Globalization, Trade Imbalances and Labor Market Adjustment

Rafael Dix-Carneiro
Duke University

João Paulo Pessoa
São Paulo School of Economics

Ricardo Reyes-Heroles
Federal Reserve Board

Sharon Traiberman
New York University

NBER ITI

December 5th 2020

The views expressed in this presentation are those of the authors and do not necessarily reflect the position of the Federal Reserve Board or the Federal Reserve System.

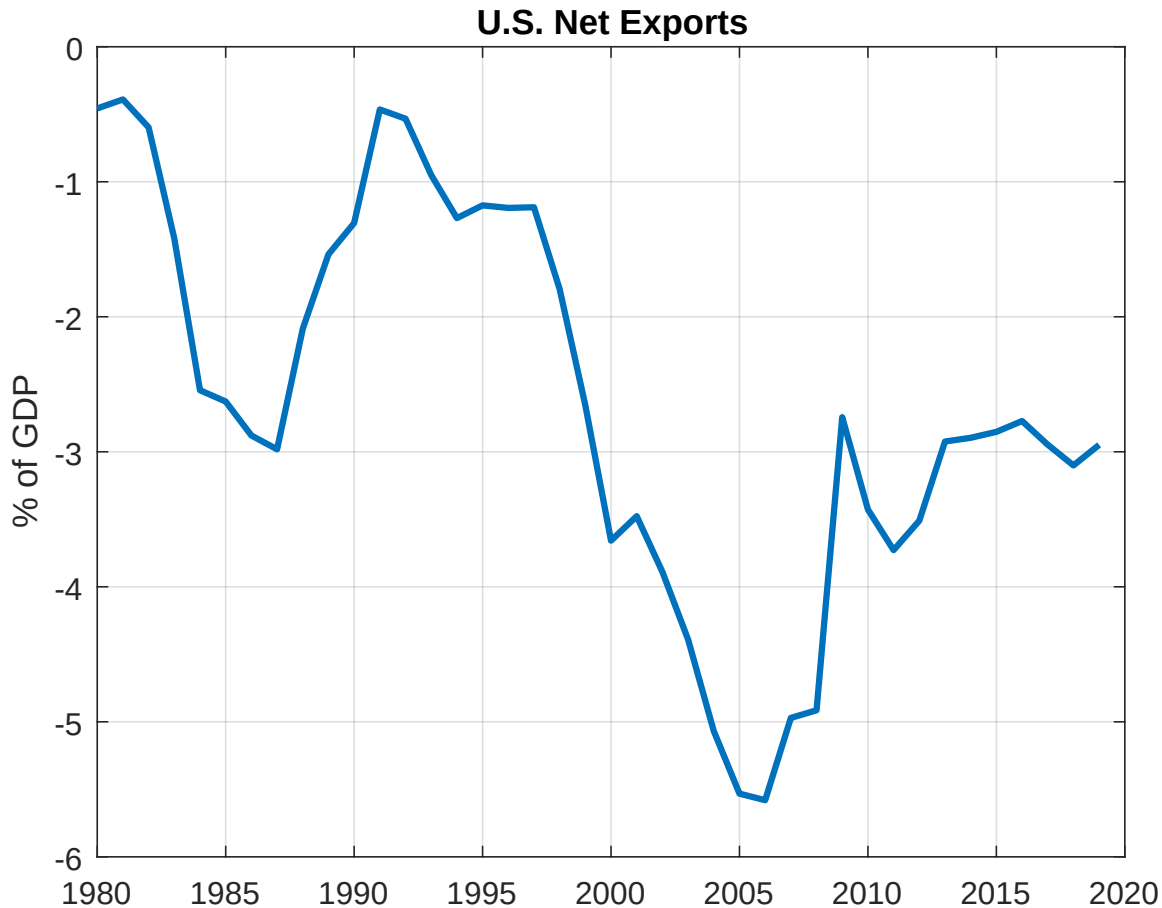
Globalization and Labor Markets

- Globalization shocks (e.g. Rise of China, Trade Liberalization) lead to disruptions in the labor market
  - Autor, Dorn and Hanson (2013), Pierce and Schott (2016), Dix-Carneiro and Kovak (2017, 2019), + many others

- Increasing interest in modeling and quantifying the labor market adjustment process
  - Measure and unpack mobility frictions
  - Quantify their implications for the adjustment process
  - Distributional effects
  - Smoothing policies
  - Artuc, Chadhuri and McLaren (2010), Dix-Carneiro (2014), Caliendo, Dvorkin and Parro (2019), Traiberman (2019)

Trade Imbalances

- Important policy actors in the US blame both globalization and persistent trade deficits for their labor market woes



Labor Markets and Trade Imbalances

- Trade deficits have, for decades and across the political spectrum, occupied a key role in policy markers' concerns with globalization
  - Crowds out domestic production (manufacturing)
  - Detrimental to jobs and workers

- In a disconnect with current policy concerns, trade economists ignore changes in imbalances in studying the labor market adjustment process.

  $\rightarrow$ **But does it matter? What do we lose by doing so?**

  $\rightarrow$ Balanced trade in textbook model dictates reallocation of resources across sectors following trade shocks

Globalization, Imbalances, and Labor Market Adjustment

This paper:

- We develop a framework to understand the role of trade imbalances in the labor market adjustment process in response to globalization shocks.
- We endogenize trade imbalances in an international trade model with unemployment and costly labor market adjustment

Approach

We build an estimable, GE, multi-country, multi-sector model with 3 key ingredients:

i. Consumption-saving decisions in each country commanded by a representative family $\Rightarrow$ trade imbalances

ii. Labor market frictions across and within sectors $\Rightarrow$ unemployment dynamics

iii. Costly trade + Ricardian comparative advantage

Literature

- Adjustment Process in Response to Globalization Shocks
  - Reduced Form
    - Autor, Dorn, Hanson & Song (2014), Pierce & Schott (2016), Dix-Carneiro & Kovak (2017, 2019)
  - Model-Based / Structural / Quantitative
    - Kambourov (2009), Artuc, Chaudhuri & McLaren (2010), Dix-Carneiro (2014), Caliendo, Dvorkin & Parro (2019), Traiberman (2019), Ruggieri (2019), Rodriguez-Clare, Ulate & Vasquez (2020)

- Multi-country, multi-sector GE models of Trade

	No or ad-hoc Imbalances	Trade Imbalances
Perfect L Mobility	Eaton & Kortum (2002) Caliendo & Parro (2015)	Reyes-Heroles (2016) Eaton, Kortum & Neiman (2016) Kehoe, Ruhl & Steinberg (2018)
L Mobility Frictions	Caliendo, Dvorkin & Parro (2019)	**This Paper!**

Model Environment

- We build on existing workhorse models of trade, imbalances, and labor market adjustment:
  1. **Imbalances:** Obstfeld & Rogoff (1995)
  2. **Trade:** Eaton & Kortum (2002), Caliendo & Parro (2015)
  3. **Labor Market Frictions:**
     - Across sectors: Artuç, Chaudhuri & McLaren (2010)
     - Within sectors: Mortensen & Pissarides (1994)

- **How do we fit these together?**

Family Problem

- Family in country i maximizes the objective function:

$$\max E_0 \left\{ \sum_{t=0}^{\infty} (\delta)^t \phi_i^t \int_0^{\overline{L}} \mathcal{U}_\ell^t \, d\ell \right\}$$

- $\mathcal{U}_\ell^t$ is individual level utility
  - Includes utility from consumption: $u(c_\ell^t)$
  - Includes switching costs and unemployment value: C, ν, b
- ϕ_i^t is family-wide intertemporal preference shock

- Budget constraint pools income, W^t, and receives profits from firms Π^t:

$$P^t \int_0^{\overline{L}} c_\ell^t \, d\ell + B^{t+1} \leq \Pi^t + W^t + R^t B^t$$

▸ Earnings Process Details ▸ Utility Function Details

Euler Equation

- Full risk sharing within countries: $c_\ell^t = c^t$

  Merz (1995), Andolfatto (1996), Kehoe et al. (2019)

  - Only able to address inequality in income, not in consumption
  - Can decentralize labor market decisions as if workers use SDF

- Family buys and sells one-period riskless bonds
  - Euler Equation:

$$R^{t+1} = \frac{1}{\delta} \times \frac{u'(c_i^t)/P_i^t}{u'(c_i^{t+1})/P_i^{t+1}}$$

  - Denote Lagrange multiplier on family budget constraint by $\widetilde{\lambda}_i^t$

- Assumption: $u(c) = \log(c)$

Worker's Bellman Equations

- Unemployed workers:

$$\widetilde{U}_{k,i}^{t}(\nu^{t}) = \max_{k'} \left(\begin{array}{c} -C_{kk',i} + \nu_{k',\ell}^{t} + b_{k',i} + \delta \widehat{\phi}_{i}^{t+1} \times \\ \left[p_{k',i}^{t} \int_{0}^{\infty} \max \left\{ W_{k',i}^{t+1}(x), U_{k',i}^{t+1} \right\} dG_{k',i}(x) \right. \\ \left. + \left(1 - p_{k',i}^{t}\right) U_{k',i}^{t+1} \right] \end{array} \right)$$

- Employed workers (match productivity x):

$$\begin{aligned} W_{k,i}^{t}(x) = & \widetilde{\lambda}_{i}^{t} w_{k,i}^{t}(x) + \eta_{k,i} \\ & + \delta \widehat{\phi}_{i}^{t+1} (1 - \chi_{k,i}) \left(\max \left\{ W_{k,i}^{t+1}(x), U_{k,i}^{t+1} \right\} \right) \\ & + \delta \widehat{\phi}_{i}^{t+1} \chi_{k,i} U_{k,i}^{t+1} \end{aligned}$$

  - Wages valued using multiplier, $\widetilde{\lambda}_{i}^{t}$, on budget constraint
  - Workers can choose to break matches in the future
  - ▸ Timing Details

Worker's Bellman Equations

- Unemployed workers:

$$\widetilde{U}_{k,i}^{t}(\nu^{t}) = \max_{k'} \left(\begin{array}{c} -C_{kk',i} + \nu_{k',\ell}^{t} + b_{k',i} + \delta \widehat{\phi}_{i}^{t+1} \times \\ \left[p_{k',i}^{t} \int_{0}^{\infty} \max \left\{ W_{k',i}^{t+1}(x), U_{k',i}^{t+1} \right\} dG_{k',i}(x) \right. \\ \left. + \left(1 - p_{k',i}^{t}\right) U_{k',i}^{t+1} \right] \end{array} \right)$$

- Employed workers (match productivity x):

$$\begin{aligned} W_{k,i}^{t}(x) = & \widetilde{\lambda}_{i}^{t} w_{k,i}^{t}(x) + \eta_{k,i} \\ & + \delta \widehat{\phi}_{i}^{t+1} (1 - \chi_{k,i}) \left(\max \left\{ W_{k,i}^{t+1}(x), U_{k,i}^{t+1} \right\} \right) \\ & + \delta \widehat{\phi}_{i}^{t+1} \chi_{k,i} U_{k,i}^{t+1} \end{aligned}$$

  - Wages valued using multiplier, $\widetilde{\lambda}_{i}^{t}$, on budget constraint
  - Workers can choose to break matches in the future
  - ▸ Timing Details

Firm's Problem

- Firms in sector k have access to variety j productivity $z_{k,i}^t(j)$ and are price takers in product, and input markets.
- Firm-worker match can produce tradable variety j accor. to

$$Y_{k,i}^t(j,x) = z_{k,i}^t(j)\, x^{\gamma_{k,i}} \prod_{\ell=1}^{K} \left(M_{\ell,i}^t\right)^{(1-\gamma_{k,i})\nu_{k\ell,i}},$$

- Given a firm-worker match, firm solves

$$S_{k,i}^t(j,x) = \max_{\{M_{\ell,i}^t\}} p_{k,i}^t(j)\, Y_{k,i}^t(j,x) - \sum_{\ell=1}^{K} P_{\ell,i}^{I,t} M_{\ell,i}^t$$

and costless variety switching $\Rightarrow S_{k,i}^t(j,x) = S_{k,i}^t(x) \equiv \widetilde{w}_{k,i}^t x$ where $\widetilde{w}_{k,i}^t$ defines sector k's "surplus". ▸ Sectoral surplus

- Standard value function and Nash Bargaining ▸ $J_{k,i}^t(x)$

Entry and Cutoffs

- Potential entrants: Unlimited mass, must pay $\kappa_{k,i} \times P_{k,i}^{F,t}$ to operate in sector k in country i. Value:

$$V_{k,i}^{t} = -\widetilde{\lambda}_{i}^{t} \kappa_{k,i} P_{k,i}^{F,t} + \delta \widehat{\phi}_{i}^{t+1} \left[\begin{array}{c} q_{ki}^{t} \int_{\underline{x}_{k,i}^{t+1}}^{\infty} J_{k,i}^{t+1}(s)\, dG_{k,i}(s) \\ + (1 - q_{ki}^{t}) \max \left\{ V_{k,i}^{t+1}, 0 \right\} \end{array} \right]$$

- **Free Entry Condition:** Entry pushes *ex-ante* profits to 0
- Cutoff rule is optimal: firm produces if $x \geq \underline{x}_{k,i}^{t} \Rightarrow$ endogenous job destruction and creation

Trade and Market Structure

- Perfect competition + costless variety switching imply:

$$p_{k,i}^t(j) = \frac{c_{k,i}^t}{z_{k,i}^t(j)}$$

- Sector specific unit cost given by:

$$c_{k,i}^t \equiv \left(\frac{\widetilde{w}_{k,i}^t}{\gamma_{k,i}}\right)^{\gamma_{k,i}} \left(\frac{P_{k,i}^{M,t}}{1-\gamma_{k,i}}\right)^{1-\gamma_{k,i}}$$

- Trade costs: $d_{k,ih}^t$, iceberg costs of shipping sector-k goods from i to h
- Efficiency is realization of r.v. $z_{k,i}^t \sim Frechet(A_{k,i}^t, \lambda)$
- ▸ SS Equilibrium Defn.

Data and Estimation

- Consider six countries and six sectors in 2000 ▸ Countries & Sectors
- Data: WIOD, ILOSTAT and US CPS
- Estimation: Method of Simulated Moments ▸ Parameters
  - Assume 2000 is steady state, Θ set of parameters to estimate
  - Conditioning on $\pi_{k,oi}^{data}$, NX_i^{data}
    - Estimation can be done country-by-country ($Y_{k,i}$ indep. of Θ)
    - No need to estimate $A_{k,i}$ nor $d_{k,oi}$ (rely on hat algebra for CFs)

Table: Moments Used in Estimation

Targeted Moment	Source
Employment allocations across sectors and countries	WIOD
Average wages across sectors and countries	WIOD
Trade shares	WIOD
Net exports	WIOD
National unemployment rates	ILOSTAT
Coefficient of variation of log-wages in the United States	CPS
Yearly transition rates for the United States	CPS

- Moments fit well ▸ Model fit

Forces in the Model - IRFs

- Shed light on main forces shaping model's outcomes
- Different shocks to evolution of $A_{k,China}$ ▸ Shocks

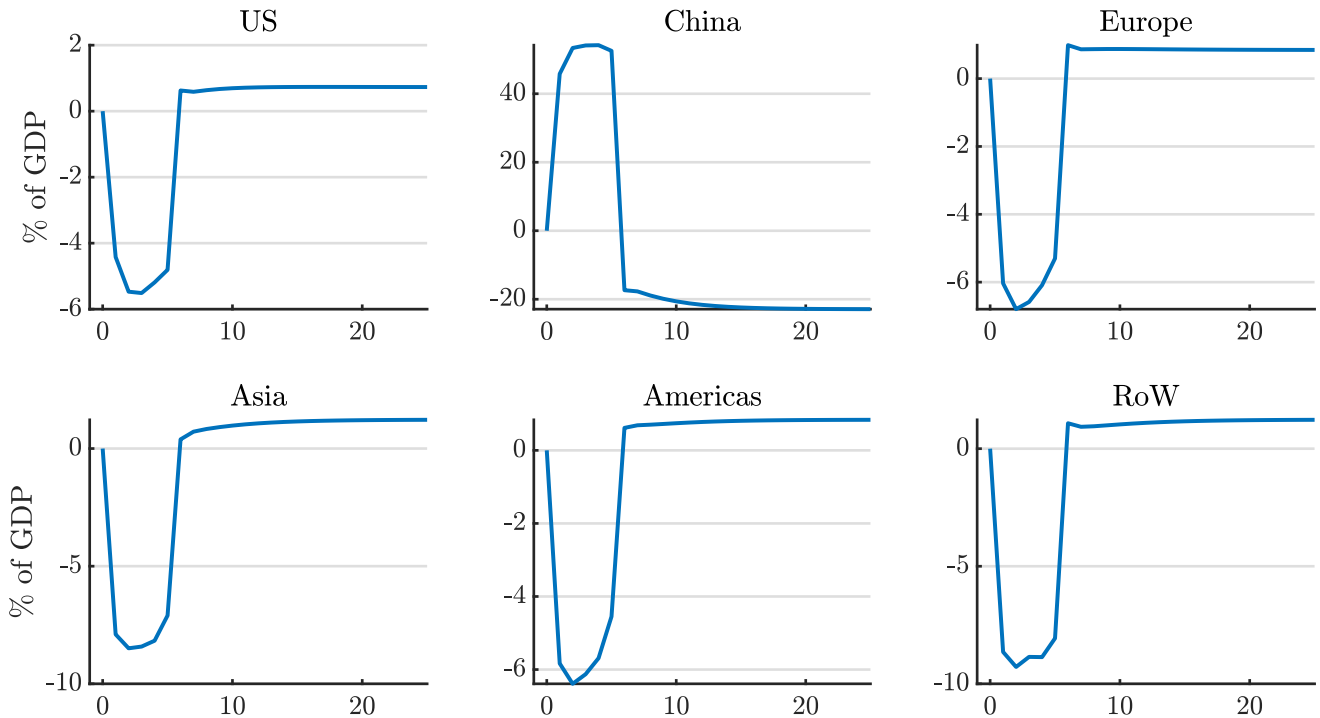
1. Temporary shock: tenfold uniform increase across sectors
   - Focus on implications for labor-market outcomes of optimal consumption-saving decisions vs. balanced trade
     $\rightarrow$ *estimate model in 2000 under balanced trade*
2. Permanent shocks: one-time and slow-moving (tenfold on impact and after 15 years, respectively, both uniform)
   - Focus on different long-run implications for labor-market outcomes of path of shocks

Modeling of consumption-saving decisions from first principles and a deep understanding of the shock is required to evaluate the effects of globalization on labor market outcomes.

Temporary Shock: Productivity Increase in China

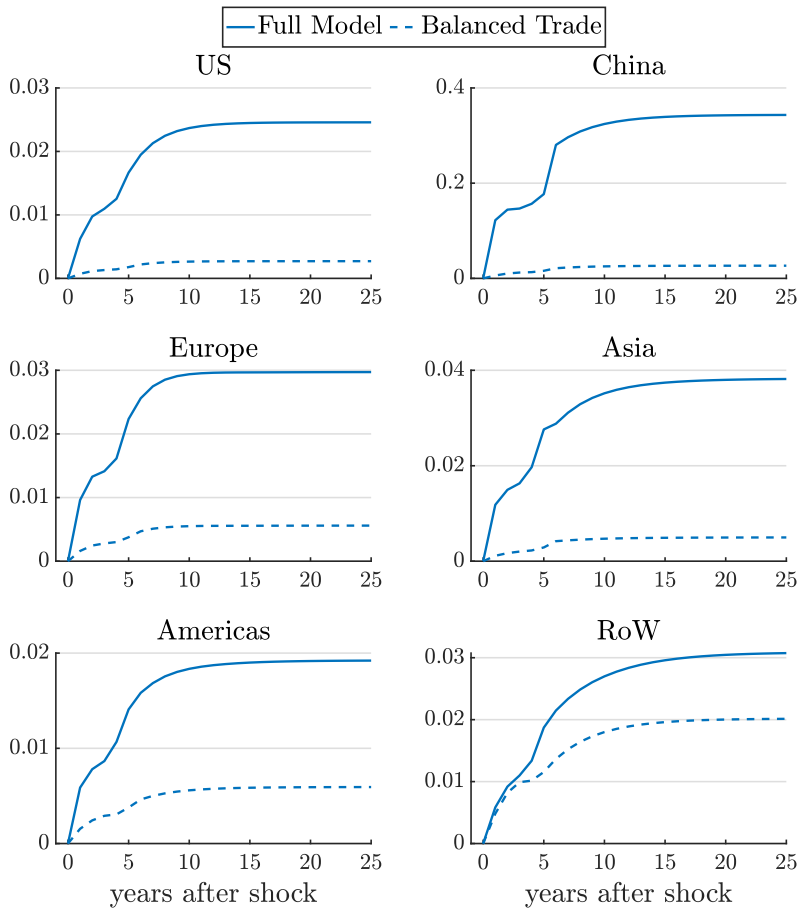
- Evolution of trade imbalances is key determinant of labor-market outcomes along transitions and in the long run!

Figure: Net Exports / GDP

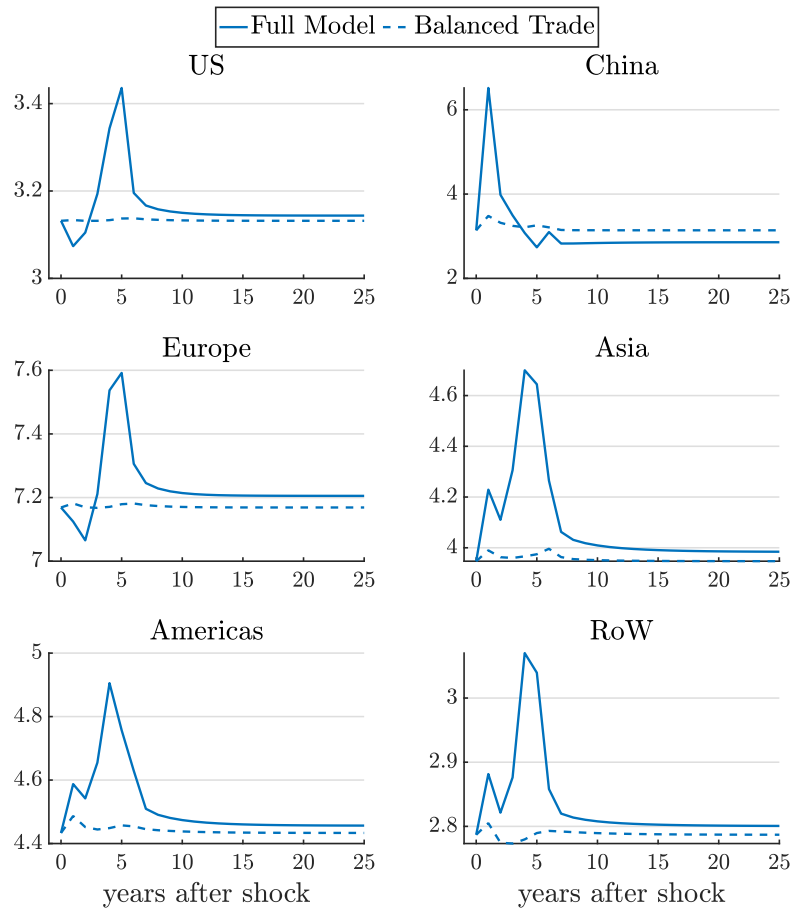


Temporary Shock: Productivity Increase in China

(a) Reallocation Index

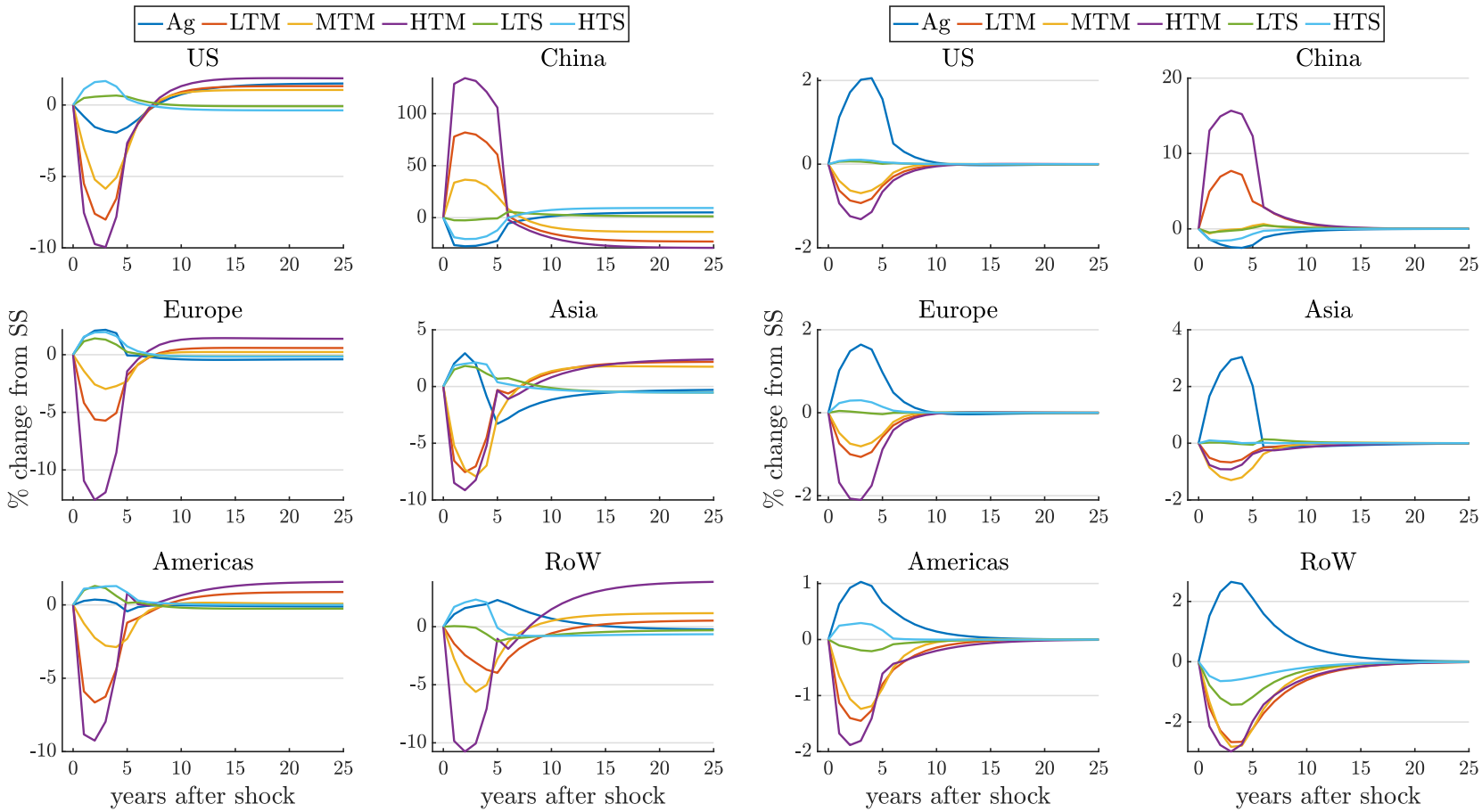


(b) Unemployment



Temporary Shock: Productivity Increase in China

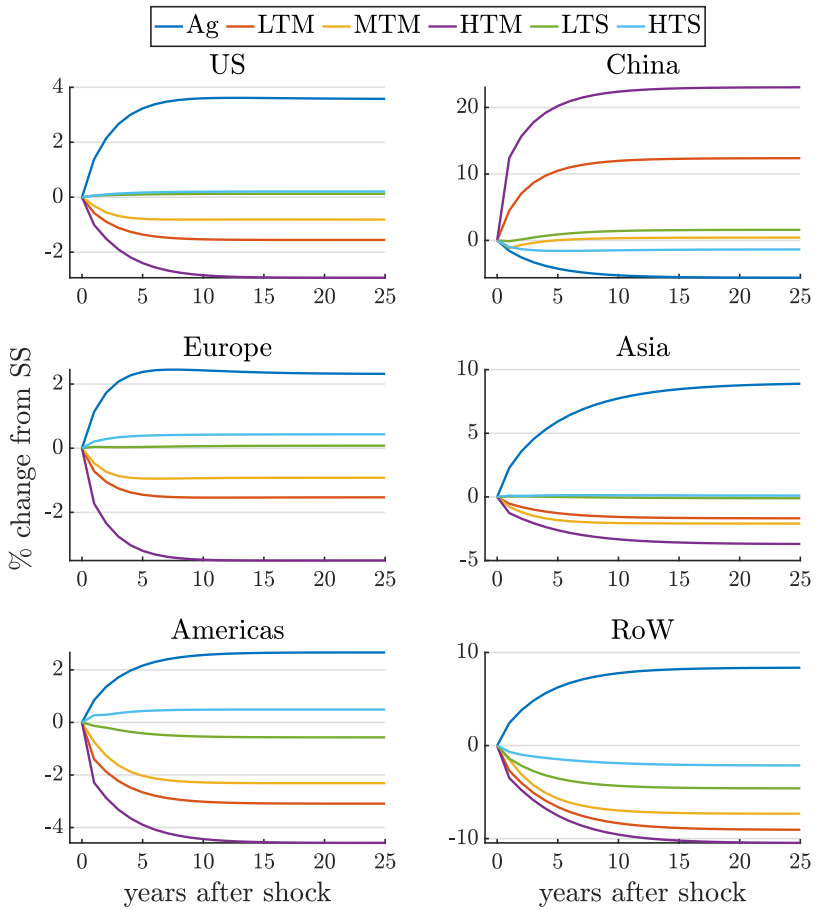
(a) Labor Allocations: Complete Model (b) Labor Allocations: Trade Balance



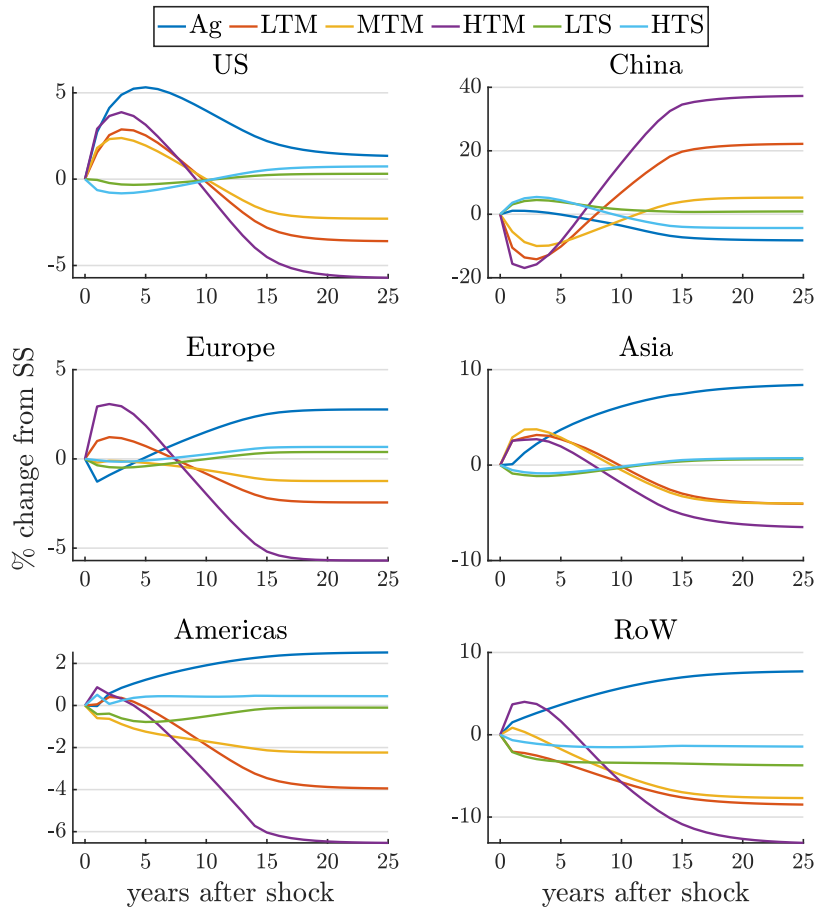
Permanent Shocks: One-time vs. Slow-moving

- Path of shocks do matter for long-run labor-market outcomes!

(a) Labor Allocations: One-time



(b) Labor Allocations: Slow-moving



Counterfactual Exercises

- Results from IRFs $\Rightarrow$ need to discipline shocks carefully
- Extract shocks from data for quantitative exercise:
  - Invert gravity and final expenditure blocks of the model to recover $\left\{\widehat{d}^t_{k,oi}\right\}$, $\left\{\widehat{A}^t_{k,i}\right\}$ and $\left\{\widehat{\phi}^t_i\right\}$.

    ▸ Productivities ▸ Trade Costs ▸ IPS

  - Model fits non-targeted transition paths for labor and imbalances well

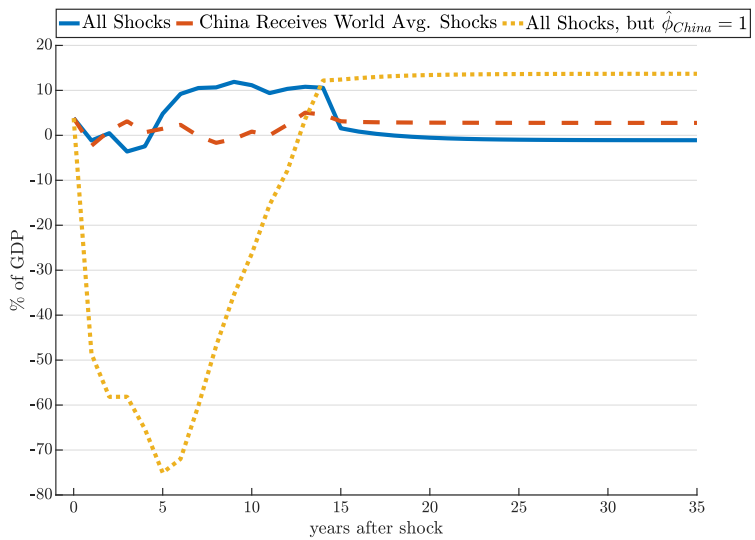
    ▸ Labor Allocations ▸ Net Exports

- Counterfactual exercises
  - Globalization shocks ($\widehat{d}^t_{k,oi}$ and $\widehat{A}^t_{k,i}$) only (**in paper**)
  - China Shock: (**today!**)
    - China receives shocks equal to the average of all other countries
    - No savings glut in China: $\widehat{\phi}_{China} = 1$
  - Comparison with ACR (**in paper**)

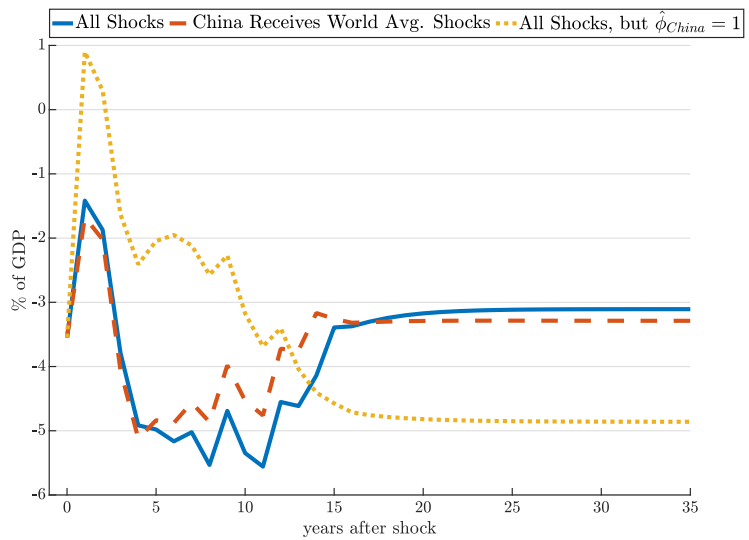
Counterfactual: China Shock

Figure: The China Shock: Net Exports

(a) NX / GDP in the China



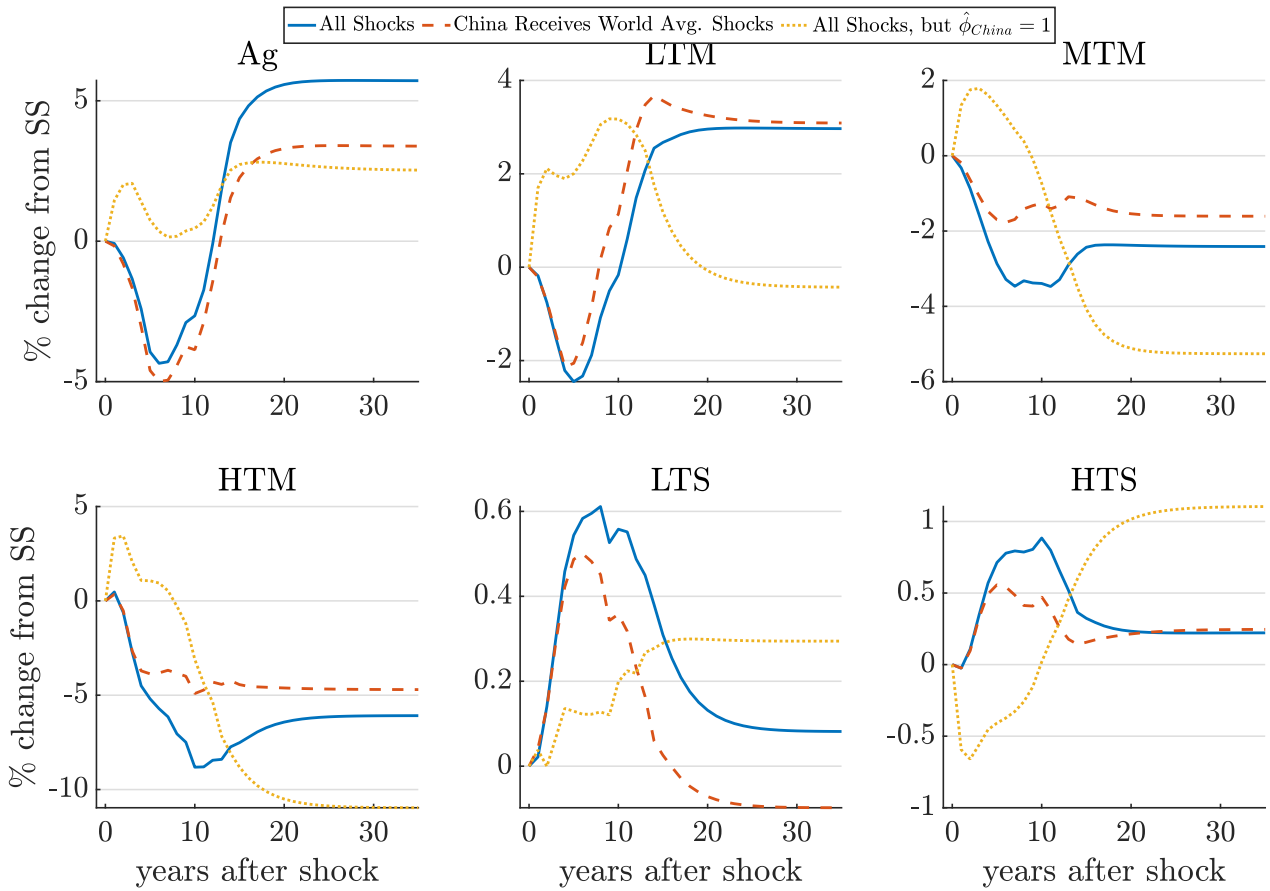
(b) NX / GDP in the US



▸ NX all countries: China at Row Avg.
▸ NX all countries: All but no Ch. Savings Glut

Counterfactual: China Shock

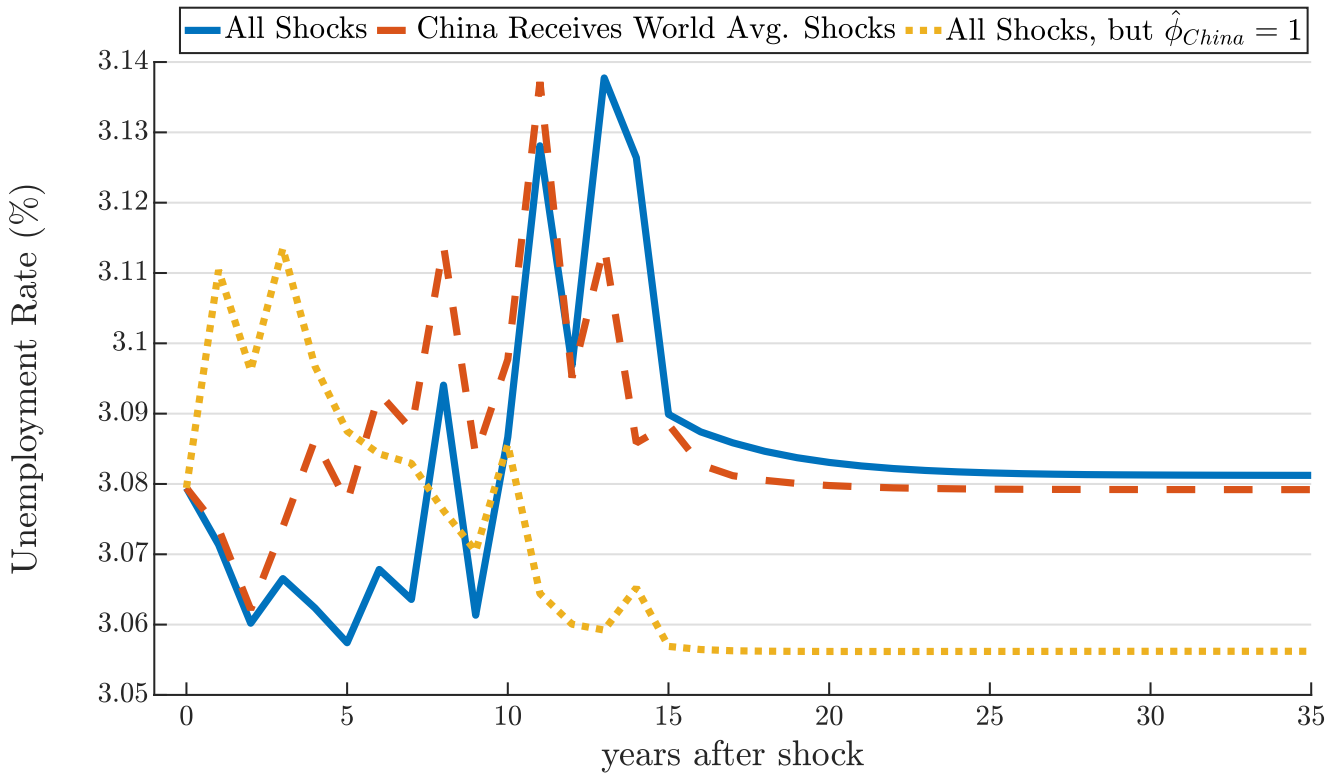
Figure: The China Shock: Labor Allocations in the US



▸ Labor: China at RoW Avg. ▸ Labor: All but no Ch. Savings Glut

Counterfactual: China Shock

Figure: The China Shock: Unemployment in the US



▸ U all countries: China at RoW Avg.
▸ U all countries: All but no Ch. Savings Glut

The Consumption Effects of the China Shock

$$\widehat{W}_i \equiv \exp\left\{(1-\delta)\sum_{t=0}^{\infty}\delta^t \log(C_i^t) - \log(C_i^{SS_0})\right\}$$

- $\widehat{W}_i^{\text{All Shocks}} / \widehat{W}_i^{\text{China Follows RoW Trend}}$
- $\widehat{W}_i^{\text{All Shocks}} / \widehat{W}_i^{\text{No China Savings Glut}}$

The Consumption Gains of the China Shock

Table: Global Consumption Gains of the China Shock (2000-2014)

	Panel A. Gains Relative to "China Follows RoW Trend"	
Country	Complete Model	Balanced Trade
US	1.001	1.012
Europe	1.001	1.003
Asia	1.004	0.993
Americas	1.001	1.001
RoW	1.005	1.030
	Panel B. Gains Relative to $\widehat{\phi}_{China} = 1$	
Country	Complete Model	Balanced Trade
US	0.997	1.000
Europe	0.998	1.000
Asia	0.998	1.000
Americas	1.003	1.000
RoW	1.010	1.000

- Impact of China alone on US is muted, but overall positive
- Modest welfare effect of the "China Savings Glut"

The Consumption Gains of Globalization

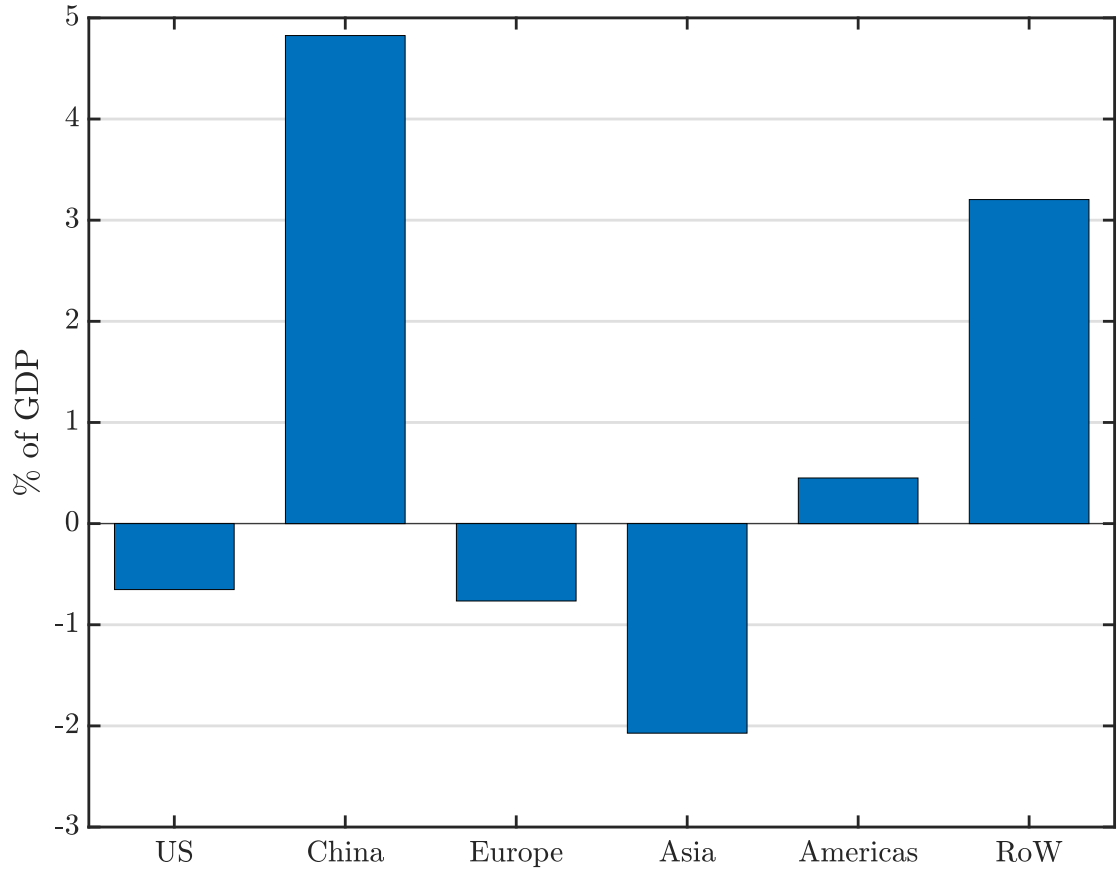
$$\widehat{W}_i \equiv \exp\left\{(1-\delta)\sum_{t=0}^{\infty}\delta^t \log(C_i^t) - \log(C_i^{SS_0})\right\}$$

Table: Globalization Consumption Gains Over 2000-2014

Country	Complete Model	Balanced Trade	Complete Model $\widehat{\phi}_{China} = 1\ \forall t$	Balanced Trade $\widehat{\phi}_{China} = 1\ \forall t$
United States	1.022	1.013	1.038	1.013
China	1.066	1.067	1.056	1.067
Europe	1.015	1.015	1.025	1.016
Asia/Oceania	1.003	1.021	0.997	1.021
Americas	1.003	1.006	1.002	1.006
RoW	1.052	1.045	1.037	1.045

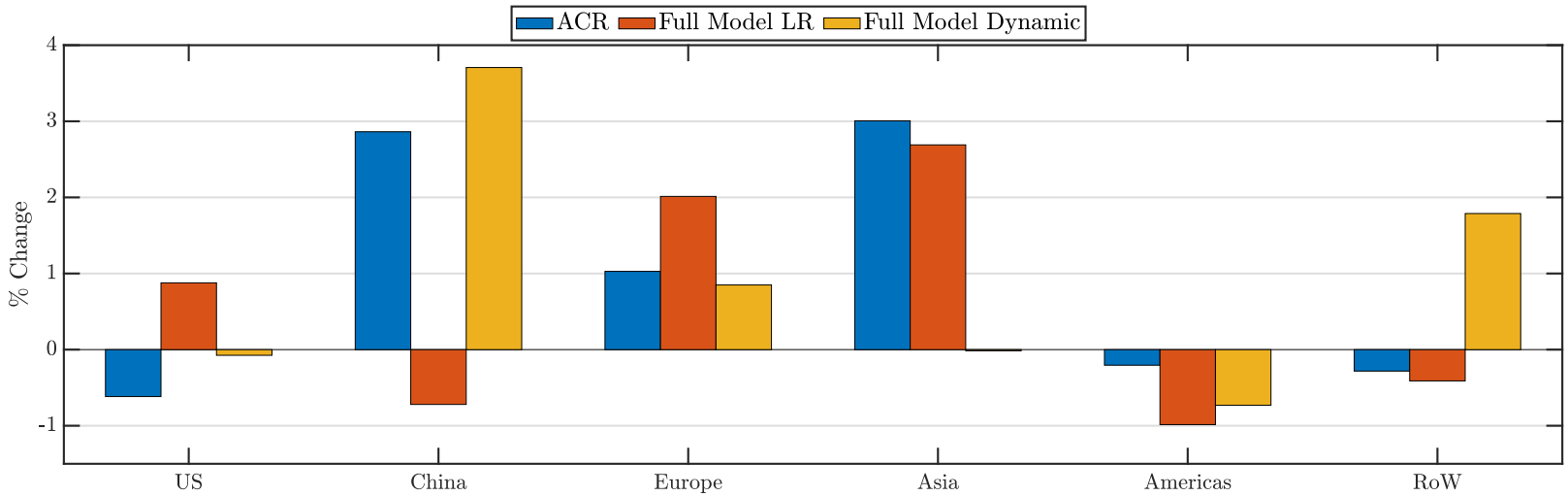
- US gains are 73% larger in the absence of the global savings glut...
- ... but 40% smaller if we had lived in a balanced trade world

Consumption Gains and ACR



- **Simulated Shock:** Starting from trade balance, feed in observed trade cost changes
- We expect ACR to give different answers because of persistent effects on imbalances

Consumption Gains and ACR



- Comparing red and blue bars compares ACR formula to changes in steady state consumption
  - Significant differences in both signs and magnitudes
- Comparing yellow and blue bars compares ACR formula to the NPV of gains

Conclusion

- Trade imbalances are key drivers of consequences of globalization on labor market outcomes
  - Imbalances can magnify effects of globalization on inter-sectoral reallocation and unemployment, and have effects on reallocation paths
  - Imbalances $\Rightarrow$ long-run outcomes are path-dependent
  - China shock: important role on contraction of US manufacturing, not on unemployment, or welfare.
  - US trade deficit and its implications for labor markets would have emerged even in the absence of the China Shock.

- Future Research
  - Heterogeneity across workers (skill premium)
  - Inequality effects
  - Incomplete markets

Worker's Individual Utility

- Worker state:
  - Employment status: e^t
  - Current sector: k^t
  - Moving cost shocks: ν_k^t
- Payoffs:
  - Consumption: c^t
  - Employment value: ν_k
  - Unemployment value: b_k
  - Switching costs: C
- Individual utility:

$$\mathcal{U}^t\left(e^t, k^{t+1}, k^t, \nu^t, c^t\right) = \left(1 - e^t\right)\left(-C_{k^t,k^{t+1}} + b_{k^{t+1}} + \nu^t_{k^{t+1},}\right) + e^t \eta_{k^t} + u\left(c^t\right)$$

Back

Worker's Earnings

- Workers matching with firm get match productivity, x
  - Workers choose whether to keep match, $\widetilde{e}_k^t(x)$
  - Probability of exogenous breakup, χ
  - Employment is a controlled process
- Workers and firms free to choose variety $\Rightarrow$ wages are sector specific
- Workers who meet firm get wage $w_k(x)$
  - Nash bargaining over match surplus later
- Evolution of state:

$$\Pr\left(k^{t+1}=k, e^{t+1}=1 | x^{t+1}, k^t, e^t\right) = \mathcal{I}\left(k^t=k\right) e^t \left(1-\chi_k\right) \widetilde{e}_k^t\left(x^{t+1}\right) + \left(1-e^t\right) \mathcal{I}\left(k^{t+1}=k\right) \theta_k^t q\left(\theta_k^t\right) \left(1-\chi_k\right) \times \widetilde{e}_k^t\left(x^{t+1}\right)$$

Back

Sectoral Surpluses

- Conditional on entry, switching varieties is costless
  - idiosyncratic match productivity x can be carried with worker and firm to different j

- No arbitrage $\Rightarrow p_{k,i}^t(j) z_{k,i}(j) = p_{k,i}^t(j') z_{k,i}(j')$

- Define *sectoral surplus*:

$$\widetilde{w}_{k,i}^t \equiv \gamma_{k,i} \left(1 - \gamma_{k,i}\right)^{\frac{1-\gamma_{k,i}}{\gamma_{k,i}}} \left(P_{k,i}^{M,t}\right)^{\frac{\gamma_{k,i}-1}{\gamma_{k,i}}} \left(p_{k,i}^t\left(j\right) z_{k,i}^t\left(j\right)\right)^{\frac{1}{\gamma_{k,i}}}$$

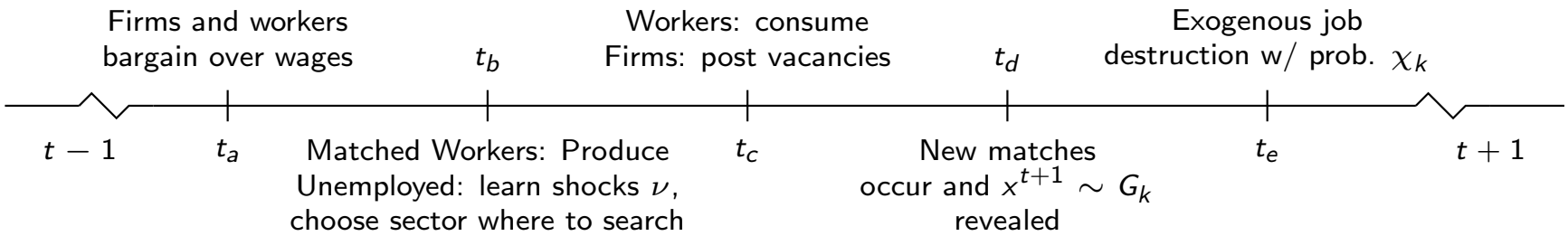
  where

$$P_{k,i}^{M,t} \equiv \prod_{l=1}^{K} \left(\frac{P_{k,i}^{l,t}}{\nu_{kl,1}}\right)^{\nu_{kl,i}}$$

  - Firms and workers in sector k only care about $\widetilde{w}_{k,i}^t$

Back

Timing in the Labor Market



- At the beginning of the period: previously matched firm-workers produce
- Unemployed workers draws sector-specific preference shocks ν and choose where to search (after incurring switching costs)
- Matching occurs
- Death shocks χ realized

Back

Firms' Value Functions and Nash Bargaining

- Firms' Value Functions

$$J_{k,i}^{t}(x) = \widetilde{\lambda}_{i}^{t}\left(\widetilde{w}_{k,i}^{t}x - w_{k,i}^{t}(x)\right) + (1-\chi_{k,i})\,\delta \max\left\{J_{k,i}^{t+1}(x), 0\right\}$$

- Wages $w_{k,i}^{t}(x)$

$$W_{k,i}^{t}(x) - U_{k,i}^{t} = \beta_{k,i}\left(J_{k,i}^{t}(x) + W_{k,i}^{t}(x) - U_{k,i}^{t}\right)$$

Back

Steady-State Equilibrium

A steady-state equilibrium is a vector of prices, $\{\widetilde{w}_k^i\}$, labor allocations, $\{L_k^i, u_k^i\}$, outputs, $\{Y_k^i\}$, transition rates across sectors, $\mathbf{S}^i$, wage policies, $\{w_k^i(x)\}$ and policy rules for firms and workers, $\{\underline{x}_k^i\}$ such that:

1. The policy rules solve workers and firms' Bellman equations
   - Free Entry Condition $V_{k,i} = 0$
2. Net zero job creation: $JC_{k,i} = JD_{k,i}$
3. Wages solve the Nash Bargaining problem
4. Labor Markets Clear: $Y_{k,i} = L_{k,i}(1 - u_{k,i}) \int_{\underline{x}_{k,i}}^{\infty} x dG_{k,i}(x)$
5. Goods Markets Clear: Standard Eaton-Kortum market clearing
6. Bonds Markets Clear: $\sum_i B_i = 0$

Back

Trade Imbalances in Steady State after Transition

- T_{SS} time required for steady state to be achieved

$$\frac{\delta^{T_{SS}}}{1-\delta} NX_i^{T_{SS}} = -\sum_{t=0}^{T_{SS}-1} \delta^t NX_i^t - \frac{1}{\delta} B_i^0,$$

- Countries with high levels of initial wealth $R^0 B_i^0 = \frac{1}{\delta} B_i^0$ are able to sustain deficits in steady state, i.e., $NX_i^{T_{SS}} < 0$.

Back

Countries and Sectors

Table: Country Definitions

1	USA
2	China
3	Europe
4	Asia/Oceania
5	Americas
6	Rest of the World (ROW)

Notes: Asia/Oceania = {Australia, Japan, South Korea, Taiwan}, Americas = {Brazil, Canada, Mexico}, Rest of the World ={Indonesia, India, Russia, Turkey, Rest of the World}

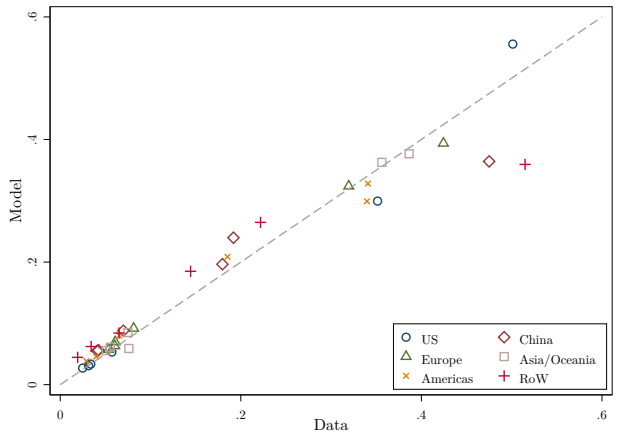
Table: Sector Definitions

1	Agriculture/Mining	Agriculture, Forestry and Fishing; Mining and quarrying
2	Low-Tech Manufacturing	Wood products; Paper, printing and publishing; Coke and refined petroleum; Basic and fabricated metals; Other manufacturing
3	Mid-Tech Manufacturing	Food, beverage and tobacco; Textiles; Leather and footwear; Rubber and plastics; Non-metallic mineral products
4	High-Tech Manufacturing	Chemical products; Machinery; Electrical and optical equipment; Transport equipment
5	Low Tech Services	Utilities; Construction; Wholesale and retail trade; Transportation; Accommodation and food service activities; Activities of households as employers
6	Hi Tech Services	Publishing; Media; Telecommunications; Financial, real estate and business services; Government, education, health

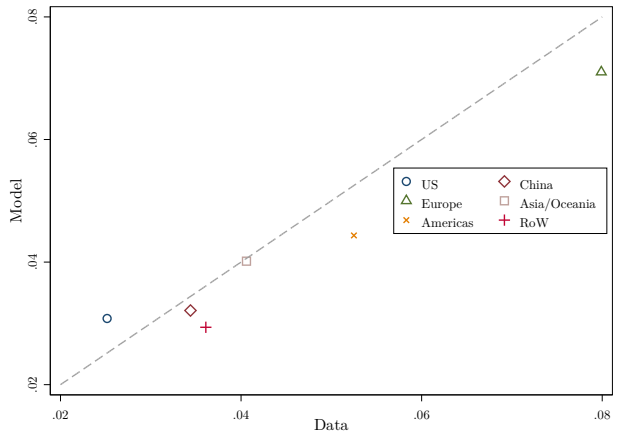
▸ Back

Model Fit

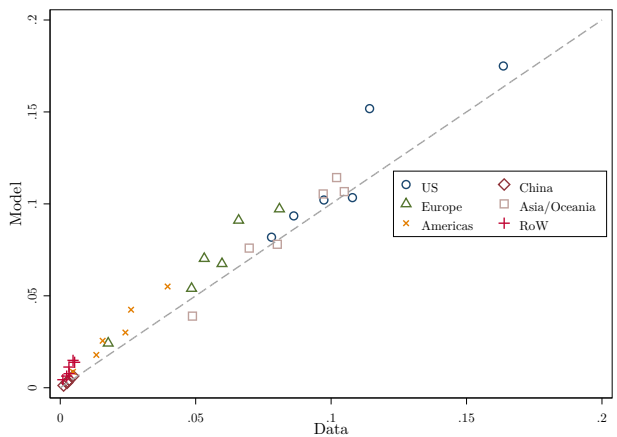
(a) Employment Shares



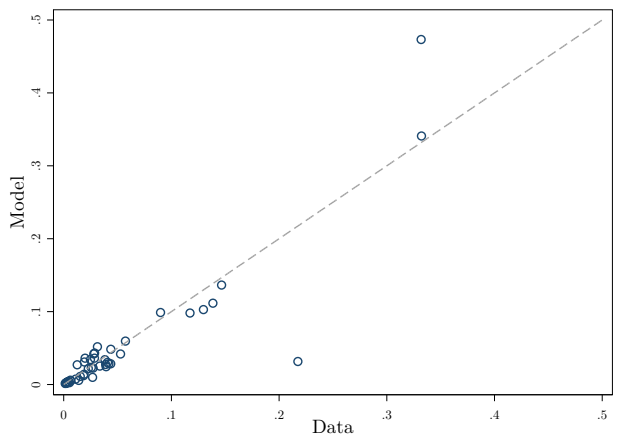
(b) Unemployment Rates



(c) Average Wages



(d) Transition Rates



▸ Back

Parameters

Table: Summary of Parameters

Panel A. Fixed According to the Literature			
Parameter	Value	Description	Source
δ	0.9924	Discount factor	?
ζ_i	1.63	Dispersion of ω shocks	?
ξ_i	1.84	Matching Function	?
λ	4	Frechet Scale Parameter	?
$\beta_{k,i}$	0.5	Worker Bargaining Power	?

Panel B. Estimated Outside of the Model		
Parameter	Description	Source
$\mu_{k,i}$	Final Expenditure Shares	WIOD
$\gamma_{k,i}$	Labor Expenditure Shares	WIOD
$\nu_{k\ell,i}$	Input-Output Matrix	WIOD

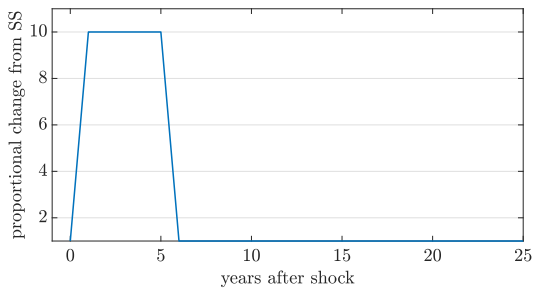
Panel C. Estimated by Method of Simulated Moments	
Parameter	Description
$\widetilde{\kappa}_{k,i}$	Vacancy Costs
$\chi_{k,i}$	Exogenous Exit
$\sigma^2_{k,i}$	$G_{k,i}$
$C_{kk'}$	Mobility Costs
$\eta_{k,i}$	Sector-Specific Utility
$b_{k,i}$	Unemployment Utility

Note: **?** use an annual discount factor of $\delta = 0.97$. Since we work at the quarterly frequency, we use $\delta = 0.97^{1/4}$.

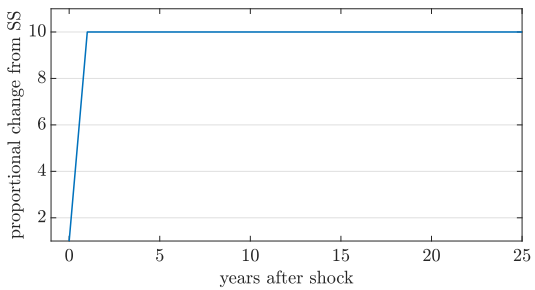
▸ Back

Shocks to Chinese Productivity $\widehat{A}_{k,China}$ for IRFs

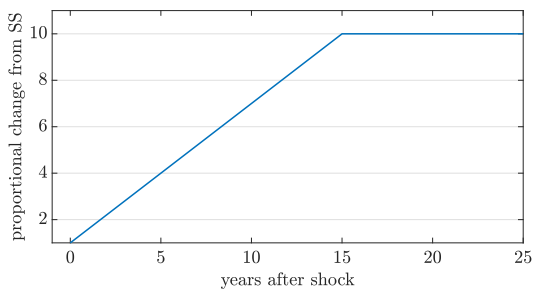
(a) Temporary



(b) Once-And-For-All



(c) Slow Moving

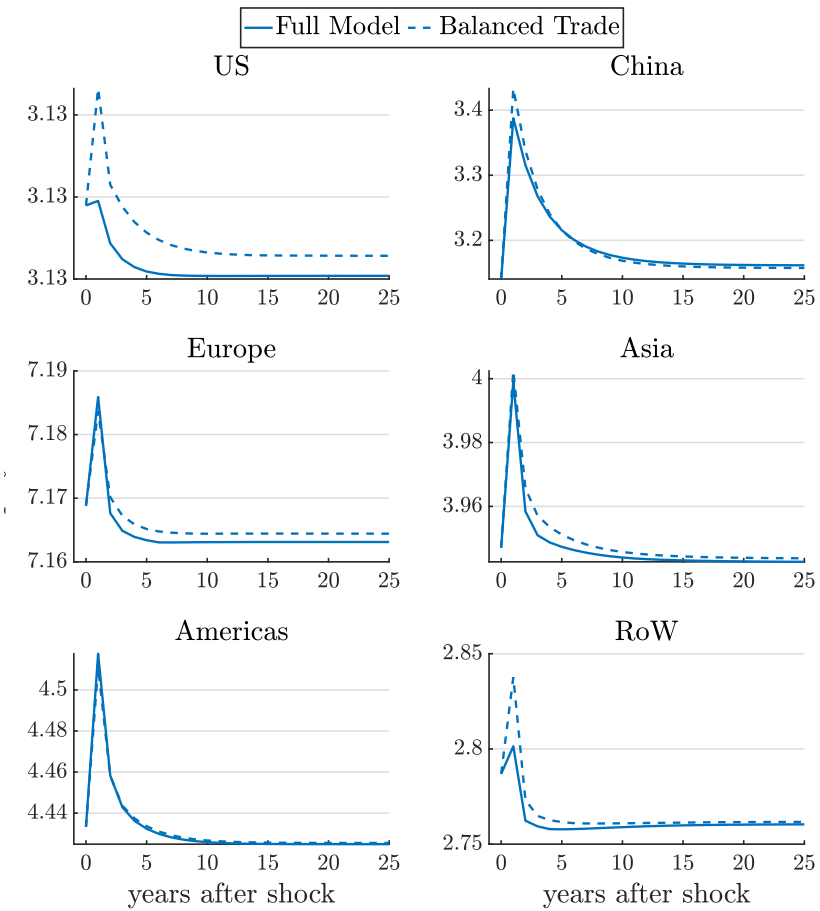


▸ Back

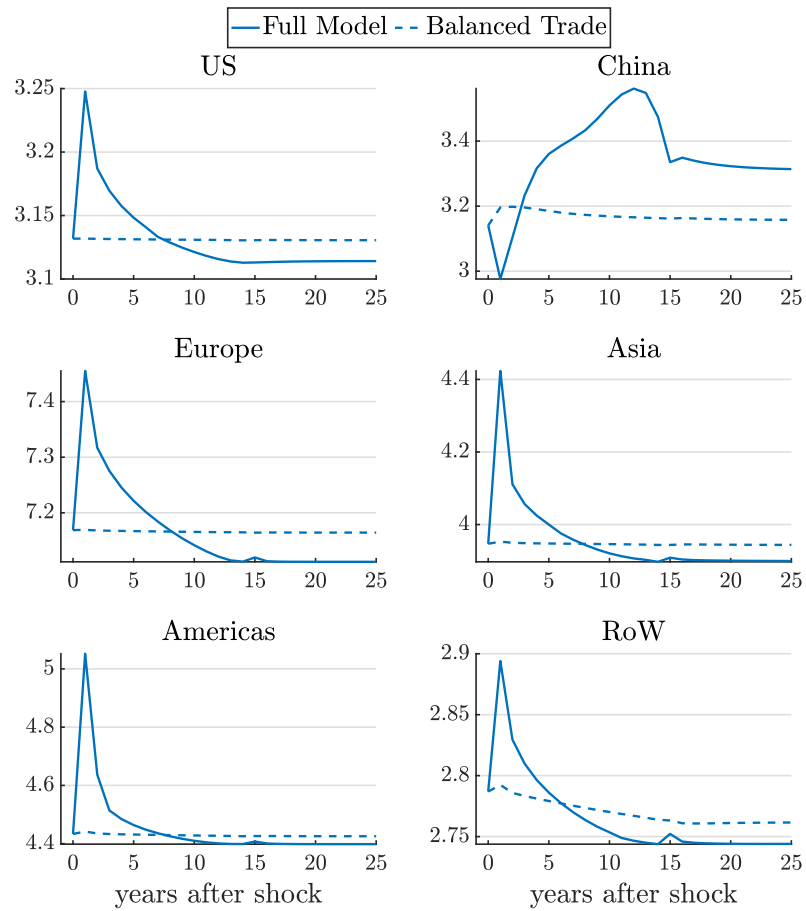
Permanent Shocks: One-time vs. Slow-moving

Unemployment

(a) Unemployment - One-time



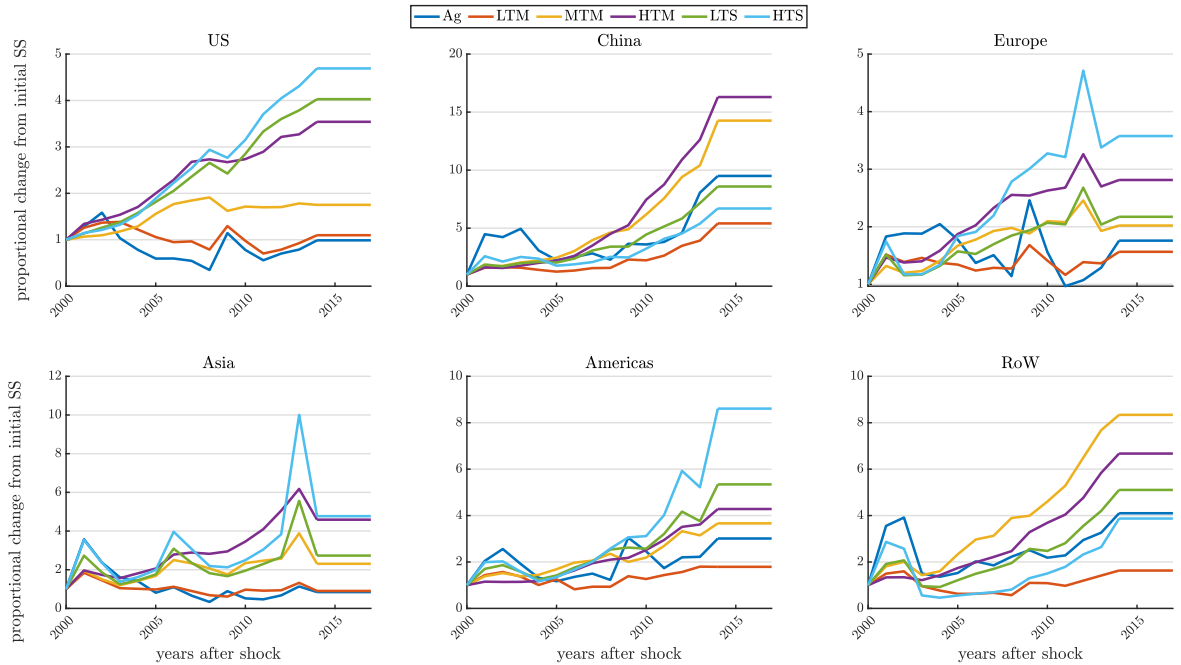
(b) Unemployment - Slow-moving



Back

Extracted Globalization Shocks

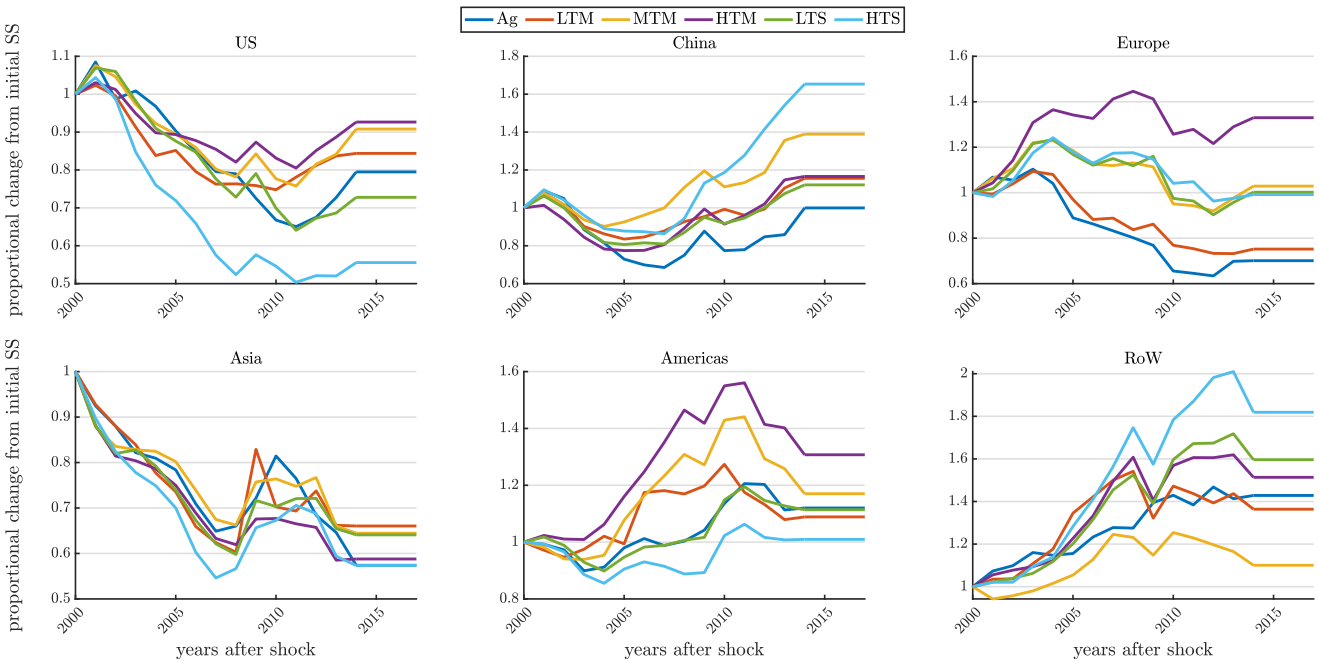
Productivities



▸ Back

Extracted Globalization Shocks

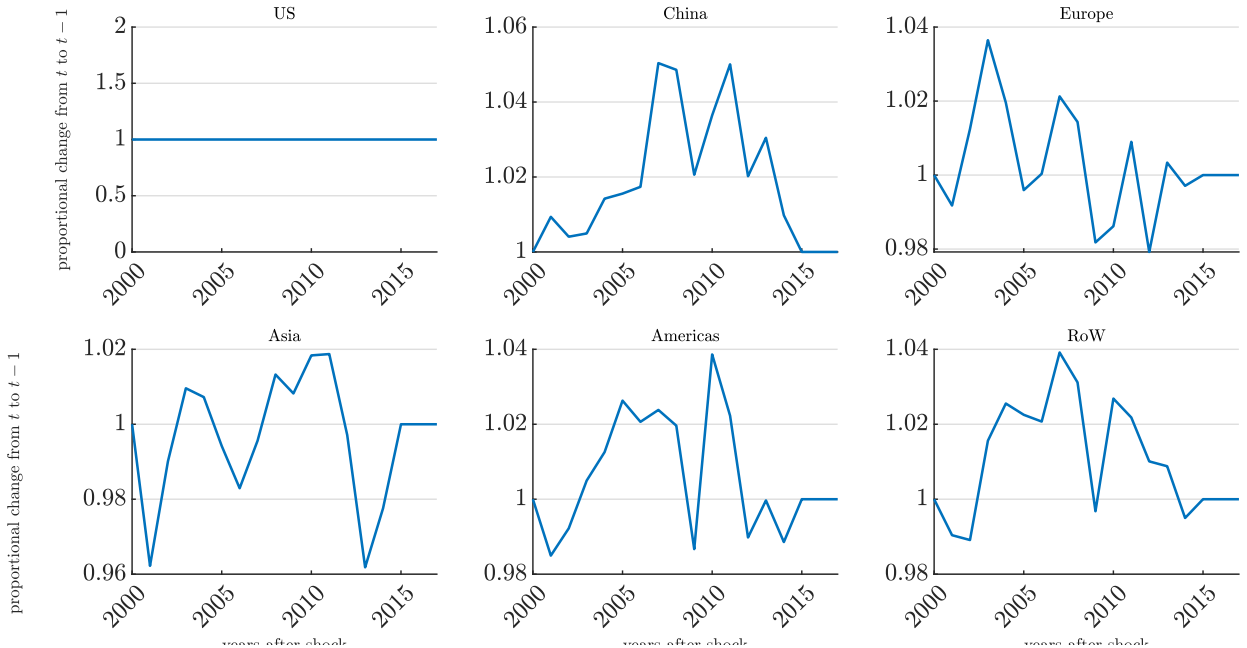
Trade-Weighted Import Costs



Back

Extracted Globalization Shocks

Intertemporal Preference Shifters



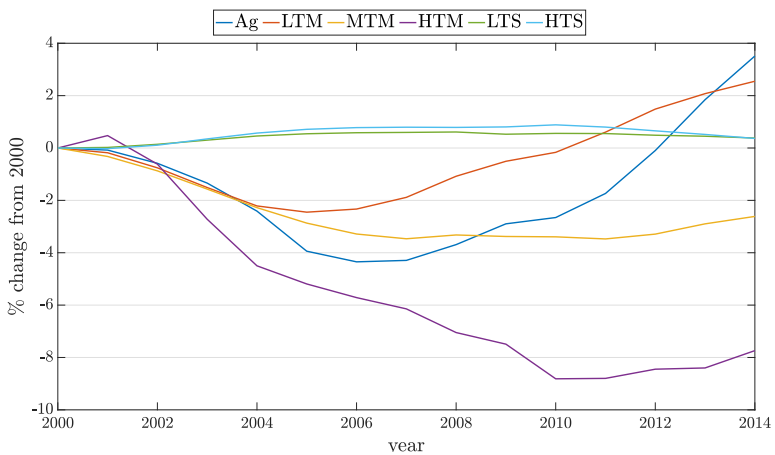
▸ Back

Non-targeted Moments

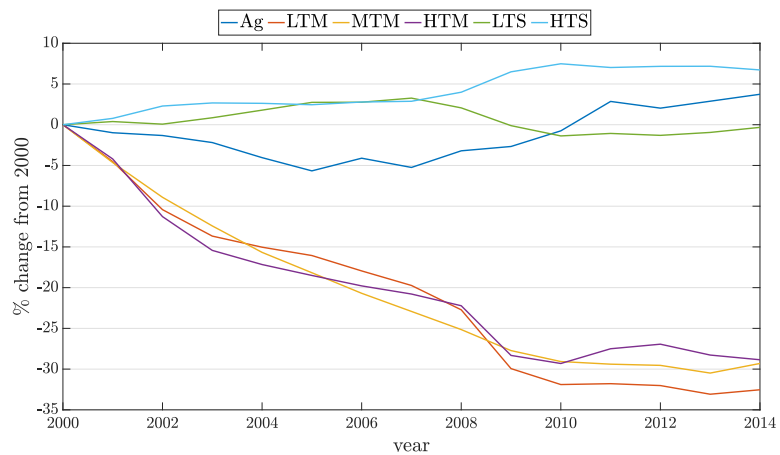
Labor Allocations

Figure: Comparing Labor Allocations in the Model and Data

(a) Model



(b) Data



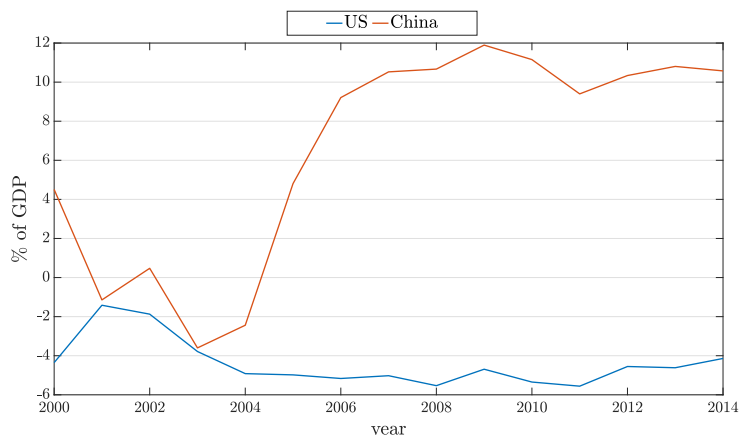
Back

Non-targeted Moments

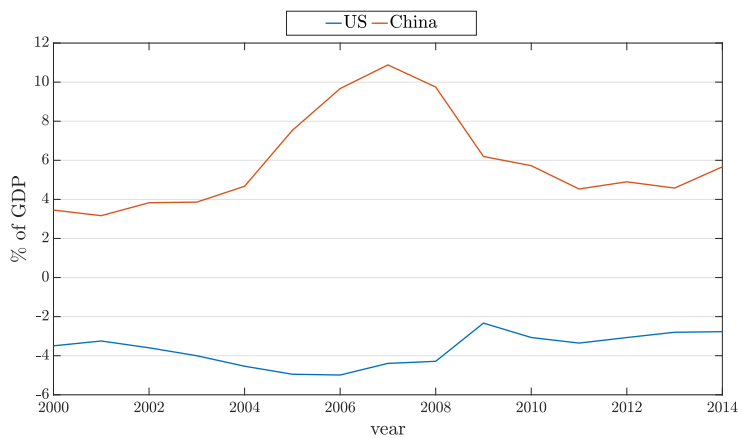
Net Exports

Figure: Comparing Net Exports in the Model and Data

(a) Model



(b) Data

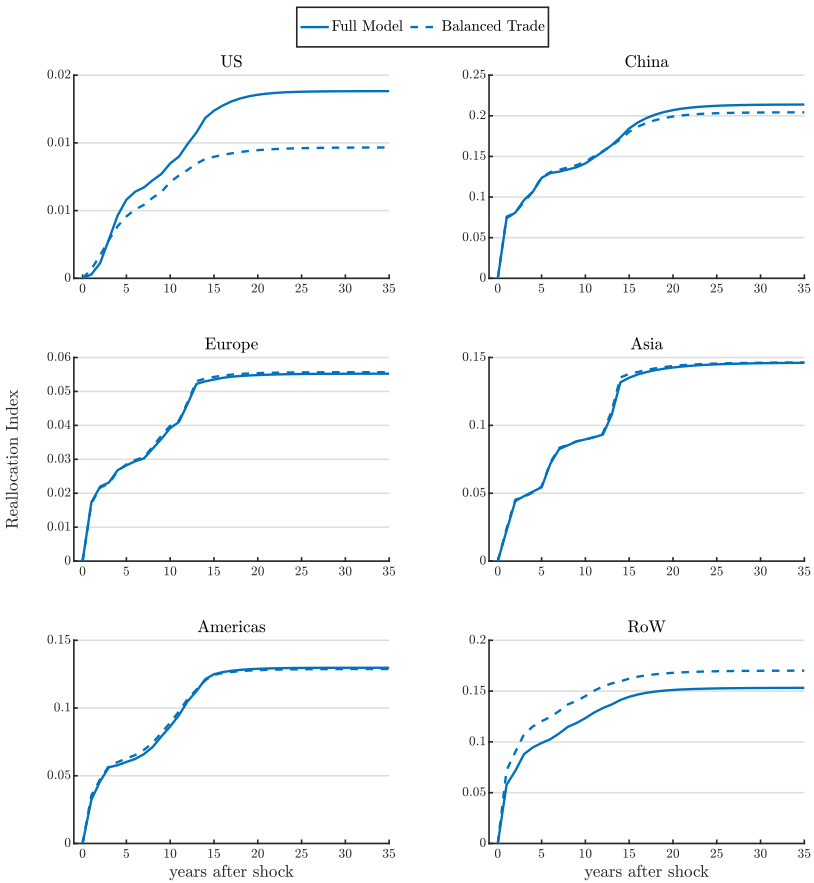


Back

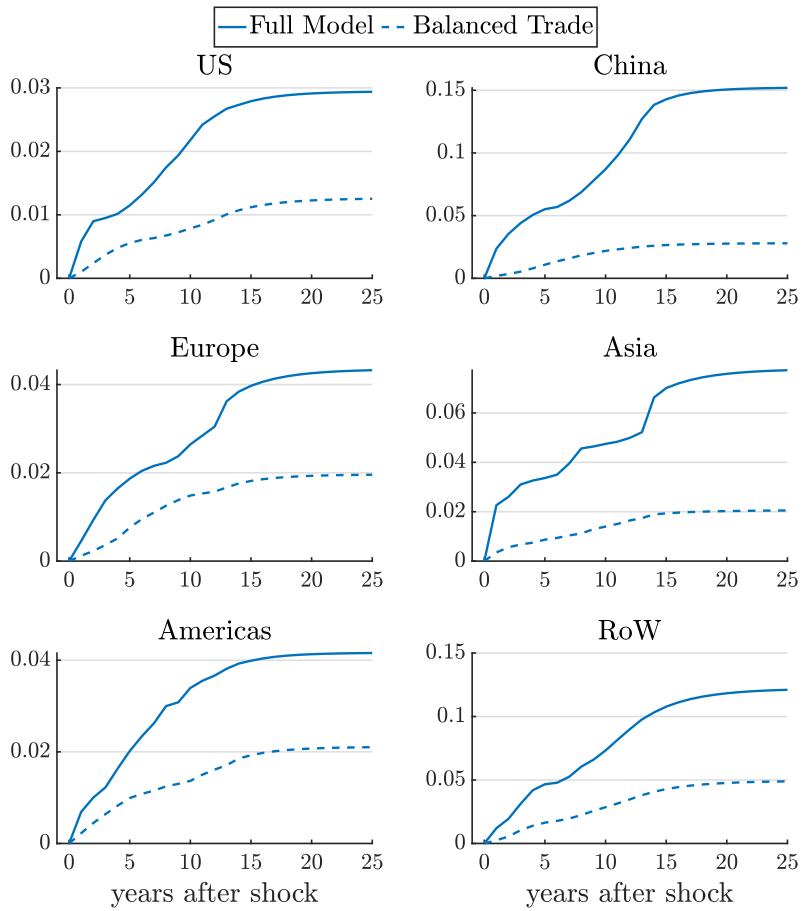
Counterfactual 1: Globalization shocks

Reallocation Index

(a) All Shocks Extracted



(b) Globalization Shocks

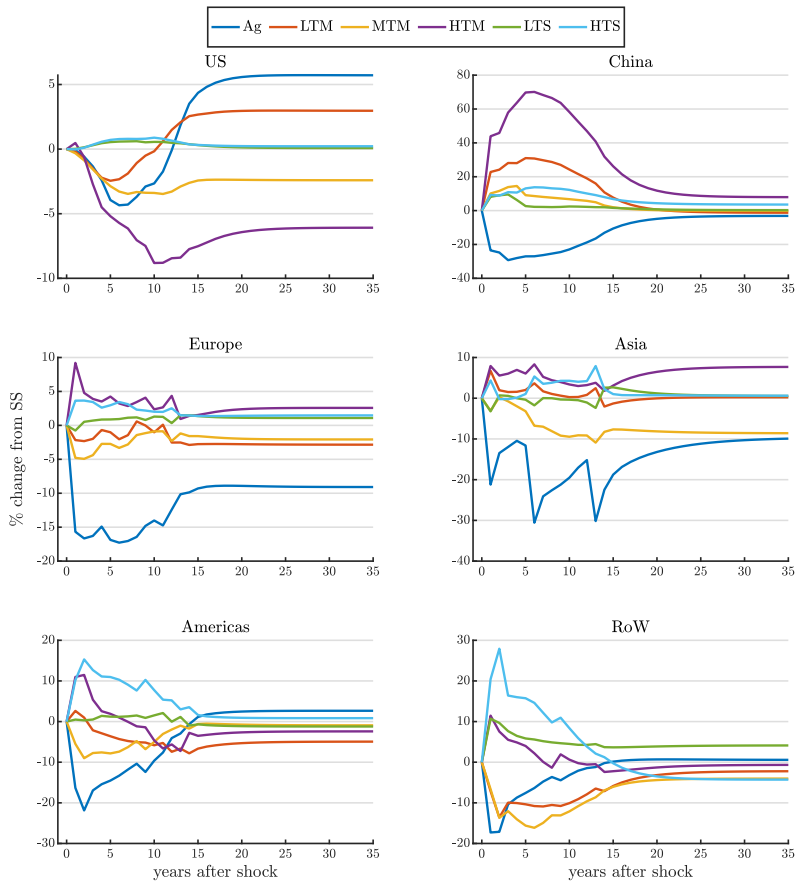


Back

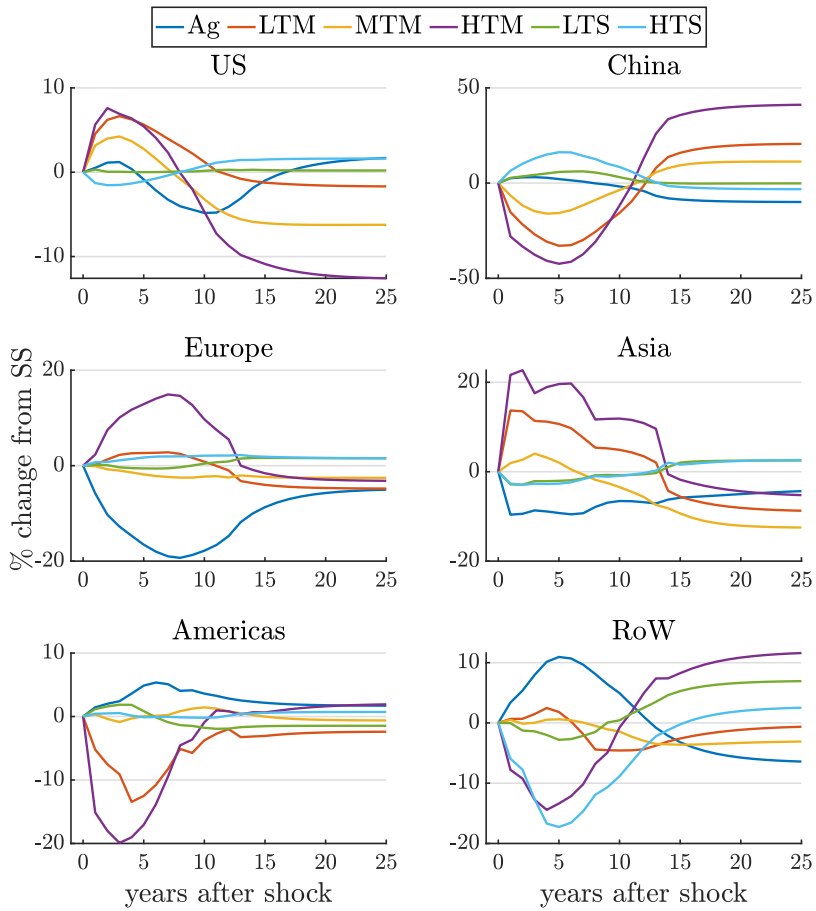
Counterfactual 1: Globalization shocks

Labor Allocations

(a) Complete Model



(b) Trade Balance

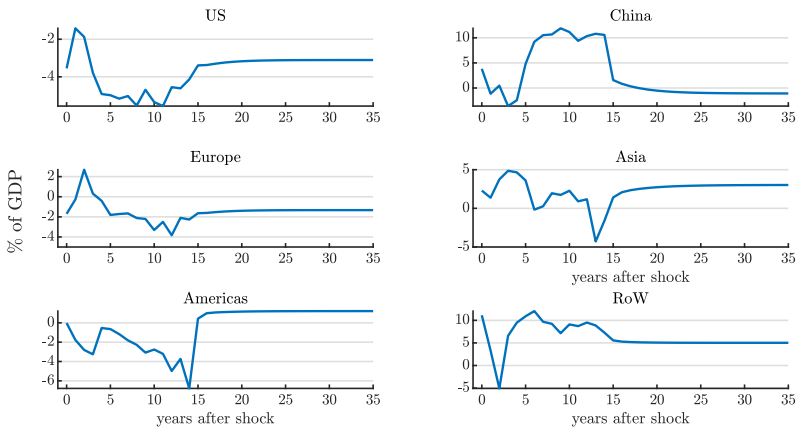


Back

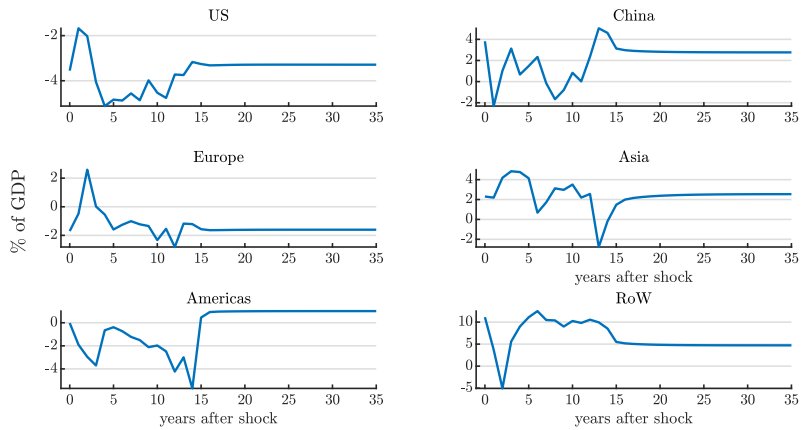
Counterfactual 2: China shocks only

Net Exports over GDP

(a) All Shocks Extracted



(b) China Receives RoW Avg. Shocks

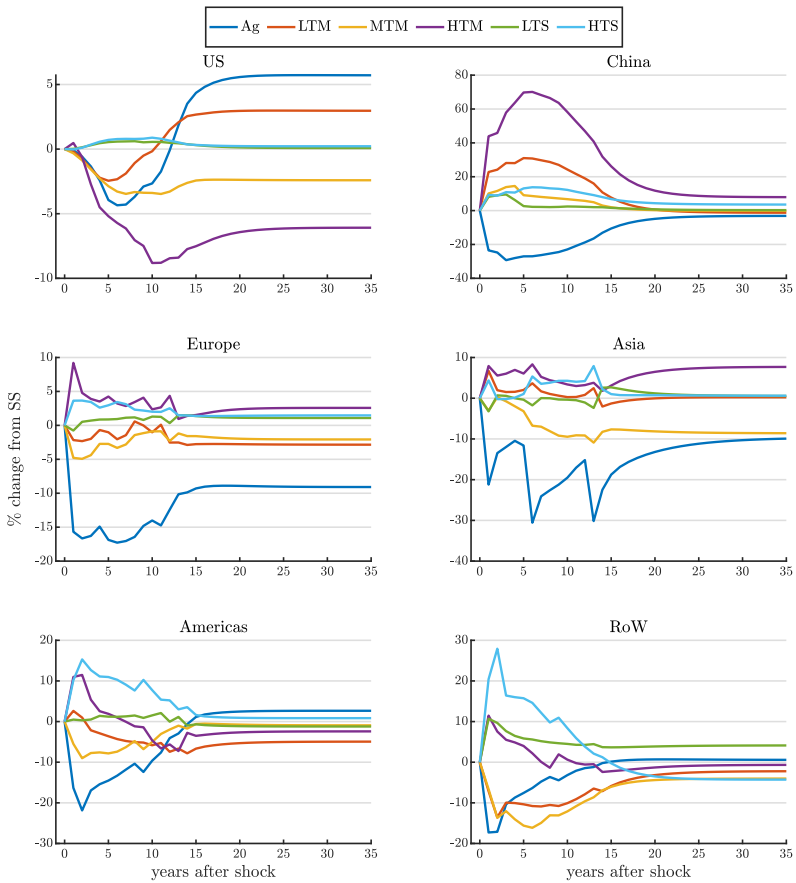


▸ Back

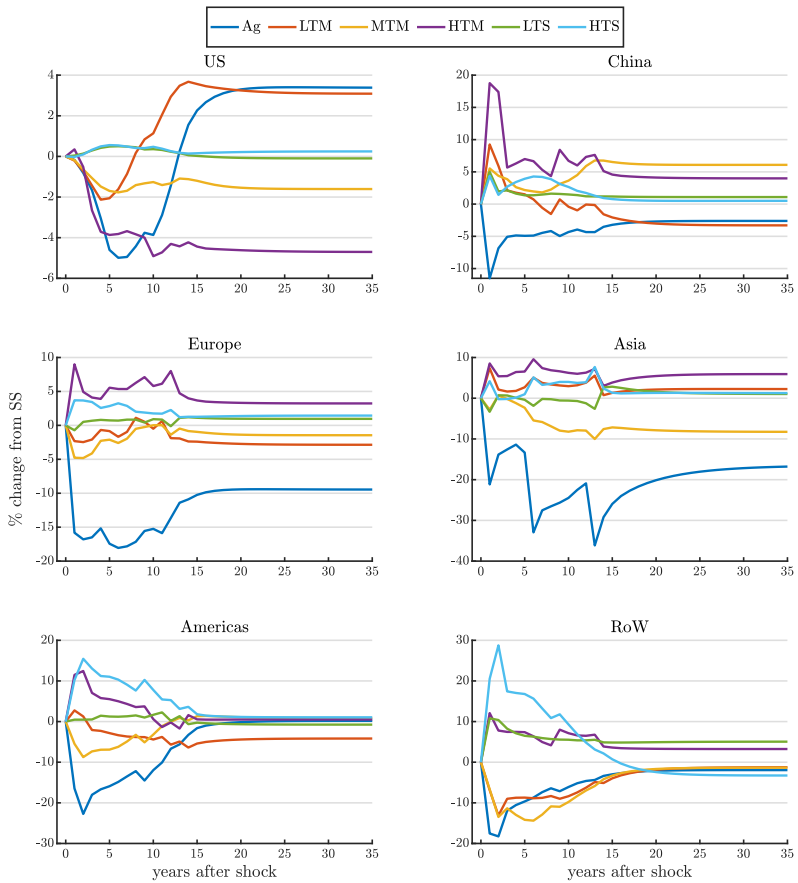
Counterfactual 2: China shocks only

Labor Allocations

(a) All Shocks Extracted



(b) China Receives RoW Avg. Shocks

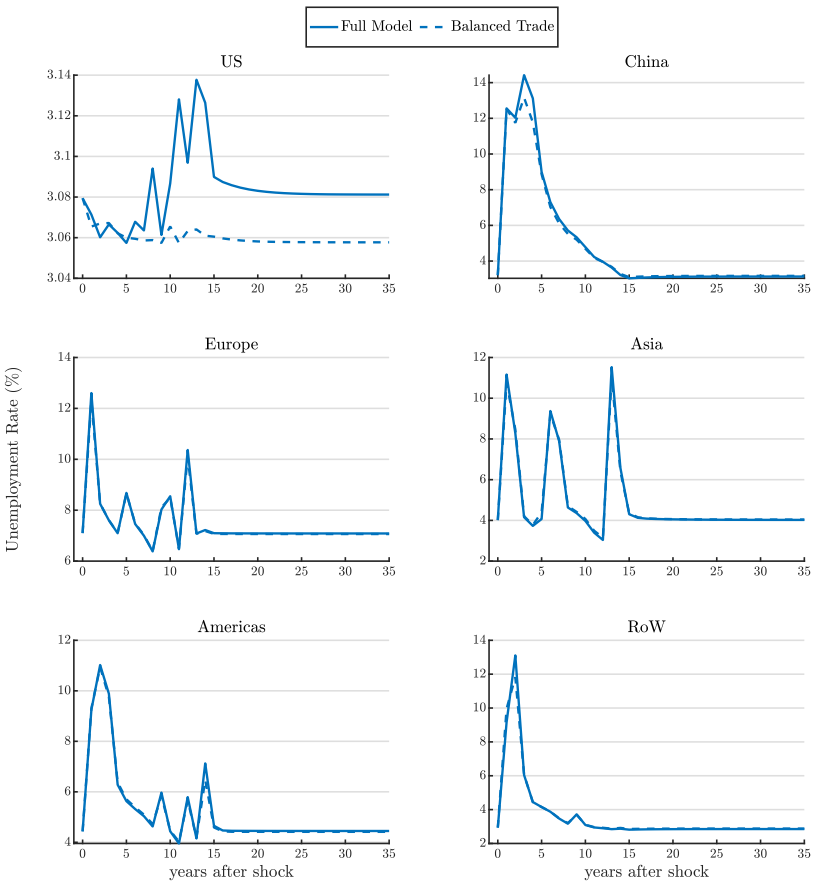


▸ Back

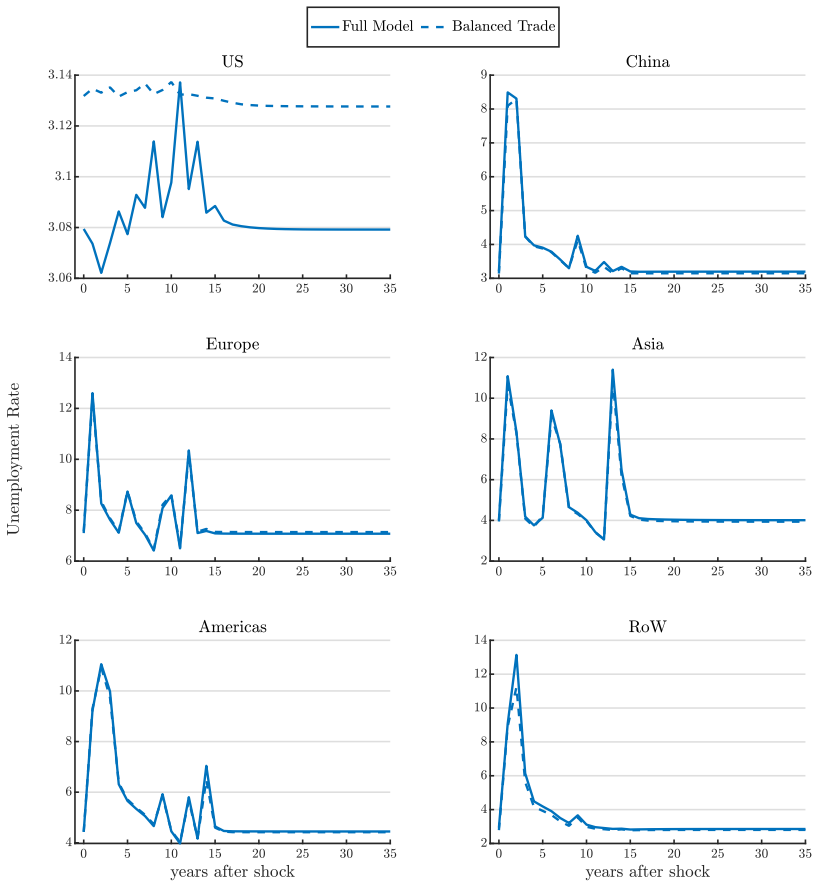
Counterfactual 2: China shocks only

Unemployment

(a) All Shocks Extracted



(b) China Receives RoW Avg. Shocks

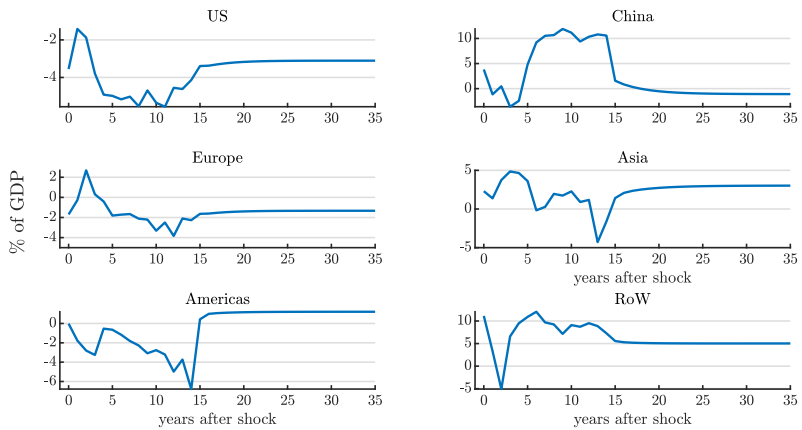


Back

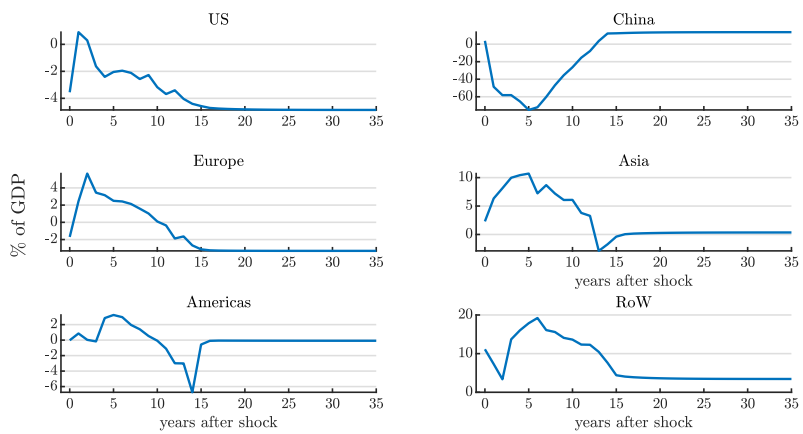
Counterfactual 2: All shocks but $\widehat{\phi}_{CN} = 1$

Net Exports over GDP

(a) All Shocks Extracted



(b) All shocks but $\widehat{\phi}_{CN} = 1$

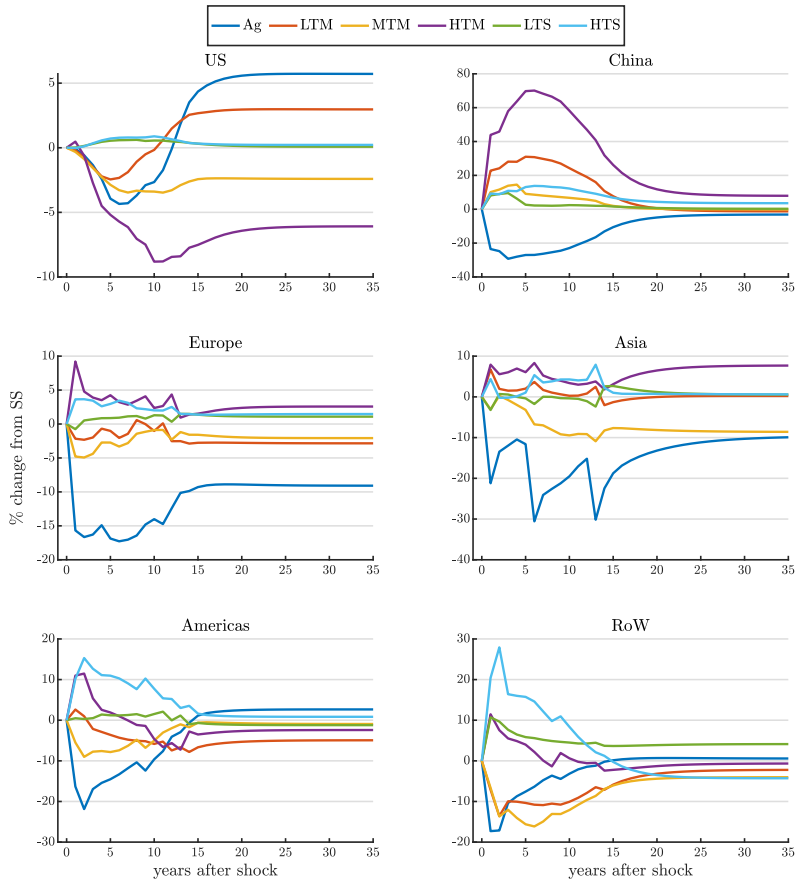


▸ Back

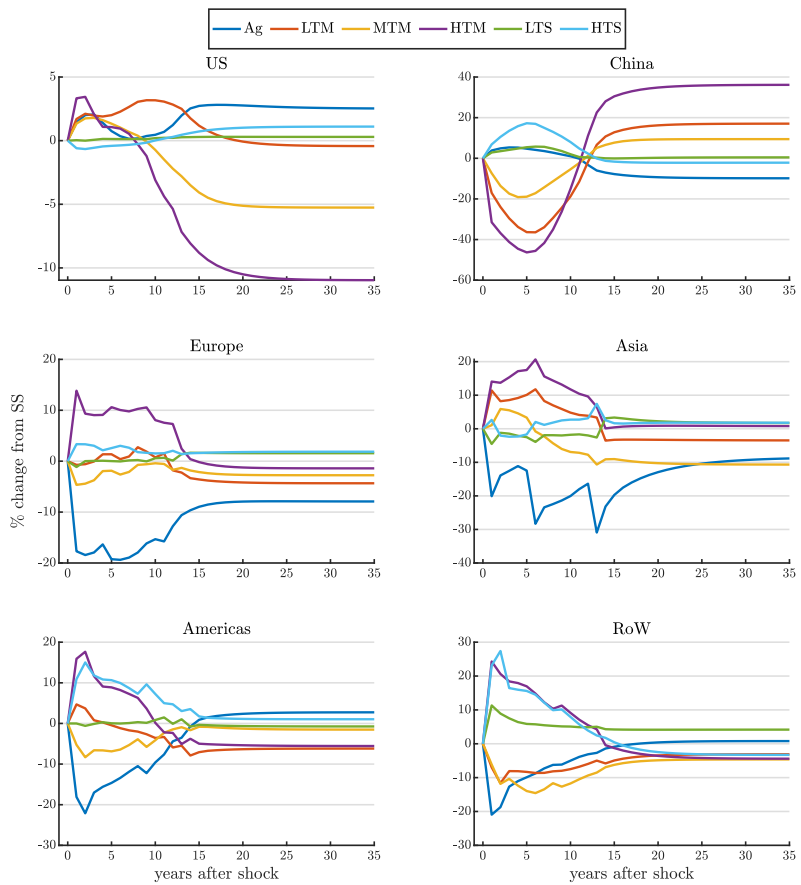
Counterfactual 2: All shocks but $\widehat{\phi}_{CN} = 1$

Labor Allocations

(a) All Shocks Extracted



(b) All shocks but $\widehat{\phi}_{CN} = 1$

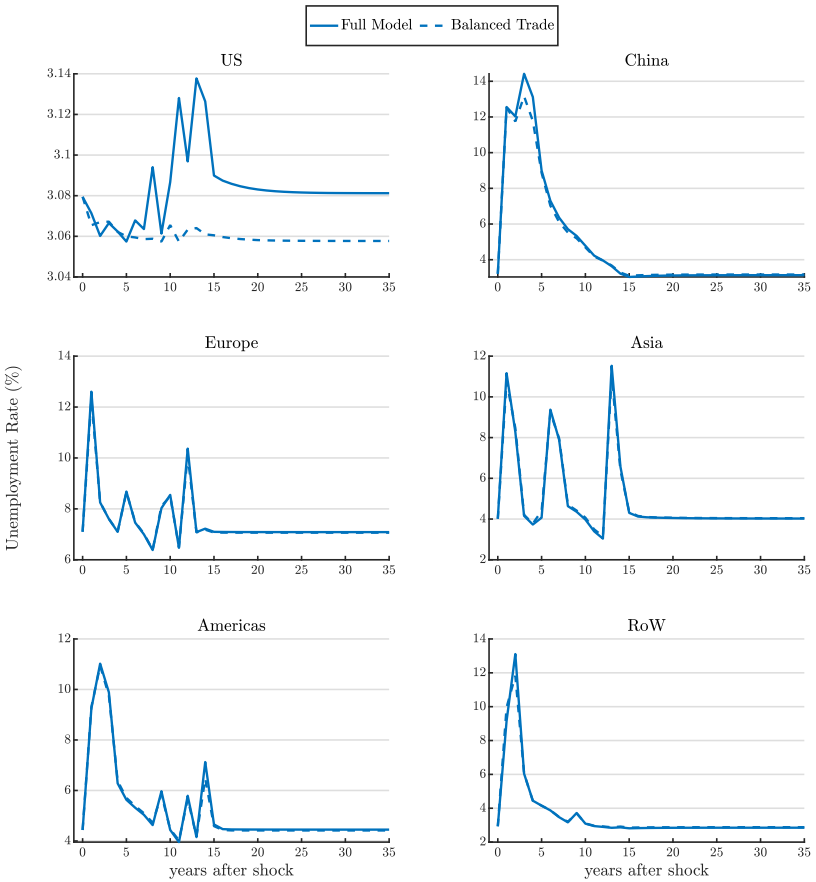


▸ Back

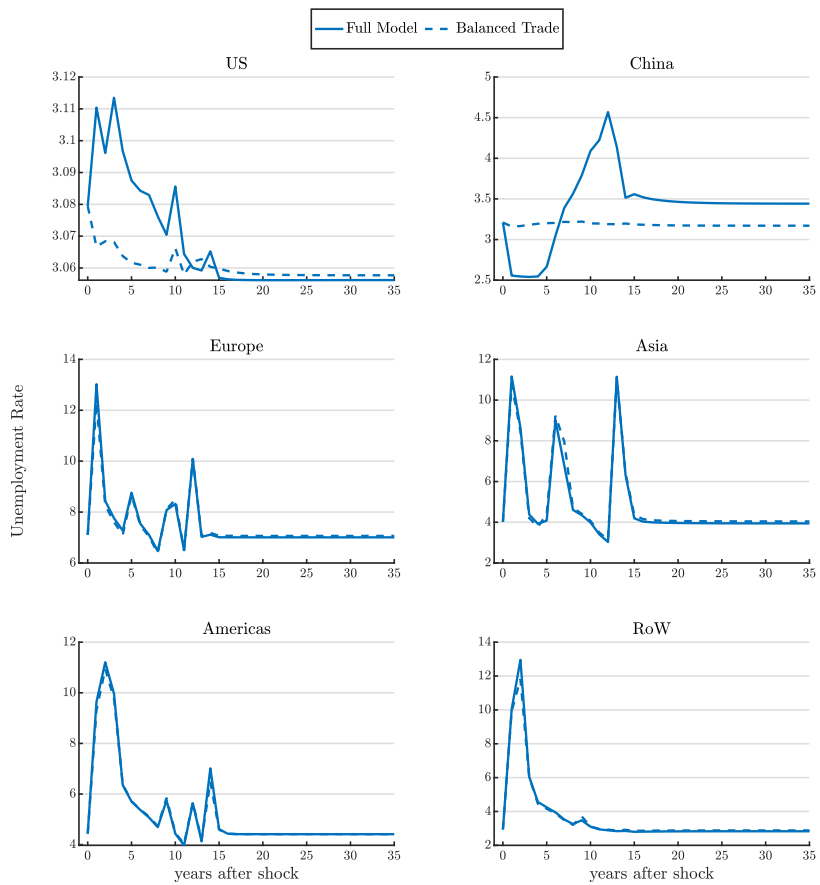
Counterfactual 2: All shocks but $\widehat{\phi}_{CN} = 1$

Unemployment

(a) All Shocks Extracted



(b) All shocks but $\widehat{\phi}_{CN} = 1$



▸ Back