Goods and Factor Market Integration: A Quantitative Assessment of the EU Enlargement

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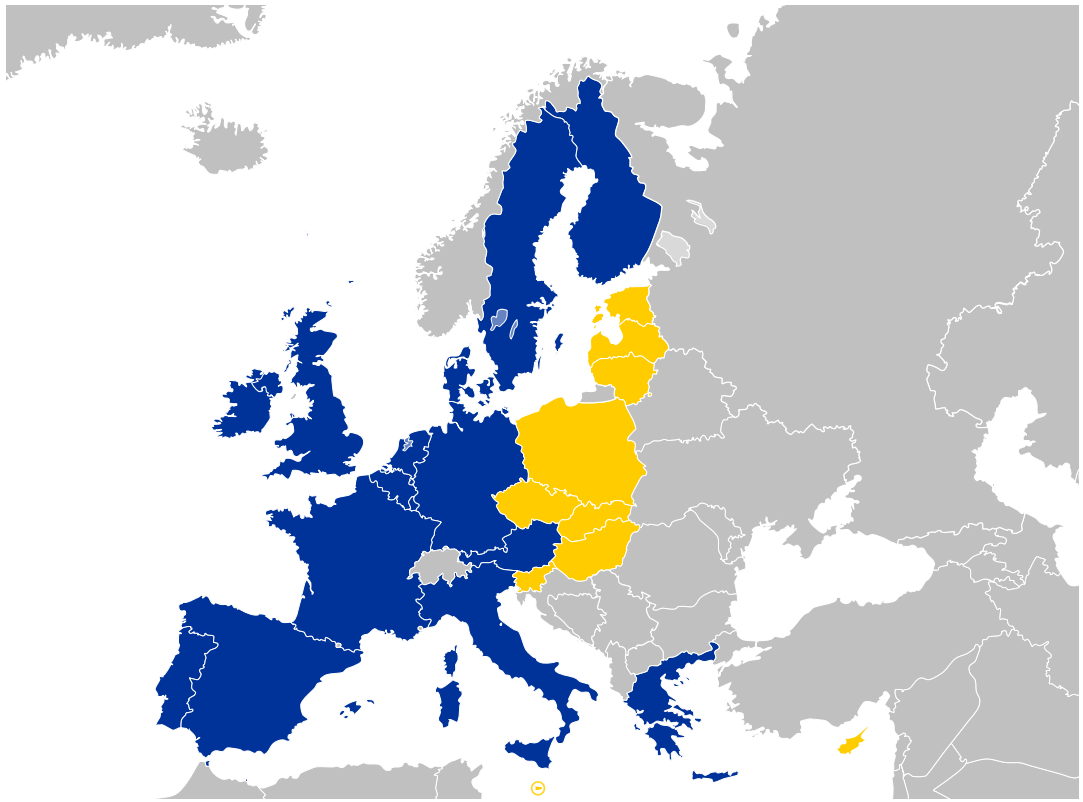
[1] The analysis, opinions, and findings represent the views of the authors, they are not necessarily those of Banco de Portugal.

Introduction

- The aggregate and distributional consequences of economic integration are a central theme in economics
  - Considerable advances on the quantification and understanding of the gains from economic integration
  - Most of the focus has been on goods market
- Develop a dynamic GE model for trade and migration policy
- Use the EU 2004 enlargement to study the gains from trade and migration

EU 2004 enlargement

- Agreement between member states of the European Union (EU) and New Member States (NMS)
- Trade policy and migration policy shocks

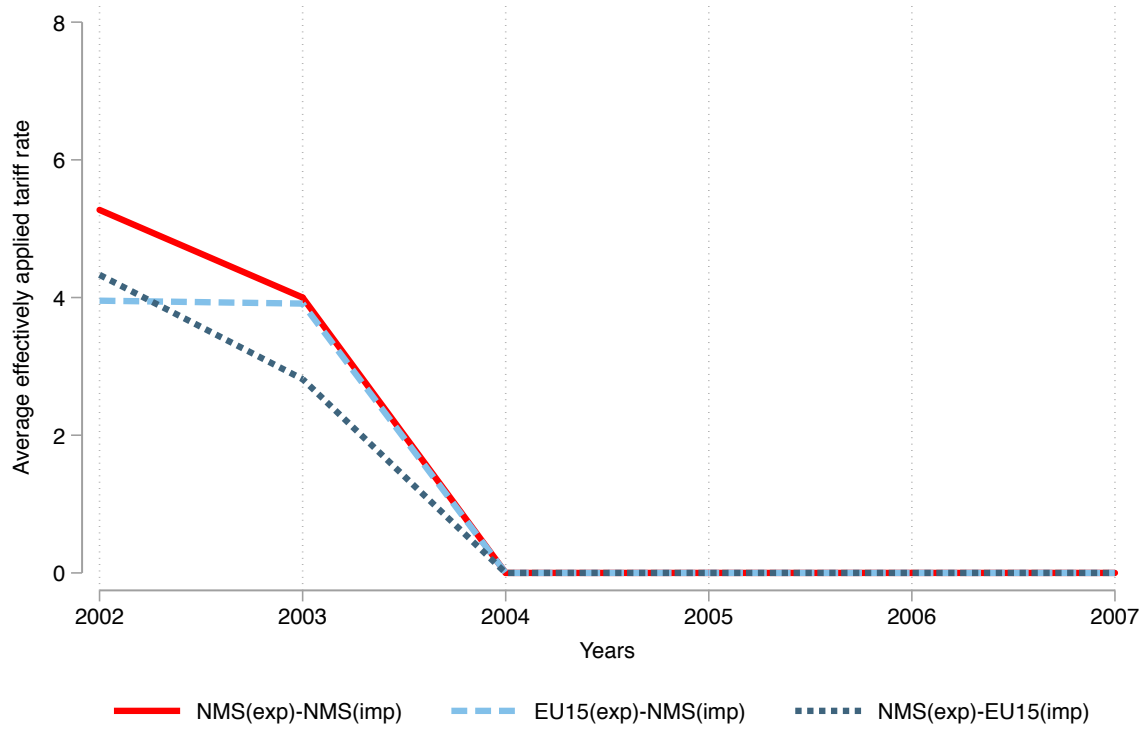


Note: EU-15 member states in blue, NMS countries in yellow

Trade policy shock

- Integration in the goods market: zero tariffs starting in 2004
- NMS countries resigned to previous FTA and joined EU FTA's

Figure: Tariff rates between EU-15 and NMS, and within NMS, 2002-2007



Migration policy shock

- Different from trade policy: the associated change in migration costs is not directly measurable
- Reduced form regression shows a positive impact of the EU enlargement on the stocks of migrants ▸ Figure
- Diff-in-diff approach, consistent with our model, identifies the change in migration costs due to the enlargement by exploiting the timing variation in the enlargement
  - UK granted access to NMS nationals in 2004, IT/ES/PT/GR in 2006
  - AT/BE/DK/DE/FR in 2008 or 2011

Approach

- Structural dynamic model of trade and migration
  - Dynamic model: welfare includes the option value of migration
  - Large degree of heterogeneity: skills, nationalities, trade & migration costs, agglomeration & congestion forces, infrastructures
  - Key focus: interaction between trade and migration policy
- Measure the changes in trade and migration costs
- Counterfactuals: quantify the migration and welfare effects of the EU enlargement
- Main findings:
  - Gradual response in migration
  - Largest winners: New Member States (NMS) unskilled workers
  - Interaction between trade and migration quantitatively matters
  - Without trade policy changes the EU-15 would have been worse off

Literature

- Static models of trade and migration: Davis and Weinstein (2002), di Giovanni et al. (2015), Burstein et al. (2017)
- Quantitative trade policy analysis: Caliendo and Parro (2015) and Ossa (2016)
- Labor reallocation and spatial distribution of economic activity: Redding (2016), Caliendo, Parro, Rossi-Hansberg, and Sarte (2017), Tombe and Zhu (2015)
  - Trade and labor market dynamics: Artuc et al. (2010); Dix-Carneiro (2014); Dix Carneiro and Kovak (2017), Caliendo, Dvorkin, Parro (2017)
- Studies on the effect of immigration on wages and employment of natives: Hanson and Slaughter (2002), Hanson and Slaughter (2016); Ottaviano and Peri (2012); Ottaviano et al. (2013) and many more
- Studies on the EU enlargement Baldwin (1995), Baldwin et al. (1997), Dustmann and Frattini (2011), and Kennan (2017)

Quantitative Trade and Migration Model

Household's problem - Dynamic migration decision

- Value of a n **national** of skill s in country i at time t

$$v^i_{n,s,t} = log(C^i_{s,t}) + \max_{\{j\}^N_{j=1}} \{\beta E[v^j_{n,s,t+1}] - m^{ij}_{n,s,t} + \nu \epsilon^j_{n,s,t}\}$$

  - migration costs $m^{ij}_{n,s,t} = \tilde{m}^{ij}_{n,s,t} + mpol^{ij}_{n,s,t}$
  - i.i.d Gumbel preference shocks $\epsilon^j_{n,s,t}$; $\nu > 0$ is the migration cost elasticity

- Migration share from i to j

$$\mu^{ij}_{n,s,t} = \frac{exp(\beta V^j_{n,s,t+1} - m^{ij}_{n,s,t})^{1/\nu}}{\sum_{k=1}^N exp(\beta V^k_{n,s,t+1} - m^{ik}_{n,s,t})^{1/\nu}}$$

- Labor allocations

$$L^i_{n,s,t+1} = \sum_{j=1}^N \mu^{ji}_{n,s,t} L^j_{n,s,t}, \quad \text{for all } n, s$$

Static production problem

- Perfect competition, CRS technology, idiosyncratic productivity z^i $\sim$ *Fréchet*$(1, \theta)$, deterministic TFP A_t^i (Eaton and Kortum 2002)

$$q_t^i(z^i) = z^i A_t^i \left[\left(\delta^i\right)^{\frac{1}{\rho}} \left(L_{h,t}^i\right)^{\frac{\rho-1}{\rho}} + \left(1-\delta^i\right)^{\frac{1}{\rho}} \left(L_{l,t}^i\right)^{\frac{\rho-1}{\rho}} \right]^{\frac{\rho(1-\gamma^i)}{\rho-1}} \left(H^i\right)^{\gamma^i}$$

  - $A_t^i = \phi_t^i L_t^i \Rightarrow$scale effects, H^i fixed factor$\Rightarrow$ congestion effect

- Costly trade $\kappa_t^{ij} = (1 + \tau_t^{ij}) d_t^{ij}$

  - Ad-valorem tariffs $\tau_t^{ij} \geq 0$, with $\tau_t^{ii} = 0$
  - Iceberg trade costs $d_t^{ij} \geq 1$, with $d_t^{ii} = 1$

Closure of the model

Do not even think of clicking in case of 25 minutes presentations

Data and Estimation

Data and Estimation

- From the European labour force survey (EU-LFS) confidential micro data...
- ...build a **new dataset** of bilateral gross flows by nationality & skill over 2002-2007 (soon till 2016)
  - EU15: Austria, Belgium, Germany, Denmark, Spain, France, UK, Greece, Italy, Portugal
  - NMS: Cyprus, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland
- Construct migration flows based on info. on past year residence
  - Distinguish between "EU15", "NMS" and "Other" nationals
  - Define skilled workers as college educated, and unskilled labor as those with high school or less

Example: change in migration costs from NMS to U.K.

- Treated flows: *NMS nationals* from NMS to UK
- Control flows: *NMS nationals* from NMS to EU5, EU5 to UK
  - EU5: Austria, Belgium, Denmark, France, and Germany, countries that did not open before 2008
- Difference-in-difference approach, guided by the model

$$\log \frac{\mu^{ij}_{n,s,t}}{\mu^{ii}_{n,s,t}} = -\frac{1}{\nu}\left(m^{ij}_{n,s,t} - m^{ii}_{n,s,t}\right) + \frac{\beta}{\nu} V^{j}_{n,s,t+1} - \frac{\beta}{\nu} V^{i}_{n,s,t+1}$$

Estimation- Changes in migration policy/cost

- Migration costs structure ($i \in NMS$):

$$m^{ij}_{n,s,t} = \tilde{m}^{ij}_{n,s,t} + mpol^{ij}_{n,s,t},$$

where

$$\tilde{m}^{ij}_{n,s,t} = \bar{m}^{i}_{n,s,t} + \bar{m}^{j}_{n,s,t} + \bar{m}^{ij}_{n,s,t}$$

- Estimating equation

$$\log \frac{\mu^{ij}_{n,s,t}}{\mu^{ii}_{n,s,t}} = \underbrace{-\frac{1}{\nu}\bar{m}^{i}_{n,s,t} - \frac{\beta}{\nu}V^{i}_{n,s,t+1}}_{\text{origin-time-nationality-skill FE}} \underbrace{-\frac{1}{\nu}\bar{m}^{j}_{n,s,t} + \frac{\beta}{\nu}V^{j}_{n,s,t+1}}_{\text{dest-time-nationality-skill FE}}$$

$$\underbrace{-\frac{1}{\nu}mpol^{ij}_{n,s,t}}_{\text{dummy UK-NMS before-after}} \underbrace{-\frac{1}{\nu}\bar{m}^{ij}_{n,s,t}}_{\text{dummy U.K.-NMS}} + \underbrace{\epsilon^{ij}_{n,s,t}}_{\text{error term}}$$

- Levels of migration costs depends on nationality and skills
- Placebo: We expect the costs of migrating from NMS to the U.K not to have changed for EU-15 nationals

Counterfactuals

Counterfactuals

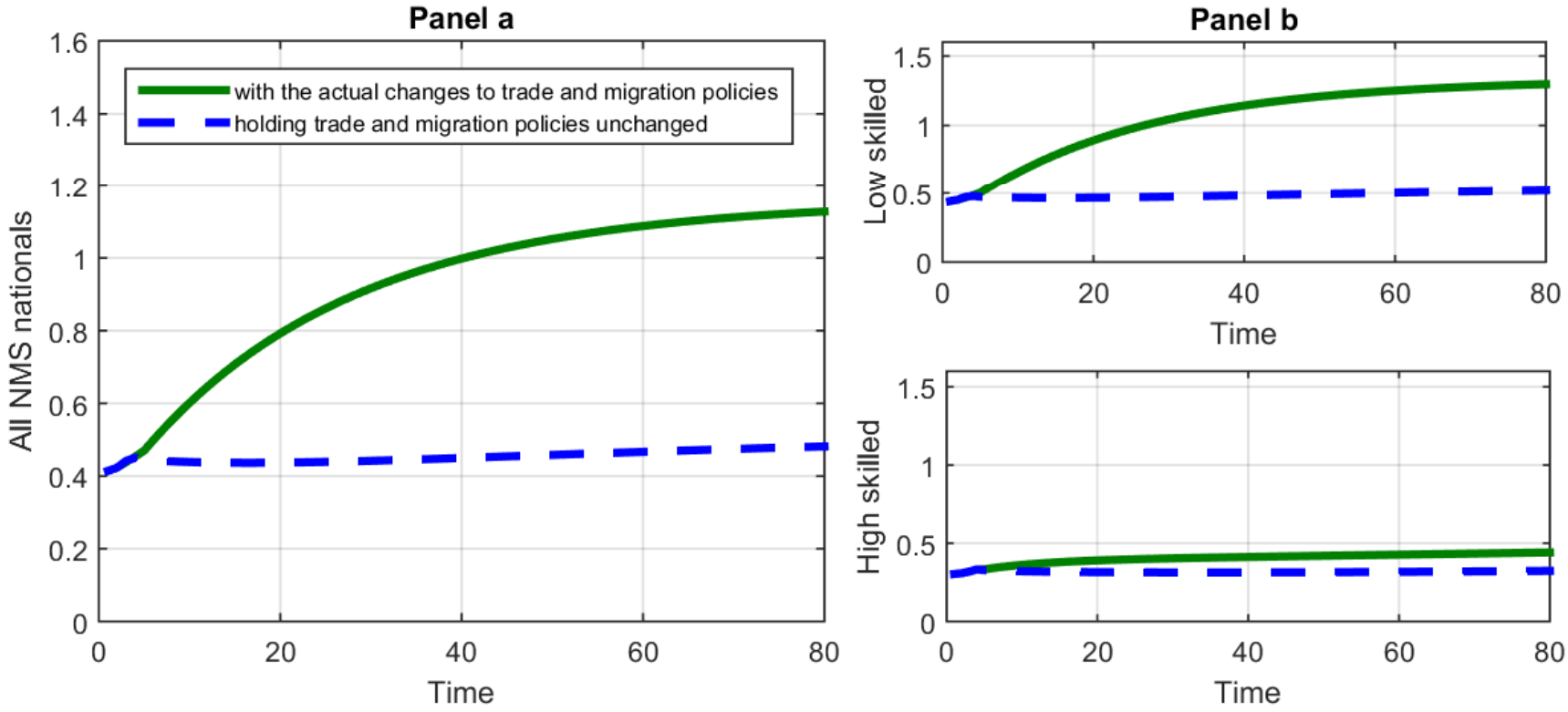
- What are the migration and welfare effects of the EU enlargement?
  - Baseline (EU enlargement) vs. counterfactual (no change in tariffs and migration costs) economies

- Two attractive properties:
  1. Given data $\{L_t, \mu_t, \pi_t, X_t\}_{t=0}^{\infty}$, elasticities $(\nu, \theta, \beta, \rho)$, and a sequence of counterfactual changes in policy $\{\hat{\Upsilon}_t\}_{t=0}^{\infty}$, **solving the model does not require to identify the evolution of the fundamentals**
  2. The baseline economy **matches exactly the observed sequence of gross migration flows, trade flows, and all the observed labor market allocations and wages**

▸ To: Equilibrium in "hats"

Migration effects

Figure: Stocks of NMS nationals in EU-15 due to the enlargement



- Gradual increase in stocks
  - Stock of NMS nationals in EU-15 increases by 3 percentage points (pp) in 3 years, 21pp in 10 years, and 63pp in SS

Migration effects

- EU enlargement primarily increases the migration of unskilled NMS workers to EU-15, and to a much lesser extent the migration of skilled workers
  - Stock of NMS unskilled increases 0.75pp (2.8 mill) in SS
  - Stock of NMS skilled increases 0.14pp (521 thous) in SS
- We find that trade policy helps mitigate congestion effects by reducing migration
  - About 300 thousand more migrants in SS in the absence of trade policy

skills

Welfare effects from trade and migration policy

- The largest winners are the NMS countries, in particular unskilled workers
- Migration without changes to trade policy would have resulted in welfare losses for EU15

		EU enlargement (%)	Only changes to trade policy (%)	Only changes to migration policy (%)
EU-15	*High skill*	0.503	0.439	0.060
	Low skill	0.386	0.442	-0.055
	Aggregate	0.409	0.441	-0.032
NMS	*High skill*	1.191	1.098	0.090
	Low skill	1.715	1.073	0.615
	Aggregate	1.653	1.076	0.554
	Europe	0.622	0.550	0.068

Welfare effects from migration policy

- Welfare effect of migration policy depends on trade openness

		Changes to migration policy (%)	Changes to migration policy under trade autarky (%)	Changes to migration policy under free trade (%)
EU-15	*High skill*	0.060	0.071	0.058
	Low skill	-0.055	-0.049	-0.056
	Aggregate	-0.032	-0.025	-0.033
NMS	*High skill*	0.090	0.043	0.098
	Low skill	0.615	0.563	0.625
	Aggregate	0.554	0.502	0.563
	Europe	0.068	0.065	0.068

Mechanisms & Extensions

- Role of scale effect, trade, and fixed factors
  - **Without scale effects**:
    - NMS welfare 0.3pp larger,
    - EU-15 welfare 0.06pp smaller
  - **Textbook model: without trade, scale, and congestion effects** $\rightarrow$ significantly different welfare evaluation of migration policy
    - Europe's welfare 0.06% instead of 0.62%
    - EU-15 countries has welfare losses
    - NMS welfare 0.4% instead of 1.65%

▸ results

- Role of congestion effects coming from the provision of public goods

▸ Public good

Conclusion

- Develop a dynamic model for trade and migration policy analysis
  - take into account role of tariff revenues, public goods, congestion effects, changes in migration costs, stock v/s flow of migrants
  - model guides the estimation of changes in migration costs as a consequence of changes in migration policy
- Compute the effects of actual changes in trade and migration policy as a consequence of the EU enlargement of 2004
  - results show welfare gains, heterogeneous across skill groups
  - unskilled NMS nationals are the largest winners
  - gradual employment adjustment
  - trade policy crucial for mitigating negative effects from congestion

Thank you!

Household's problem

- Households supply a unit of labor inelastically
  - Receive a competitive market wage $w^i_{s,t}$
- Consumption aggregator

$$C^i_{s,t} = \left(\frac{G^i}{L^i_t}\right)^{\alpha_i} \left((1-\tau^i_L)\frac{w^i_{s,t}}{P^i_t}\right)^{1-\alpha_i},$$

  where P^i_t is the local price index, and α_i is the fraction of public goods in total consumption
- $\frac{G^i}{L^i_t}$ is per capita provision of public goods => congestion effect
- Government finance spending with: tariff revenues, labor taxes (τ^i_L), lump sum transfer from structure owners

All the rest

- Goods & labor market clearing (matching global imbalances)
- State of the economy $L_t = \left\{ L^i_{n,h,t}, L^i_{n,l,t} \right\}^{N,N}_{n=1,i=1}$
- Fundamentals $\Theta_t \equiv (\{d^{ij}_t\}, \{\tilde{m}^{ij}_{n,h,t}\}, \{\tilde{m}^{ij}_{n,l,t}\}, \{\phi^i_t\}, \{H^i\})^{N,N}_{i=1,j=1}$
- Policies $\Upsilon_t \equiv (\{\tau^{ij}_t\}, \{mpol^{ij}_{n,h,t}\}, \{mpol^{ij}_{n,l,t}\})^{N,N,N}_{n=1,i=1,j=1}$
- *Given* $(L_t, \Theta_t, \Upsilon_t)$*, the* ***temporary equilibrium*** *is a set of factor prices* $\{\omega^i_{s,t}(L_t, \Theta_t, \Upsilon_t)\}^N_{i=1}$ *for* $s = \{h, l\}$ *that solves the static sub-problem given by the equilibrium conditions*
- *Given an initial allocation of labor* L_0*, a sequence of fundamentals* $\{\Theta_t\}^\infty_{t=0}$*, and a sequence of policies* $\{\Upsilon_t\}^\infty_{t=0}$*, a* ***sequential competitive equilibrium*** *is a sequence* $\{L_{n,s,t}, \mu_{n,s,t}, V_{n,s,t}, \omega^i_{s,t}(L_t, \Theta_t, \Upsilon_t)\}^{N,\infty}_{n=1,t=0}$ *for* $s = \{h, l\}$*, that solves the HH dynamic problem and the temporary equilibrium at each*

Solving for counterfactuals

Proposition *Given data* $\{L_t, \mu_t, \pi_t, X_t\}_{t=0}^{\infty}$, *elasticities* $(\nu, \theta, \beta, \rho)$, *and a sequence of counterfactual changes in policy* $\{\hat{\Upsilon}_t\}_{t=0}^{\infty}$, *solving the model does not require* $\{\Theta_t\}_{t=0}^{\infty}$, *and solves*

$$\hat{u}^i_{n,s,t} = \hat{C}^i_{s,t} \left(\sum_{j=1}^{N} \mu'^{ij}_{n,s,t-1} \dot{\mu}^{ij}_{n,s,t} \left(\hat{m}^{ij}_{n,s,t} \right)^{-1/\nu} \left(\hat{u}^j_{n,s,t+1} \right)^{\beta/\nu} \right)^{\nu},$$

$$\mu'^{ij}_{n,s,t} = \frac{\mu'^{ij}_{n,s,t-1} \dot{\mu}^{ij}_{n,s,t} \left(\hat{m}^{ij}_{n,s,t} \right)^{-1/\nu} \left(\hat{u}^j_{n,s,t+1} \right)^{\beta/\nu}}{\sum_{k=1}^{N} \mu'^{ik}_{n,s,t-1} \dot{\mu}^{ik}_{n,s,t} \left(\hat{m}^{ik}_{n,s,t} \right)^{-1/\nu} \left(\hat{u}^k_{n,s,t+1} \right)^{\beta/\nu}},$$

$$L'^{i}_{n,s,t+1} = \sum_{j=1}^{N} \mu'^{ji}_{n,s,t} L'^{j}_{n,s,t},$$

for all n, *and* s, *where* $\dot{\mu}^{ij}_{n,s,t}$ *is the observed (data) change in migration flows over time, and* $\hat{C}^i_{s,t} = \hat{\omega}^i_{s,t}(\widehat{L}_t, \widehat{\Upsilon}_t)$ *is obtained from solving the temporary equilibrium conditions.*

Equilibrium in "hats"

- Transition matrix (migration flows) $\{\mu_t^{ij}\}_{t=0}^{T}$, **Data**

$$\mu_{n,s,,t}^{ij} = \frac{exp(\beta V_{n,s,t+1}^{j} - m_{n,s,t}^{ij})^{1/\nu}}{\sum_{k=1}^{N} exp(\beta V_{n,s,t+1}^{k} - m_{n,s,t}^{ik})^{1/\nu}}$$

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- Transition matrix at t, from Model given counterfactual policy $m_t^{'}$

$$\mu_{n,s,t}^{'ij} = \frac{exp(\beta V_{n,s,t+1}^{'j} - m_{n,s,t}^{'ij})^{1/\nu}}{\sum_{k=1}^{N} exp(\beta V_{n,s,t+1}^{'k} - m_{n,s,t}^{'ik})^{1/\nu}}$$

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- Take the differences at each t. Model relative to data

$$\mu_{n,s,t}^{'ij} = \frac{\mu_{n,s,t}^{ij} exp(V_{n,s,t+1}^{'j} - V_{n,s,t+1}^{j})^{\beta/\nu} exp(m_{n,s,t+1}^{'j} - m_{n,s,t+1}^{j})^{-1/\nu}}{\sum_{k=1}^{N} \mu_{n,s,t}^{ik} exp(V_{n,s,t+1}^{'k} - V_{n,s,t+1}^{k})^{\beta/\nu} exp(m_{n,s,t+1}^{'k} - m_{n,s,t+1}^{k})^{-1/\nu}}$$

Equilibrium in "hats"

- Denote by:

$$\hat{u}^{i}_{n,s,t} = \dot{u}^{'i}_{n,s,t} / \dot{u}^{i}_{n,s.t} = \frac{exp(V^{i'}_{n,s,t+1} - V^{i}_{n,s,t+1})}{exp(V^{i'}_{n,s,t} - V^{i}_{n,s,t})}$$

$$\hat{m}^{ij}_{n,s,t} = exp(m^{'ij}_{n,s,t} - m^{ij}_{n,s,t}) / exp(m^{'ij}_{n,s,t-1} - m^{ij}_{n,s,t-1})$$

$$\dot{\mu}^{ij}_{n,s,t} = \mu^{ij}_{n,s,t} / \mu^{ij}_{n,s,t-1}$$

- and generically

$$\hat{\Theta}_t = \hat{\Theta}'_t / \dot{\Theta}_t$$

- Take the relative time difference to obtain

$$\mu^{'ij}_{n,s,t} = \frac{\mu^{'ij}_{n,s,t-1} \dot{\mu}^{ij}_{n,s,t} \left(\hat{m}^{ij}_{n,s,t}\right)^{-1/\nu} \left(\hat{u}^{j}_{n,s,t+1}\right)^{\beta/\nu}}{\sum_{k=1}^{N} \mu^{'ik}_{n,s,t-1} \dot{\mu}^{ik}_{n,s,t} \left(\hat{m}^{ik}_{n,s,t}\right)^{-1/\nu} \left(\hat{u}^{k}_{n,s,t+1}\right)^{\beta/\nu}}$$

Equilibrium in "hats"

- Analogously, trade shares

$$\dot{\pi}_t^{ij} = \dot{A}_t^j \left(\frac{\dot{\kappa}_t^{ij} \dot{\omega}_t^j}{\dot{P}_t^i}\right)^{-\theta}$$

$$\dot{\pi}_t^{\prime ij} = \dot{A}_t^j \left(\frac{\dot{\kappa}_t^{ij} \dot{\omega}^{\prime j}_t}{\dot{P}^{\prime i}_t}\right)^{-\theta}$$

$$\hat{\pi}_t^{ij} = \left(\frac{\hat{\omega}_t^j}{\hat{P}_t^i}\right)^{-\theta}$$

- where

$$\hat{P}_t^i = \left(\sum_{j=1}^{N} \pi_{t-1}^{\prime ij} \dot{\pi}_t^{ij} (\hat{\omega}_t^j)^{-\theta}\right)^{-\frac{1}{\theta}}$$

Back

Employment effects

	High skill (%)		*High skill (thous.)*	
	Δ EU enlargement	w/o trade policy	Δ EU enlargement	w/o trade pc
2002	0	0	0	0
2007	0.014	0.019	53.2	69.4
2015	0.058	0.066	217.8	247.3
Steady state	0.140	0.174	521.1	650.3

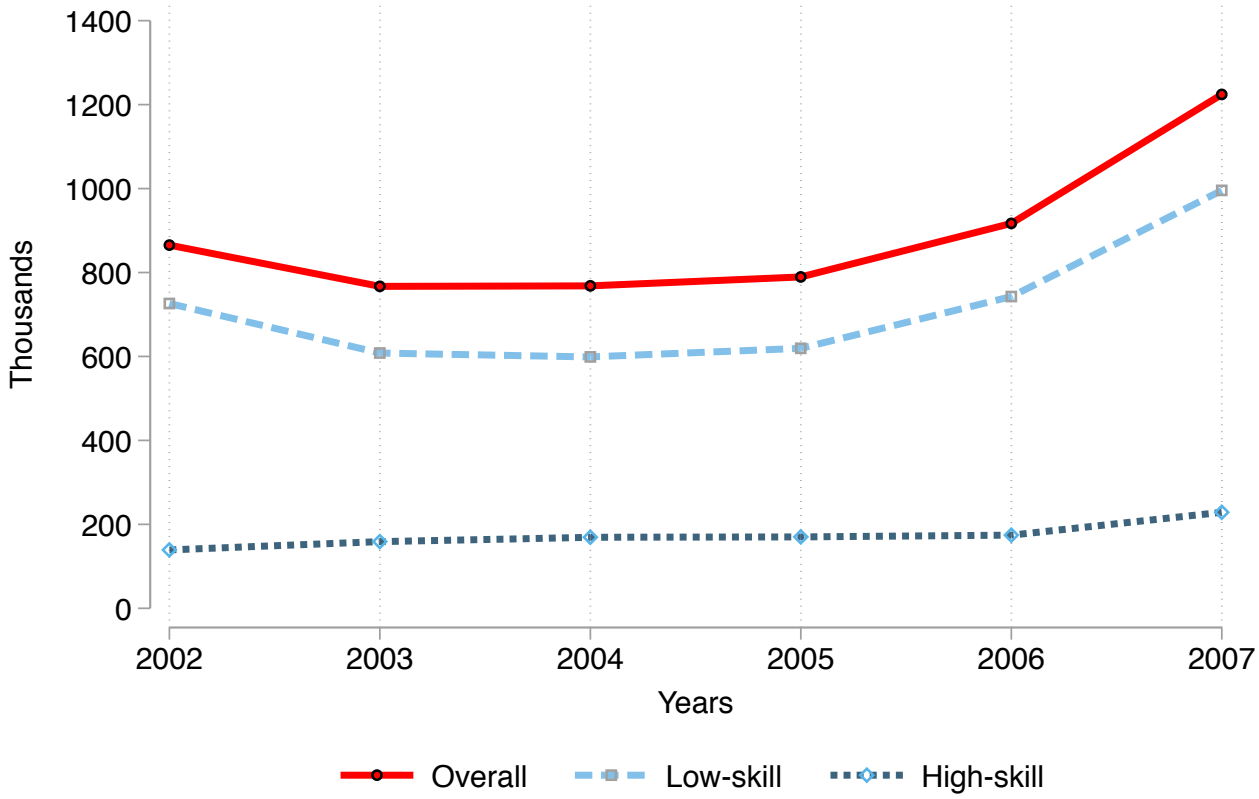
	Low skill (%)		*Low skill (thous.)*	
	Δ EU enlargement	w/o trade policy	Δ EU enlargement	w/o trade pc
2002	0	0	0	0
2007	0.066	0.070	245.6	261.7
2015	0.299	0.309	1,115	1,152
Steady state	0.745	0.784	2,780	2,925

Back

Solving the model

- Solving for the model requires information on the whole set of fundamentals and economic policies
  - Levels of migration costs, trade costs, productivities, stock of public goods, stock of infrastructure
- We solve this problem by the Dynamic Hat Algebra method developed in CDP
- Why is this progress?
  - We can solve the model without knowing levels of Θ_t and Υ_t

Stock of NMS nationals in EU-15



- Reduced form regression shows a positive impact of the EU enlargement on the stocks of migrants
  - Controlling by country and time effects

Back

Estimation- Changes in migration policy/cost

- **Change in migration costs from NMS to NMS**
- We use a Head-Ries index due to the lack of control groups

$$\log \frac{\mu_{t,n}^{ij}}{\mu_{t,n}^{ii}} \frac{\mu_{t,n}^{ji}}{\mu_{t,n}^{jj}} = -\frac{1}{\nu}\left(m_{t,n}^{ij} + m_{t,n}^{ji}\right)$$

- We assume symmetry for costs from NMS to NMS
- Back

Measuring changes in migration costs

- For migration costs from NMS to NMS, and EU nationals to NMS, we use a Head-Ries index due to the lack of control groups

$$\log \frac{\mu^{ij}_{n,s,t}}{\mu^{ii}_{n,s,t}} \frac{\mu^{ji}_{n,s,t}}{\mu^{jj}_{n,s,t}} = -\frac{1}{\nu}\left(m^{ij}_{n,s,t} + m^{ji}_{n,s,t}\right)$$

  - we assume symmetry for costs from NMS to NMS
  - we assume no change in migration cost from NMS to EU for EU nationals

Back

Migration effects

	High skill (%)		*High skill (thous.)*	
	Δ EU enlargement	w/o trade policy	Δ EU enlargement	w/o trade policy
2002	0	0	0	0
2007	0.014	0.019	53.2	69.4
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Back

Extension: Provision of public goods

- We extend our model to account for additional congestion effects coming from the provision of public goods

$$C_{s,t}^{i} = \left(\frac{G^{i}}{L_{t}^{i}}\right)^{\alpha_i} \left((1-\tau_{L}^{i})\frac{w_{s,t}^{i}}{P_{t}^{i}}\right)^{1-\alpha_i}$$

- Government finance spending with: tariff revenues, labor taxes ($\tau_{L,t}^{i}$), lump sum transfer from structure owners
  - We re-estimate ν in a model with public goods ($\nu = 1.89$)
  - We calibrate α_i using final government consumption over total final consumption by country from the WIOD

Extension: Provision of public goods

- We find somewhat larger welfare effects for NMS, lower for EU-15, smaller migration effects
  - In the long run, the stock of NMS skilled workers in EU-15 countries increases by 375.5 thousands (instead of 521 thousands)
  - The stock of NMS unskilled workers increases by 2.2 million (instead of 2.8 mm)
  - Aggregate NMS welfare increases 1.59% (instead of 1.65%), while EU-15 welfare increases 0.26% (instead of 0.41%).

back

Additional results

		EU enlargement	No scale effects	Autarky, no congestion and scale effects
EU-15	*High skill*	0.503	0.416	0.090
	Low skill	0.386	0.331	-0.042
	Aggregate	0.409	0.348	-0.016
NMS	*High skill*	1.191	1.478	-0.003
	Low skill	1.715	2.020	0.465
	Aggregate	1.653	1.957	0.410
	Europe	0.622	0.623	0.057

back

Estimation- Changes in migration policy/cost

Estimates of $-\frac{1}{\nu}\left(m^{ij}_{n,s,post} - m^{ij}_{n,s,pre}\right)$ for NMS8 and EU nationals

	NMS nationals				
Destination $j \rightarrow$	*U.K. (2004)*	*GR (2006)*	*IT (2006)*	*ES (2006)*	*PT (2006)*
$\beta^{j}_{n,post}$	3.52***	2.29**	1.01*	0.18	1.01***
	(1.11)	(0.83)	(0.55)	(0.54)	(0.49)
R^2	0.96	0.97	0.98	0.97	0.98
Obs.	564	564	564	564	564

Standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.10.

Estimation- Changes in migration policy/cost

Estimates of $-\frac{1}{\nu}\left(m^{ij}_{n,s,post} - m^{ij}_{n,s,pre}\right)$ for NMS8 and EU nationals

NMS nationals					
Destination $j \rightarrow$	*U.K. (2004)*	*GR (2006)*	*IT (2006)*	*ES (2006)*	*PT (2006)*
$\beta^{j}_{n,post}$	3.52***	2.29**	1.01*	0.18	1.01***
	(1.11)	(0.83)	(0.55)	(0.54)	(0.49)
R^2	0.96	0.97	0.98	0.97	0.98
Obs.	564	564	564	564	564
Placebo: EU nationals					
Destination $j \rightarrow$	*U.K. (2004)*	*GR (2006)*	*IT (2006)*	*ES (2006)*	*PT (2006)*
$\beta^{j}_{n,post}$	0.74	−0.08	−0.02	0.46	−1.22
	(1.40)	(1.52)	(1.35)	(1.34)	(1.45)
R^2	0.88	0.90	0.89	0.90	0.90
Obs.	564	564	564	564	564

Standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.10. back

Migration costs

- Migration costs have policy and non-policy components

$$m^{ij}_{n,s,t} = \tilde{m}^{ij}_{n,s,t} + mpol^{ij}_{n,s,t},$$

- To fix ideas, let us describe the cost of migrating from NMS countries to the U.K. (i= NMS, $j = UK$)

$$\tilde{m}^{iUK}_{n,s,t} = \bar{m}^{i}_{n,s,t} + \bar{m}^{UK}_{n,s,t} + \bar{m}^{iUK}_{n,s,t}$$

$$mpol^{i,UK}_{n,s,t} = mpol^{NMS,UK}_{NMS,t}$$

- Migration policy is non-discriminatory across NMS countries and across skills
- Levels of migration costs depends on nationality and skills

back