

Emigration and Fiscal Austerity in a Depression

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Motivation

Nearly half a million Greeks have become economic migrants since the crisis began, one of the biggest exoduses from any eurozone country.

(NYT, 5 June 2018: Greece May Be Turning a Corner. Greeks Who Fled Are Staying Put.)

► Fiscal austerity and emigration in the Greek Depression

- economy shrank by a quarter
- unemployment climbed up to 27%
- biggest bailout in global history, conditional on austerity
- 0.5 million emigrants (2010-2015) [graph](#)
 - half were previously employed (Labrianidis and Pratsinakis (2016))

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► **Migration and macroeconomy:** academic and policy debates

- Brexit, EU accession of Eastern countries, shock absorption in Currency Union
- assessment through macro model with endogenous migration?

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2. Interplay between fiscal austerity and emigration?

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- ▶ Part A: Austerity mix and emigration in Greek Depression: **Simulations**

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- ▶ Part A: Austerity mix and emigration in Greek Depression: **Simulations**

- ▶ Part B: **Transmission** of austerity shocks with **labour income tax hikes** and **spending cuts** in the presence of emigration

Literature

► Fiscal Austerity

- Erceg and Lindé (2012, 2013), Pappa et al. (2015), Philippopoulos et al. (2017), Bandeira et al. (2018), House et al. (2020), Alesina et al. (2015), Alesina et al. (2019)
- This paper: implications of emigration

► Greek Debt Crisis (micro-founded macro models)

- Gourinchas et al. (2017), de Cordoba et al. (2017), Chodorow-Reich et al. (2021), Economides et al. (2020), Papageorgiou et al. (2021)
- This paper: role of emigration
- Oikonomou (2021): extension with skill heterogeneity & CSC (without fiscal austerity)

Literature

► Migration impact in host country

- Static, S&M: Ortega (2000), Chassambouli & Palivos (2014), Chassambouli & Peri (2015), Battisti et al. (2018), Iftikhar & Zaharieva (2018)
- Dynamic, S&M: Lozej (2018), Kiguchi & Mountford (2017), Braun & Weber (2021)
- This paper: (1) endogenous migration, (2) fiscal policy

► Migration between 2 countries

- no S&M: Mandelman & Zlate (2012), Farhi & Werning (2014)
- S&M: Hauser and Seneka (2022)
- This paper: (1) fiscal policy, (2) migration of employed

► Fiscal implications of emigration

- Developing world or neo-classical: e.g., Desai et al. (2009), Wilson (2008)
- 2-way feedback with sovereign default: Alessandria et al. (2020)
- This paper: (1) fiscal policy, (2) migration of employed, (3) S&M dynamic setup

Takeaways

1. Simulations for Greek Depression

- ▶ Match (a) GDP fall, (b) emigration increase & composition
- ▶ **Austerity:** 1/3 of GDP fall, 13% of emigration
- ▶ **Emigration:** 1/6 of GDP fall, $\uparrow$ debt/GDP by 9 pp

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- ▶ $\uparrow$ required T hike & time for given debt reduction

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4. Emigration as fiscal shock absorber

- ▶ reversal of unemployment gains over time
(higher T hikes required, higher wages sustained)
- ▶ mitigation of *pc* output costs for T hikes
(reduction of population)

Outline

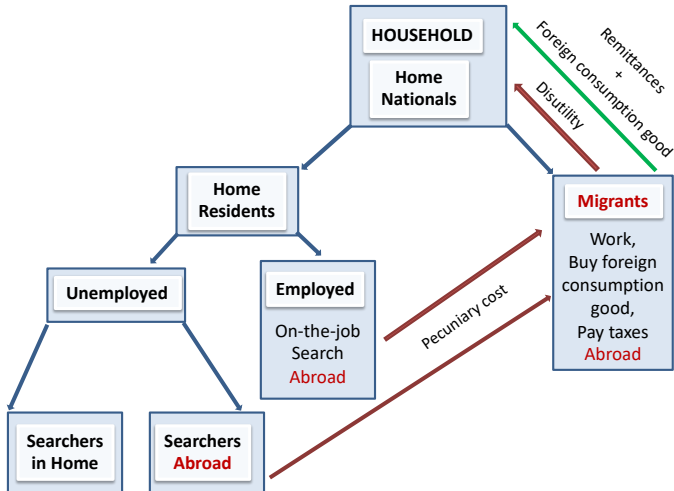
1. Overview of the model
2. Simulations: Austerity mix and emigration in Greek Depression
3. Mechanisms: Fiscal consolidation shocks and emigration
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Model Overview: Household

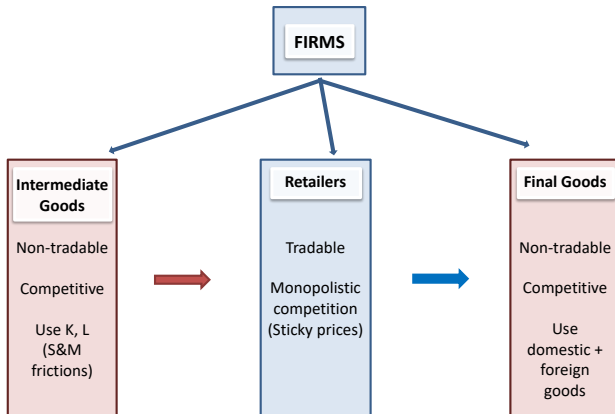
- strong family ties



The Model: Emigration

- ▶ **Higher wages** and **lower unemployment** exist **abroad**
- ▶ A share of **unemployed** s_t apply to jobs **abroad**
 - ▶ subject to pecuniary cost $\varsigma(\tilde{s}_t \tilde{u}_t)$
- ▶ **Employed** workers exert **search effort** z_t to find a job **abroad**
 - ▶ subject to pecuniary cost $\phi(z_t)$
- ▶ Emigration entails a **utility cost** for the household
- ▶ Migrants pay **taxes abroad**, buy **foreign consumption good**, send **remittances** eqs

Model Overview: Firms

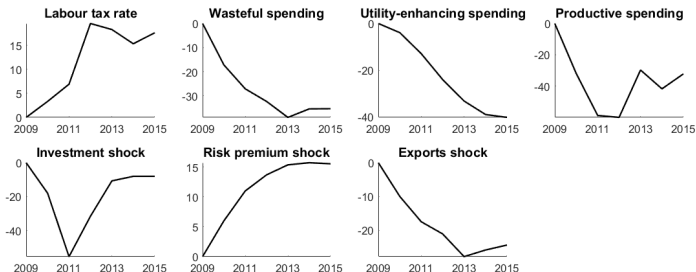


Outline

1. Overview of the model
2. **Simulations: Austerity and emigration in Greek Depression**
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Simulations: Austerity and Emigration in Greek Depression

Figure 1: Paths of fiscal instruments and of shocks



Growth rates in percentages relative to 2009.

- ▶ Annual data (Eurostat)
 - ▶ **Wasteful G** : government consumption (except wage bill)
 - ▶ **Productive G**: gross capital formation
 - ▶ **Utility-enhancing G**: health & education (net of GCF)
 - ▶ Effective tax rates computed following Mendoza et al. (1994)

Calibration: Greece around 2009

Table 1: Annual calibration: Labour market [more](#)

unemployment rate	$u/(u + n)$	0.12
stock of migrants	$m_e/\hat{n}$	0.10
job-finding probability abroad	ψ_H^*/ψ_H	1.60
wage premium abroad	w^*/w	1.10
vacancy-filling probability	ψ_F	0.70
job-finding probability	ψ_H	0.60
firm's bargaining power	ϑ	0.38
vacancies matching elasticity	μ_2	ϑ
net replacement rate	$b/[(1 - \tau_n) w]$	0.41
termination rates	σ, σ^*	0.072

Calibrated jointly:

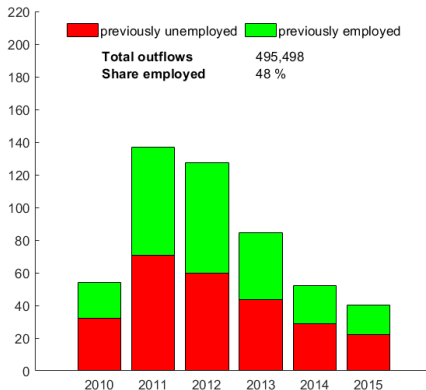
- ▶ risk premium shocks to match the response of C
- ▶ investment efficiency shocks to match the response of I
- ▶ external demand shocks (to Greek exports) to match GDP

Simulations: Austerity and Emigration in Greek Depression

Calibration of costs for job search abroad:

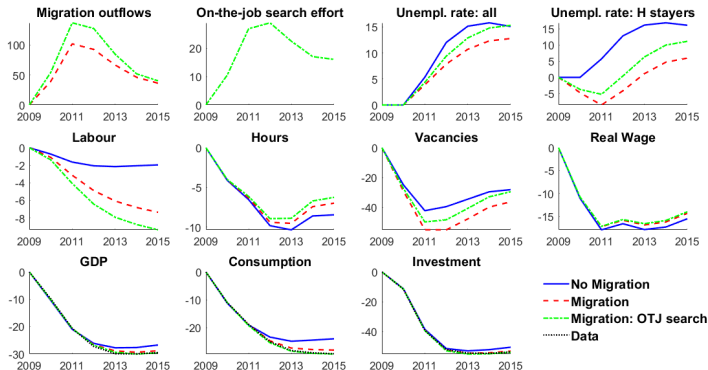
- ▶ match magnitude and composition of migration outflows in Greece (Labrianidis and Pratsinakis (2016))

Figure 2: Who left?



Simulations: Austerity and Emigration in Greek Depression

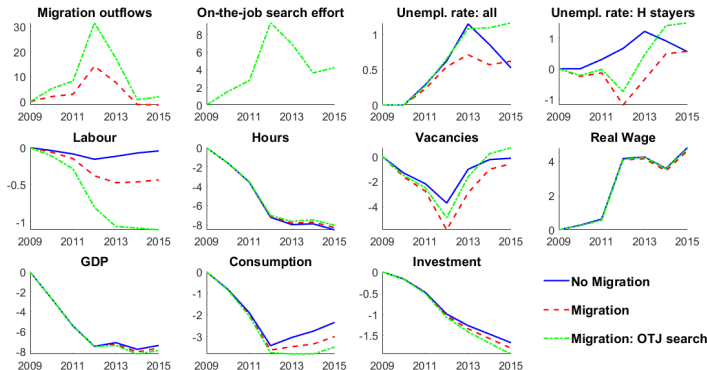
Figure 3: Baseline Simulations



Notes: Responses for migration outflows are in levels (thousand persons). All other responses are in percent deviations from steady state. Consumption refers to the domestic good. Unempl. rate: H stayers excludes the unemployed targeting a job abroad. OTJ denotes on the job.

Simulations: Austerity and Emigration in Greek Depression

Figure 4: Counterfactual: Effects of Austerity Alone



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Austerity accounts for 1/3 of GDP fall and 13% of emigration increase.

Simulations: Policy Experiments

Table 4: The debt-to-GDP ratio and total emigration under different migration and fiscal scenarios

Simulation Scenario	Debt (% GDP), 2015	Emigrants, 2010-2015
Actual fiscal policy mix with emigration	176.70	495,498
Actual fiscal policy mix without migration	167.87	0
Labour tax hikes only	185.61	1,617,090
Spending cuts only (balanced)	182.44	546,547
Mostly wasteful spending cuts	177.72	502,886
Mostly utility-enhancing spending cuts	181.71	492,411
Mostly productive spending cuts	187.78	682,672
Wasteful and utility-enhancing spending cuts	177.20	455,610
Milder consolidation	195.74	462,963

Notes: “emigration” concerns both the unemployed and the employed. Each time, the same size of fiscal adjustment is achieved (in terms of nominal value). “balanced” means that the three expenditure components are cut by the same amount (%). Cuts mostly in wasteful spending, utility-enhancing, and productive spending means that they are three times bigger than cuts in other expenditure. With “Milder consolidation”, all four instruments move by half of what they actually did.

Since the same nominal size of consolidation is achieved each time, differences in the path of debt-to-GDP ratio are due to differences in the path of GDP.

Policy Experiments: In Progress

We are revising the previous table to include the following:

- ▶ Benchmark (actual fiscal policy mix with emigration)
- ▶ Counterfactual without migration
- ▶ Counterfactual without fiscal consolidation
- ▶ Counterfactual without fiscal consolidation and without emigration

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1. Overview of the model
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3. **Mechanisms: Fiscal consolidation shocks and emigration**
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The Model: Government

- ▶ Consider one **fiscal instrument** at a time: $\Psi \in \{\tau^n, g_f\}$, $f = w, c, y$
 - ▶ Labour income tax: τ^n
 - ▶ Gov't spending: **wasteful**: g_w , **utility-enhancing**: g_c , **productive**: g_y
- ▶ **Fiscal rule:**

$$\Psi_t = \Psi^{(1-\beta_{\Psi 0})} \Psi_{t-1}^{\beta_{\Psi 0}} \left[\left(\frac{\tilde{b}_{g,t}}{b_{g,t}^T} \right)^{\beta_{\Psi 1}} \left(\frac{\Delta \tilde{b}_{g,t+1}}{\Delta b_{g,t+1}^T} \right)^{\beta_{\Psi 2}} \right]^{(1-\beta_{\Psi 0})} \quad (1)$$

- ▶ discrepancy between $\tilde{b}_{g,t} \equiv \frac{b_{g,t}}{gdp_t}$ and $b_{g,t}^T$ and between changes (Δ)
- ▶ $\beta_{\Psi 1}, \beta_{\Psi 2} > 0$ for $\Psi = \tau^n$ and $\beta_{\Psi 1}, \beta_{\Psi 2} < 0$ for $\Psi = g_f$

The Model: Government

- ▶ AR(2) for **debt/GDP target** $b_{g,t}^T$ (Erceg & Lindé (2013)):

$$\log b_{g,t}^T - \log b_{g,t-1}^T = \rho_1(\log b_{g,t-1}^T - \log b_{g,t-2}^T) + \rho_2(\log \bar{b} - \log b_{g,t-1}^T) - \varepsilon_t^b \quad (2)$$

- ▶ $\bar{b}$: steady-state debt/GDP, ε_t^b : **fiscal austerity shock**
- ▶ ρ_2 : **strong inertia** (simulate gradual, effectively permanent reduction)

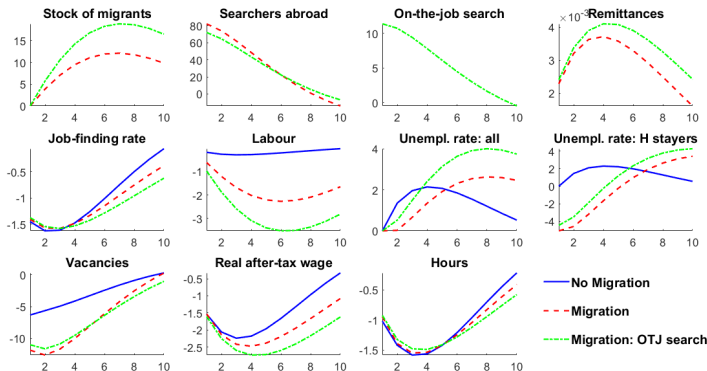
Exercise

- ▶ Three model variants:
 1. no migration: assume a 5% fall in the debt/GDP target, met by the actual debt/GDP in 10 years, through calibration of fiscal rule
 2. migration of unemployed
 3. migration of unemployed and employed

- ▶ For comparability, we work with (3), keeping migration variables fixed at the steady state when considering (1)-(2)

Fiscal Consolidation Shocks and Emigration

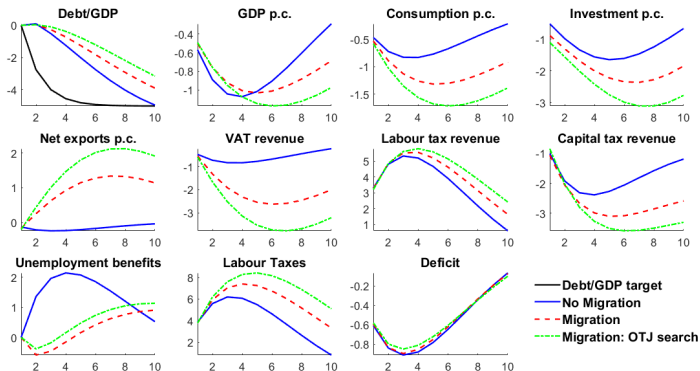
Figure 5: Labour Tax Hikes: Migration and Labour Market Variables



Notes: Responses for the job-finding rate are in levels. All other responses are in percent deviations from steady state. Unempl. rate: stayers excludes the unemployed targeting jobs abroad. OTJ denotes on the job.

Fiscal Consolidation Shocks and Emigration

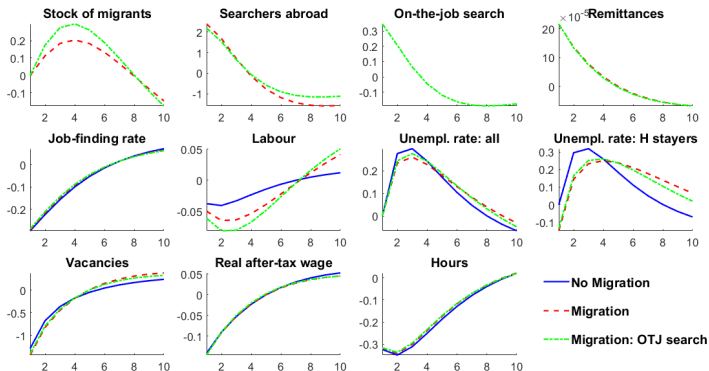
Figure 6: Labour Tax Hikes: Output and Fiscal Variables



Notes: Responses for net exports are in levels. All other responses are in percent deviations from steady state. Consumption refers to consumption of the domestic good. OTJ denotes on the job and p.c. denotes per capita.

Fiscal Consolidation Shocks and Emigration

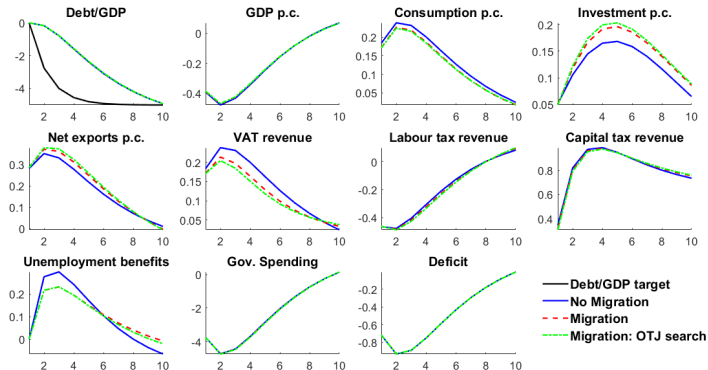
Figure 7: (Wasteful) Spending Cuts: Migration and Labour Market Variables



Notes: Responses for the job-finding rate are in levels. All other responses are in percent deviations from steady state. Unempl. rate: stayers excludes the unemployed targeting jobs abroad. OTJ denotes on the job.

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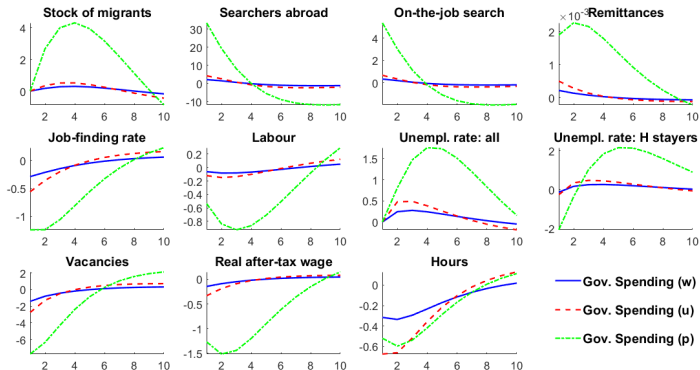
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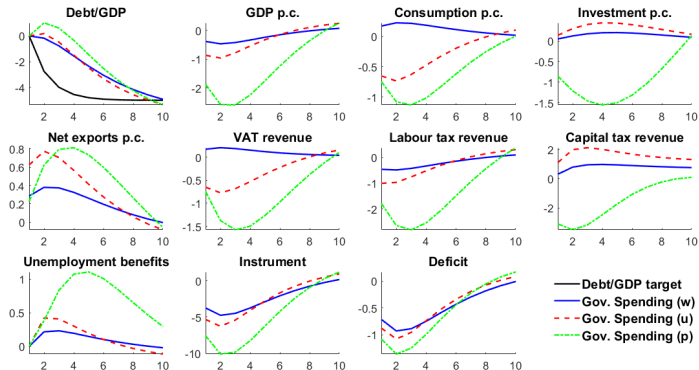
Figure 9: More Spending Instruments: Migration and Labour Market Variables



Notes: Responses for the job-finding rate are in levels. All other responses are in percent deviations from steady state. Unempl. rate: stayers excludes the unemployed targeting jobs abroad. OTJ denotes on the job.

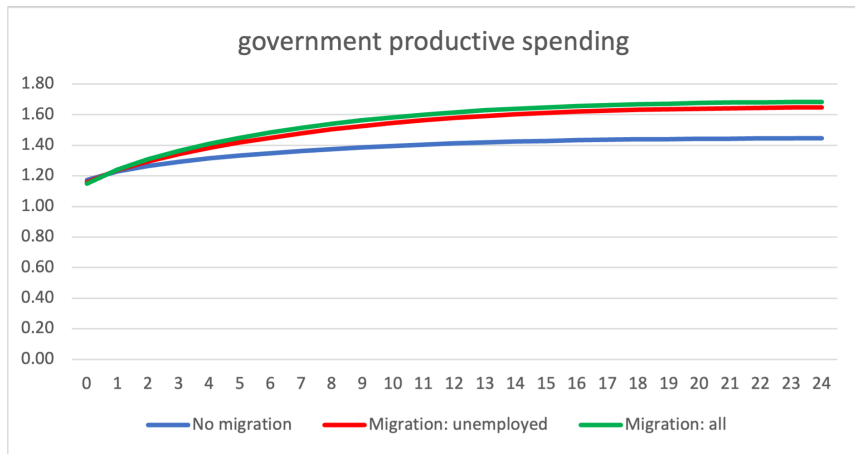
Fiscal Consolidation Shocks and Emigration

Figure 10: More Spending Instruments: Output and Fiscal Variable



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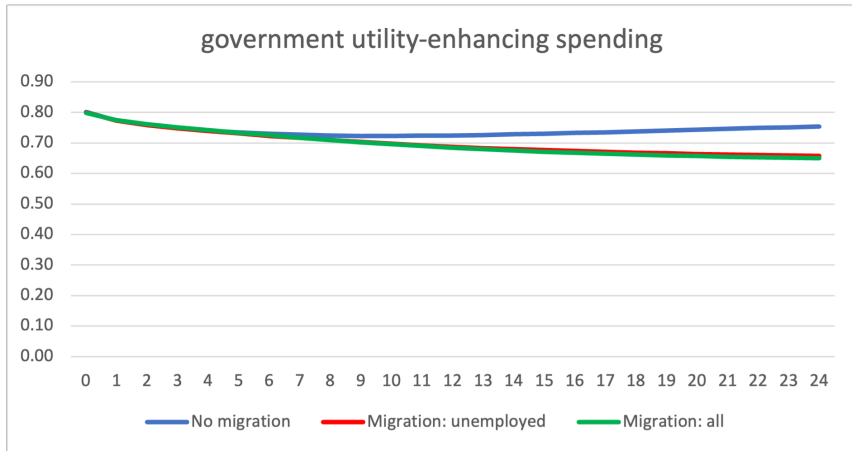
Cumulative Multipliers and Emigration



The horizontal axis refers to the year after the AR(1) fiscal shock.

multipliers > 1 $\rightarrow$ increased incentive to emigrate following the cuts $\rightarrow$ high emigration
 $\rightarrow$ multipliers differ in the presence of emigration (amplified due to intensified C change)

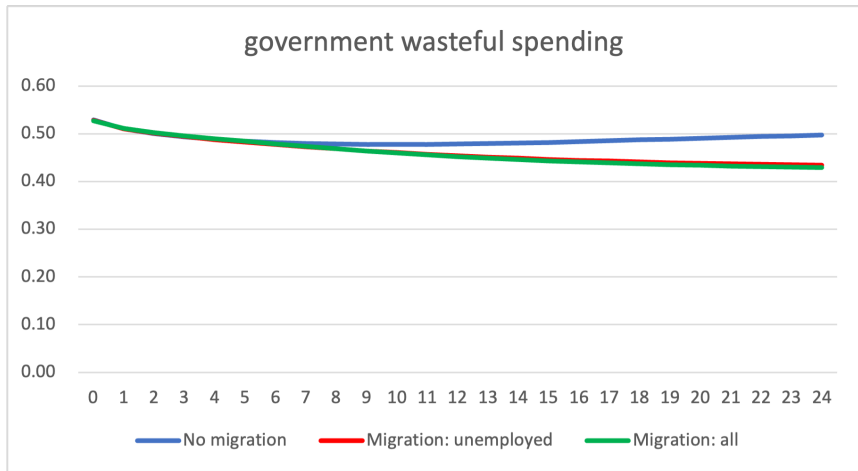
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multipliers < 1 $\rightarrow$ little incentive to emigrate following the cuts $\rightarrow$ low emigration $\rightarrow$ multipliers differ little (decrease in size) in the presence of emigration

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Concluding remarks

Summary

1. Effects of fiscal austerity on emigration
2. Implications of emigration for fiscal austerity
3. Emigration as absorber of fiscal austerity shocks

Policy Implications

- ▶ Implications of emigration for fiscal multipliers and adjustment
- ▶ especially for labour T hikes and productive G cuts
- ▶ Need for carefully targeted spending cuts

Extensions

- ▶ Skills mismatch and emigration
- ▶ Emigration and inequality
- ▶ Automation and migration in 2-country model

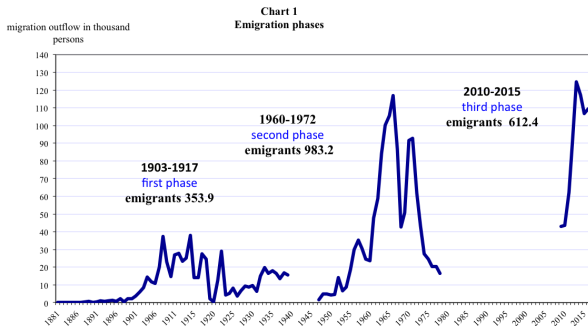
Thank you!

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5. **Supplementary material**

History of Greek Emigration

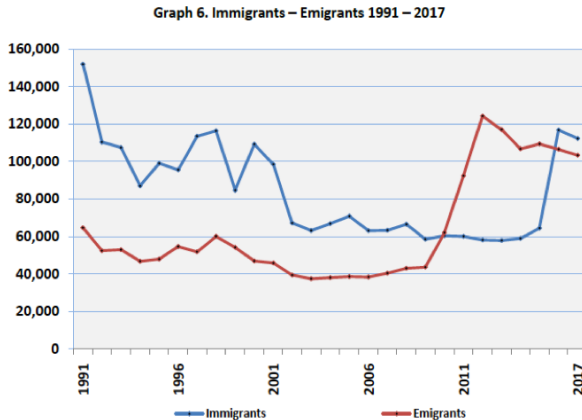
Figure 11: Emigration waves in Greek history (all ages) [return1](#)



source: Lazaretou (2016) [return2](#)

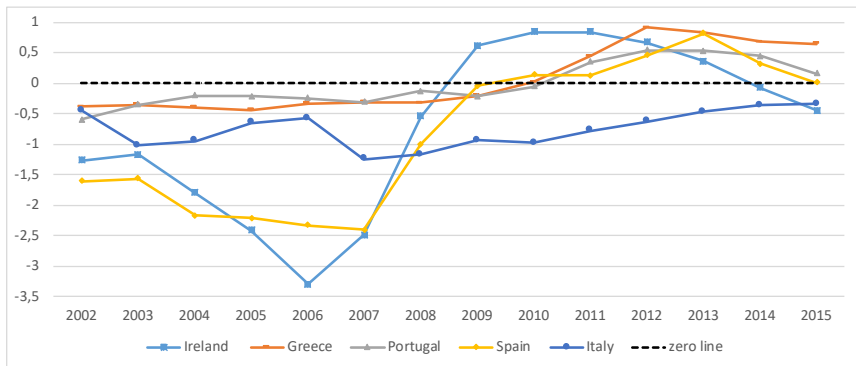
Emigration and Immigration in Greece

Figure 12: Migration flows in Greece, source: Hellenic Statistic Authority



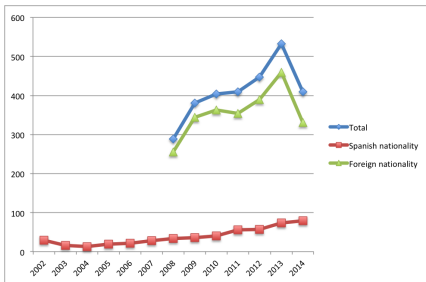
Net Migration in the Periphery

Figure 13: Net migration flows (= outflows - inflows, % active population), source: Eurostat



Migration Outflows from Spain

Figure 14: Emigration from Spain [return](#)



- ▶ Since 2010, annual outflows have exceeded 400K
 - ▶ **highest level of emigration historically**
 - ▶ comparable to annual immigrant flow of 485K during 2000-2006 boom
- ▶ Sources:
 - ▶ **Estadística de Variaciones Residenciales** since 2002: municipal registers
 - ▶ **Estadística de Migraciones** by the INE since 2008: alternative surveys

The Model: Labour Market

- ▶ Home **nationals** $\hat{n}$ include **residents** N_t and **migrants** $n_{e,t}$:

$$\hat{n} = N_t + n_{e,t} \quad (3)$$

- ▶ variations in $n_{e,t}$: cross-border movements

- ▶ Residents are **employed** or **unemployed**:

$$N_t = n_t + u_t \quad (4)$$

- ▶ Evolution of **resident employment**:

$$n_{t+1} = (1 - \sigma - \psi_H^* \varphi(z_t)) n_t + \psi_{H,t}((1 - s_t) u_t) \quad (5)$$

- ▶ $\psi_{H,t} \equiv m_t / ((1 - s_t) u_t)$: job-finding probability
- ▶ $\varphi(z_t)$: productivity of on-the-job search effort

- ▶ Evolution of **migrant employment**:

$$n_{e,t+1} = (1 - \sigma^*) n_{e,t} + \psi_H^* (s_t u_t + \varphi(z_t) n_t) \quad (6)$$

- ▶ Jobs are created through a **matching function**: $m_t = m(v_t, (1 - s_t) u_t)$

The Model: Household's Utility

- **Consumption bundle 1** : purchases by residents c_t and emigrants $c_{e,t}$

$$C_t \equiv c_t + c_{e,t} \quad (7)$$

- Consumption bundle 2** : with public expenditure g_t^c

$$\Phi_t \equiv [(1 - \alpha_1)(C_t)^{\alpha_2} + \alpha_1 (g_t^c)^{\alpha_2}]^{\frac{1}{\alpha_2}} \quad (8)$$

- Edgeworth complementarity between C_t and g_t^c (Buakez and Roubei (2007), Feve et al. (2013))

- **Utility function:**

$$U(C_t, g_t^c, h_t, n_{e,t}) = \frac{\Phi_t^{1-\eta}}{1-\eta} - \chi \frac{(h_t^{1+\xi} n_t + h_e^{1+\xi} n_{e,t})}{1+\xi} - \Omega \frac{(n_{e,t})^{1+\mu}}{1+\mu} \quad (9)$$

The Model: Household's Budget Constraint

► Migrants budget:

$$(1 + \tau^{c*}) c_{e,t} = (1 - \tau^{n*}) w^* h_e n_{e,t} - \Xi_t \quad (10)$$

► Remittances (altruistic compensation mechanism):

$$\Xi_t = \varrho \left(\frac{(1 - \tau^{n*}) w^*}{(1 - \tau_t^n) w_t} \right)^{\rho \Xi} \quad (11)$$

► Household's budget constraint:

$$\begin{aligned} (1 + \tau^c) c_t + i_t + \frac{b_{g,t+1}}{r_t} - \frac{e_t b_{f,t+1}}{r_{f,t}} + \phi(z_t) n_t + \varsigma(\tilde{s}_t \tilde{u}_t) s_t u_t \\ \leq \\ (1 - \tau_t^n) w_t h_t n_t + [r_t^k - \tau^k (r_t^k - \delta_t)] x_t k_t + b u_t + \Pi_t^r + T_t \\ + b_{g,t} - e_t b_{f,t} + e_t \Xi_t \end{aligned} \quad (12)$$

The Model: Household's Optimization

- **Fraction of unemployed searching abroad**, s_t : considers migration costs & country differences in net wage income and job-finding probs:

$$\psi_H^* \lambda_{e,t} - \lambda_{c,t} \varsigma (\tilde{s}_t \tilde{u}_t) = \psi_{H,t} \lambda_{n,t} \quad (13)$$

- equalized **values of employment in Home and abroad** $\lambda_{n,t}$ and $\lambda_{e,t}$, the latter including the **utility-adjusted moving cost**

- **On-the-job effort**, z_t : also considers the cost of the on-the-job search:

$$\psi_H^* (\lambda_{e,t} - \lambda_{n,t}) = \lambda_{c,t} \frac{\phi'(z_t)}{\varphi'(z_t)} \quad (14)$$

- **excess value of working abroad** equal to **utility-adjusted MC of on-the-job search**

return

The Model: Intermediate Goods Firms

► Production function:

$$y_t = (h_t n_t)^{1-a} (x_t k_t)^a (g_t^y)^\nu$$

- g_t^y : productive public expenditure, h_t : hours worked, x_t : utilization

► Evolution of employment:

$$n_{t+1} = (1 - \sigma - \psi_H^* \varphi(z_t)) n_t + \psi_{F,t} v_t$$

- $\psi_{F,t} \equiv m_t/v_t$: job-filling probability (taken as given)

► FOC wrt vacancies:

$$\frac{\kappa}{\psi_{F,t}} = E_t \beta_{t+1} \left[MPL_{t+1} - w_{t+1} h_{t+1} + (1 - \sigma - \psi_H^* \varphi(z_{t+1})) \frac{\kappa}{\psi_{F,t+1}} \right] \quad (15)$$

- κ : vacancy cost, $\psi_H^* \varphi(z_{t+1})$: termination due to cross-border matches

The Model: Capital Accumulation

- ▶ The household owns the capital stock:

$$k_{t+1} = \epsilon_{i,t} \left[1 - \frac{\omega}{2} \left(\frac{i_t}{i_{t-1}} - 1 \right)^2 \right] i_t + (1 - \delta_t) k_t, \quad (16)$$

i_t : investment, $\epsilon_{i,t}$: investment efficiency shock, ω : investment adjustment costs parameter

- ▶ The depreciation rate δ_t depends on capital utilization x_t :

$$\delta_t = \bar{\delta} x_t^\iota, \quad (17)$$

where $\bar{\delta}, \iota > 0$

The Model: Wage-Hours Nash Bargaining

► Equilibrium wage income:

$$w_t h_t = (1 - \vartheta) \left(MPL_t + \underbrace{(1 - \varphi(z_t)) \frac{\psi_{H,t}}{\psi_{F,t}} \kappa}_{\text{Firm's continuation value}} \right) + \frac{\vartheta}{(1 - \tau_t^n)} \left\{ b + \frac{\chi}{\lambda_{c,t}} \frac{h_t^{1+\xi}}{1+\xi} + \underbrace{\phi(z_t) - \varphi(z_t) \varsigma(\tilde{s}_t \tilde{u}_t)}_{\text{Net benefit from a match}} \right\} \quad (18)$$

- The prob that workers resign $\varphi(z_t)$ due to on-the-job search pushes down on wages.
- **Term weighted by the firm's bargaining power** includes the outside option of the unemployment benefit, the disutility from hours, and the costs of on-the-job search $\phi(z_t)$ net of the benefit from a match abroad of not incurring the search cost as unemployed $\varphi(z_t) \varsigma(\tilde{s}_t \tilde{u}_t)$.
- **Hours:**

$$\chi \frac{h_t^{1+\xi}}{\lambda_{c,t}} = (1 - \tau^n) (1 - \alpha)^2 \frac{p_{y,t} y_t}{n_t} \quad (19)$$

Closing the Model

- ▶ Tradable goods: $y_{r,t} = y_{l,t} + y_{m,t}^*$

- ▶ Non-tradable final good:

$$y_{f,t} = \left[(\varpi)^{\frac{1}{\gamma}} (y_{l,t})^{\frac{\gamma-1}{\gamma}} + (1-\varpi)^{\frac{1}{\gamma}} (y_{m,t})^{\frac{\gamma-1}{\gamma}} \right]^{\frac{\gamma}{\gamma-1}}$$

- ▶ Resource constraint: $y_{f,t} = c_t + i_t + g_t + \kappa v_t + \phi(z_t) n_t + \varsigma(\tilde{s}_t \tilde{u}_t) s_t u_t$

- ▶ GDP (units of final good): $gdp_t = y_{f,t} + nx_t$

- ▶ Net exports: $nx_t \equiv p_{r,t} y_{m,t}^* - e_t p_r^* y_{m,t}$

- ▶ Exports:

$$y_{m,t}^* = \left(\frac{p_{r,t}}{e_t} \right)^{-\gamma_x} \overline{y_m^*} \epsilon_{y_m^*,t}$$

- ▶ Net foreign assets: $e_t (r_{f,t-1} b_{f,t-1} - b_{f,t}) = nx_t + e_t \Xi_t$

- ▶ Risk premium: $r_{f,t} = r^* \exp \left\{ \Gamma \left(\frac{e_t b_{f,t+1}}{gdp_t} - \frac{\bar{e} \bar{b}_f}{\bar{gdp}} \right) + \epsilon_{r,t} \right\}$

- ▶ Fisher equation: $r_t = \frac{R_t}{E_t \pi_{t+1}}$

Calibration

Table 2: Calibration: Migration return

on-the-job search effort	$\bar{z}$	1.00
on-the-job search abroad cost	ϕ_{z1}, ϕ_{z2}	0.0017, 3.40
on-the-job effort productivity	$\varphi_{z1}, \varphi_{z2}$	0.0047, 3.00
unemployed's search abroad cost	$\varsigma_{s1}, \varsigma_{s2}$	0.6485, 1.15
disutility of migration	Ω, μ	0.64, 1.00

► where:

- cost of job search abroad for unemployed and employed:

$$\varsigma(\tilde{s}_t \tilde{u}_t) = \varsigma_{s1} (\tilde{s}_t \tilde{u}_t)^{\varsigma_{s2}} \text{ and } \phi(z_t) = \phi_{z1} (z_t)^{\phi_{z2}}$$

- productivity of on-the-job search effort: $\varphi(z_t) = \varphi_{z1} (z_t)^{\varphi_{z2}}$

- $\varsigma_{s2}, \phi_{z2}$: match **magnitude and composition of migration outflows** in Greece (Lazaretou (2016), Labrianidis and Pratsinakis (2016))
- φ_{z2} such that in simulations **on-the-job effort fluctuates reasonably**
- without **utility costs** μ , pecuniary costs in simulations too high
- $\varsigma_{s1}, \phi_{z1}, \varphi_{z1}$ and Ω : pinned down in steady state

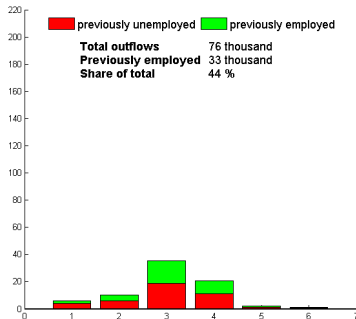
Calibration

Table 3: Calibration: Other return

<i>National accounts:</i>		
per capita real GDP	gdp	1.00
private consumption / GDP	C/gdp	0.62
private investment / GDP	i/gdp	0.18
imports / GDP	y_m/gdp	0.25
net foreign assets / GDP	b_f/gdp	0.10
remittances / GDP	Ξ/gdp	0.03
<i>Utility:</i>		
discount factor	β	0.96
intertemporal elasticity	η	1.01
external habits in consumption	ζ	0.75
home bias in consumption	ϖ	0.75
elasticity home/imported goods	γ	1.20
elasticity exports	γ_x	0.20
elasticity hours worked	ξ	1.00
weight hours worked	χ	1.68
<i>Production:</i>		
capital share in production	α	0.33
capital depreciation rate	$\bar{\delta}$	0.088
investment adjustment costs	ω	4.00
price monopolistic elasticity	ϵ	11
price Calvo lottery	λ_p	0.25

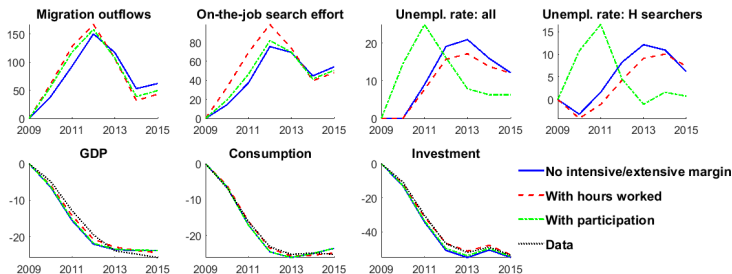
Simulations: Effects of Austerity Alone

Figure 15: Who left?



Simulations: Sensitivity Analysis

Figure 16: Intensive and extensive margin

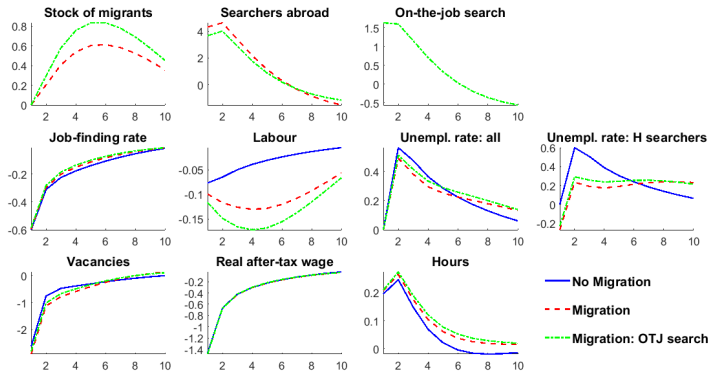


Blue: no hours/no participation; **Red:** with hours; **Green:** with participation. Unempl. rate: all and Unempl. rate: H searchers denote measures of the unemployment rate including and excluding, respectively, the share of unemployed that look for a job abroad. Responses for the unemployment rate are in levels. All other responses are in percent deviations from steady state.

Unemployment peaks earlier: initially many enter the labour force because of the negative income effect of the risk premium shock. [return](#)

Business Cycles and Emigration

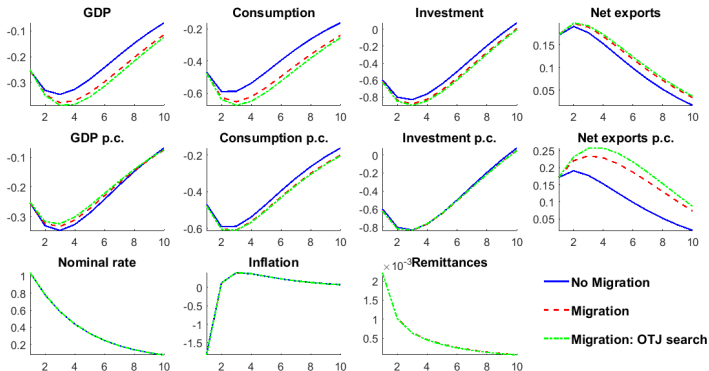
Figure 17: Risk premium shock: labour market and migration



Blue: no migration; **Red:** migration of job-seekers; **Green:** migration of job-seekers and on-the-job search. Unempl. rate: all and Unempl. rate: H searchers denote measures of the unemployment rate including and excluding, respectively, the share of unemployed that look for a job abroad. Responses for the unemployment rate and the job-finding rate are in levels. All other responses are in percent deviations from steady state.

Business Cycles and Emigration

Figure 18: Risk premium shock: aggregates



Blue: no migration; Red: migration of job-seekers; Green: migration of job-seekers and on-the-job search. Responses for net exports are in levels. All other responses are in percent deviations from steady state.

Mechanisms

1. Migration of unemployed:

- ▶ unemployment ↓
- ▶ fiscal stabilizer: unemployment benefits ↓

2. Migration of the employed:

- ▶ vacancies ↑ $\Rightarrow$ migration of unemployed ↓
- ▶ tax base ↓

3. Both

- ▶ aggregate demand ↓ $\Rightarrow$ deficit ↑
- ▶ wages ↑ $\Rightarrow$ unemployment ↑