th>(2) GMMFD</th>
<th>(3) GMMs</th>
<th>(4) CCEMG</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnGDP_t-1</td>
<td>0.044***</td>
<td>0.040</td>
<td>0.053</td>
<td>0.062</td>
</tr>
<tr>
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<td>(0.005)</td>
<td>(0.061)</td>
<td>(0.055)</td>
<td>(0.104)</td>
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<tr>
<td>lnGDP_PC_t-1</td>
<td>-0.637***</td>
<td>-0.666</td>
<td>-0.689</td>
<td>-2.671</td>
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<td></td>
<td>(0.194)</td>
<td>(0.592)</td>
<td>(0.701)</td>
<td>(2.557)</td>
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<tr>
<td>lnPOP_t-1</td>
<td>0.002**</td>
<td>0.001</td>
<td>0.001</td>
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<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.004)</td>
<td>(0.012)</td>
</tr>
<tr>
<td>lnDensity_t-1</td>
<td>0.038***</td>
<td>0.040***</td>
<td>0.021</td>
<td>0.001</td>
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<tr>
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<td>(0.011)</td>
<td>(0.014)</td>
<td>(0.014)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>lnΔGDP_t</td>
<td>0.010**</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
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<tr>
<td></td>
<td>(0.005)</td>
<td>(0.001)</td>
<td>(0.004)</td>
<td>(0.012)</td>
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<tr>
<td>lnΔGDP_PC_t</td>
<td>0.078</td>
<td>0.026</td>
<td>0.006*</td>
<td>0.003</td>
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<td>(0.236)</td>
<td>(0.362)</td>
<td>(0.003)</td>
<td>(0.060)</td>
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<tr>
<td>lnΔPOP_t</td>
<td>0.006*</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
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<tr>
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<td>(0.003)</td>
<td>(0.001)</td>
<td>(0.004)</td>
<td>(0.012)</td>
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<tr>
<td>lnΔDensity_t</td>
<td>-0.145**</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
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<td>(0.060)</td>
<td>(0.014)</td>
<td>(0.014)</td>
<td>(0.001)</td>
</tr>
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Results

- Origin and Destination Variables

<table>
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<tr>
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<th>(2) GMM\textsubscript{FD}</th>
<th>(3) GMM\textsubscript{S}</th>
<th>(4) CCE\textsubscript{MG}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan \textsubscript{D}</td>
<td>0.088</td>
<td>0.092</td>
<td>0.103</td>
<td>0.074</td>
</tr>
<tr>
<td>(0.057)</td>
<td></td>
<td>(0.068)</td>
<td>(0.088)</td>
<td>(0.054)</td>
</tr>
<tr>
<td>Eritrea \textsubscript{D}</td>
<td>-0.412</td>
<td>-0.319</td>
<td>-0.288</td>
<td>-0.199</td>
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<tr>
<td>(0.288)</td>
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<td>(0.300)</td>
<td>(0.243)</td>
<td>(0.226)</td>
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<tr>
<td>Iraq \textsubscript{D}</td>
<td>0.025\textsuperscript{****}</td>
<td>0.020\textsuperscript{****}</td>
<td>0.022\textsuperscript{****}</td>
<td>0.018\textsuperscript{****}</td>
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<tr>
<td>(0.005)</td>
<td></td>
<td>(0.008)</td>
<td>(0.011)</td>
<td>(0.007)</td>
</tr>
<tr>
<td>Libya \textsubscript{D}</td>
<td>0.044</td>
<td>0.032</td>
<td>0.039</td>
<td>0.048</td>
</tr>
<tr>
<td>(0.050)</td>
<td></td>
<td>(0.077)</td>
<td>(0.091)</td>
<td>(0.066)</td>
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<tr>
<td>Syria \textsubscript{D}</td>
<td>0.843\textsuperscript{****}</td>
<td>0.685\textsuperscript{****}</td>
<td>0.662\textsuperscript{**}</td>
<td>0.500\textsuperscript{**}</td>
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<tr>
<td>(0.075)</td>
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<td>(0.112)</td>
<td>(0.134)</td>
<td>(0.110)</td>
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<tr>
<td>Frontex</td>
<td>0.440</td>
<td>0.375</td>
<td>0.341</td>
<td>0.202</td>
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<tr>
<td>(0.300)</td>
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<td>(0.233)</td>
<td>(0.254)</td>
<td>(0.246)</td>
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<tr>
<td>Willkommen</td>
<td>-0.028</td>
<td>-0.008</td>
<td>-0.006</td>
<td>-0.004</td>
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<td></td>
<td></td>
<td>(0.004)</td>
<td>(0.006)</td>
<td>(0.008)</td>
</tr>
<tr>
<td>Turkey</td>
<td>0.001</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>(0.003)</td>
<td></td>
<td>(0.004)</td>
<td>(0.006)</td>
<td>(0.008)</td>
</tr>
<tr>
<td>Barriers</td>
<td>-0.144</td>
<td>-0.130</td>
<td>-0.111</td>
<td>-0.091</td>
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<td>(0.155)</td>
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<td>(0.167)</td>
<td>(0.160)</td>
<td>(0.124)</td>
</tr>
</tbody>
</table>

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Conclusions

• Lagged migration strongest and most robust predictor of current migration
• Migrant stock also a robust predictor
• Probability of being granted asylum strong and positive indicator
  – In combination, suggests both network and partial adjustment effects are at play
• Socio-economic variables typically insignificant driver of forced migration
  – Although not surprising at origin, perhaps surprising at destination
• Conflict, Fragility and Repression variables show mixed impacts – some major events important but conflict events not
• Policies in single destination countries not a driver of migration
• Europe-wide policies show no impacts
  – May relate to impact of a few, large, single-country effects weighted against a number of much smaller effects
  – East-West splits not specifically accounted for
Next Steps

• Out of sample predictions
  – Allows testing of range of hypotheses about forced migration may look in the near future
  – Two steps:
    1. Test accuracy of model by using coefficients from a subset to predict migration in current years
    2. Test alternative future hypotheses by testing impact of various changes in key variables

• Testing predictions against previous migration crises
  – E.g. Repeat analysis, out of sample work, etc., for forced migration during the Balkans wars