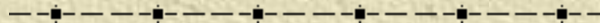




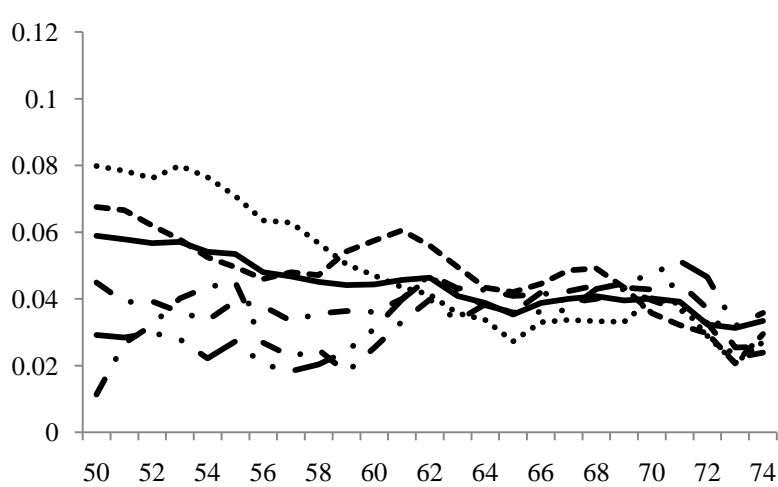
A Quantitative Exploration of the Golden Age of European Growth

Francisco Alvarez-Cuadrado (McGill University)

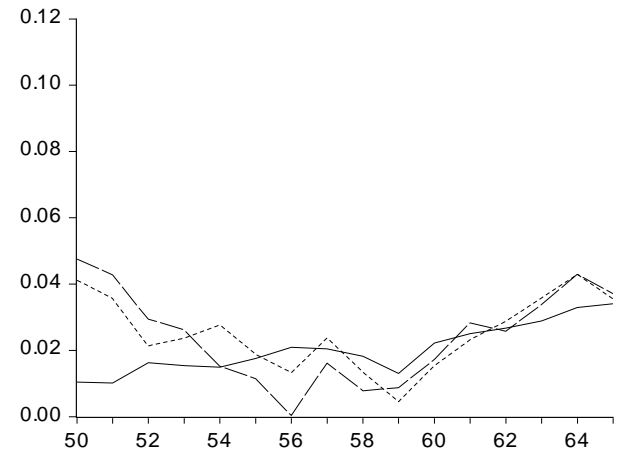
and Mihaela I. Pinteá (Florida International University)



Growth rates after WWII



- . - France Germany - - - Italy
- . - Holland - - - Belgium - - - Europe

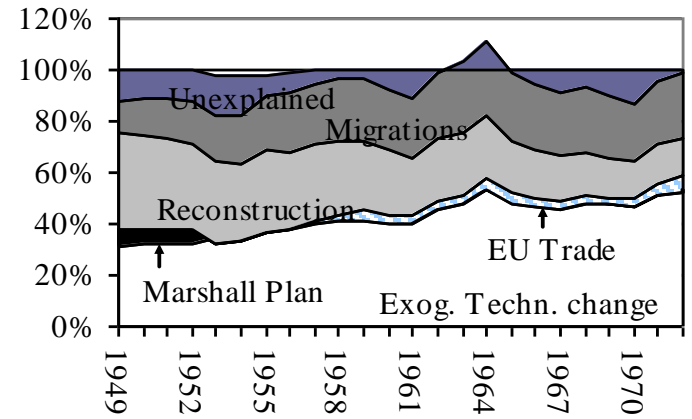
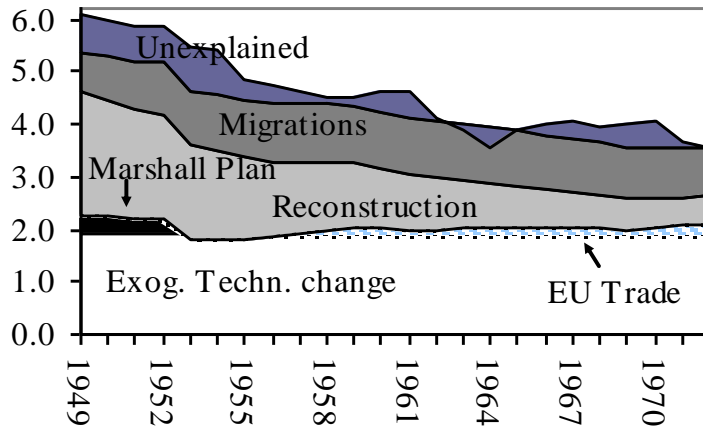


Europe 1949-1973 :

Sources of Growth

- ✦ Structural change (agricultural to nonagricultural activities)
- ✦ Reconstruction after the war
- ✦ Marshall plan
- ✦ Trade liberalization associated with the Common Market

Results



Results

- ✦ Almost three percentage points of growth can be attributed to the combined effect of reconstruction growth and structural change during the 1950s.
- ✦ During the 1960s, the contribution of reconstruction growth falls below half a percentage point, while sectoral labor migrations still contribute close to one percentage point.
- ✦ The direct contribution of the Marshall Plan is limited in time and scope, amounting to no more than a quarter of a percentage point of additional growth during the early 1950s.
- ✦ In the decade following the 1957 creation of the Common Market, the associated growth effects are small. Towards the end of the Golden Age, the Common Market contributes to one fourth of a percentage point of additional growth with its full effects being felt only two to three decades after its creation.

Model

✦ Preferences

$$U(C_t^M, C_t^{M*}, C_t^A) = C_t^A \quad \text{if } C_t^A < \bar{A}$$
$$= \ln C_t^M + \gamma \ln C_t^{M*} + \bar{A} \quad \text{if } C_t^A \geq \bar{A}$$

✦ Agricultural Sector

$$Y_t^A = \left[E_t^A N_t^A \right]^\mu Z^{1-\mu}$$

✦ Migration of labor

$$\hat{N}_t^M \equiv \frac{\dot{N}_t^M}{N_t^M} = \frac{x_A N_t^A}{1 - N_t^A}$$

Model (cont.)

✦ Manufacturing Sector

$$Y_t^M = K_t^\alpha \left[E_t^M N_t^M \right]^{1-\alpha} K_{gt}^\beta \quad \alpha + \beta < 1$$

✦ Trade Effects on Technology

$$v_t = \frac{C_t^X + P_t^{M*} C_t^{M*}}{Y_t^M}$$

$$\dot{E}_t^M = x_M \eta v_t E_t^{M*} + E_t^M$$

Model (cont.)

✦ Government

$$g_t Y_t^M = \tau_{yt} Y_t^M + \tau_t C_t^{M*} P_t^{M*} + m_t \xi Y_t^M$$

$$\dot{K}_{gt} = g_t Y_t^M - \delta_g K_{gt}$$

✦ Private capital

$$\dot{K}_t = 1 - \tau_{yt} Y_t^M - C_t^M - 1 + \tau_t C_t^{M*} P_t^{M*} - \delta_k K_t + T_t$$

Calibration (some parameters)

Preference Parameters

$\gamma=0.164$ (To match intra-European trade during the 1970s)

Technology Parameters

$X_A=0.04$ Postan (1967), average productivity growth in agriculture for France, Germany and the Netherlands.

$$X_M = 0.014$$

$\eta=0.034$ Maddison (2001), average growth rate in our sample and effects of trade on growth summarized by Frankel and Romer's (1999) estimates.

$\zeta=0.15$ (Marshall plan) DeLong and Eichengreen (1991)

$N_{1948}^A = 0.3$ The initial fraction of labor in agriculture

$\bar{A} = .2Y_{1948}^M$ The initial share of agricultural output on total production

Numerical Experiment

✦ Forward shooting algorithm in two phases:

✦ Phase I (1948-1956)

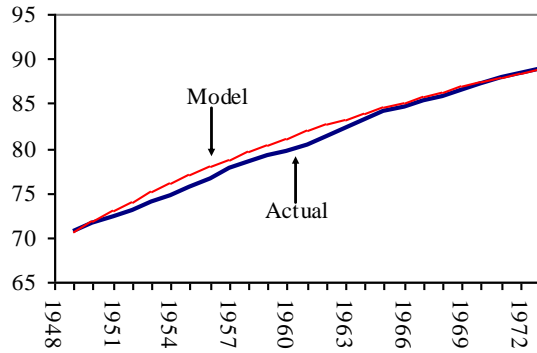
- Common Market not anticipated

✦ Phase II (1957-1980)

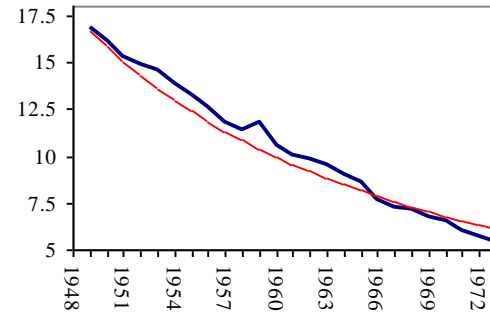
- 1957: Common Market is revealed

Model vs. Data

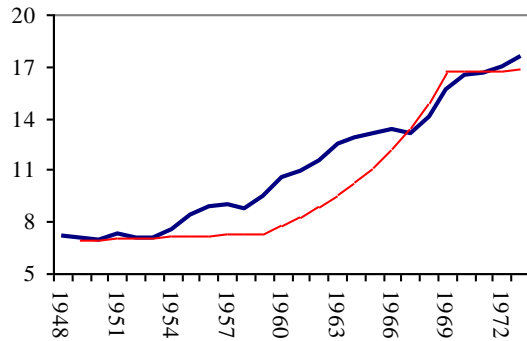
$$N^M/N$$



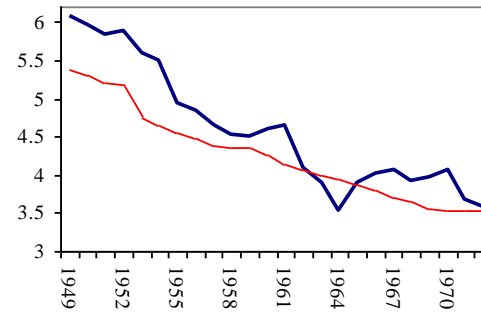
$$Y^A/Y$$



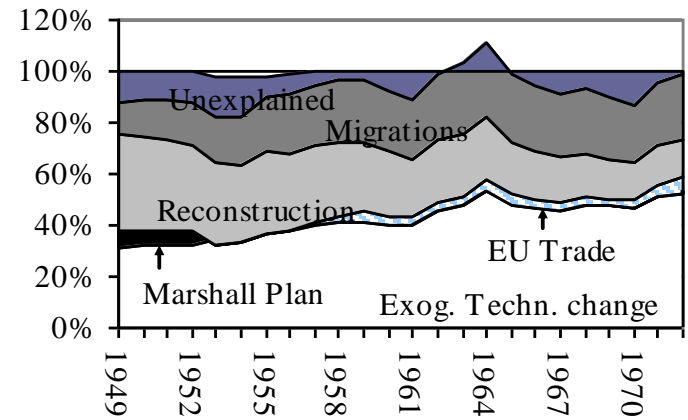
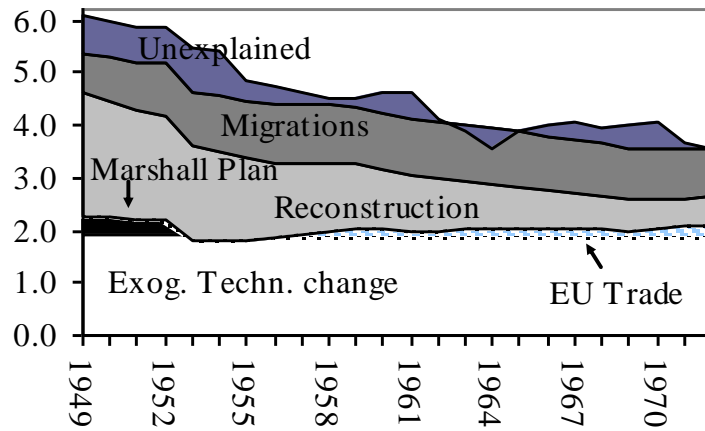
$$\left[\frac{M + X}{Y} \right]^{\text{Intra EU}}$$



$$\hat{Y}_i$$



Results (Europe)



Results

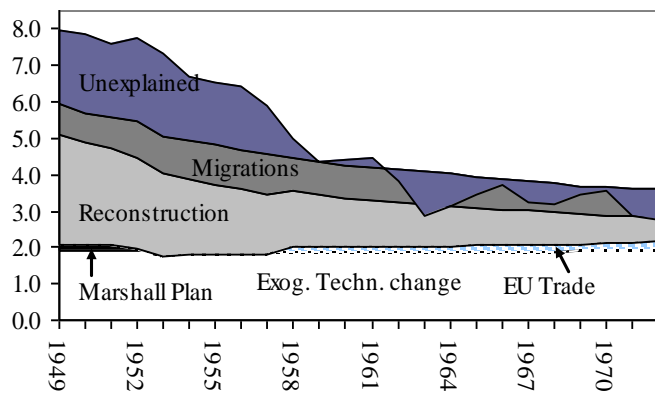
- ✦ During 1950s, the reconstruction process and structural change explain almost 50% of the actual growth (3pp)
- ✦ On average, between 1948 and 1960, the transitional dynamics associated with the destruction of capital account for almost 1.75 percentage points of growth, while labor migration explains slightly more than 1 percentage point.
- ✦ In the following decade, the contribution of the reconstruction effort falls below 0.75 percentage points. The contribution of labor migrations to growth remains as high as 1 percentage point during the 1960s.
- ✦ The Marshall Plan contributes to one fourth of a percentage point of additional growth per year between 1948 and 1951.
- ✦ Towards the end of the Golden Age, the Common Market contributes to one fourth of a percentage point to growth and a decade later, once our economy is close enough to its steady state, our model suggests that intra-European trade boosts the growth rate of the Union by half a percentage point.

Calibration (individual countries)

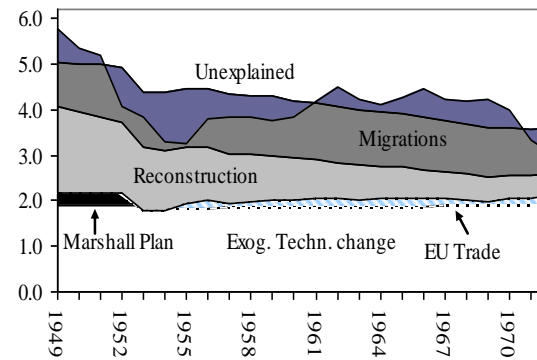
	Germany	France	Italy	Netherlands	Belgium
N_{1948}^A	0.25	0.33	0.42	0.17	0.12
K_0 / K_{ss}	0.4	0.55	0.5	0.6	0.8
γ	0.07	0.07	0.065	0.32	0.4

Results (individual countries)

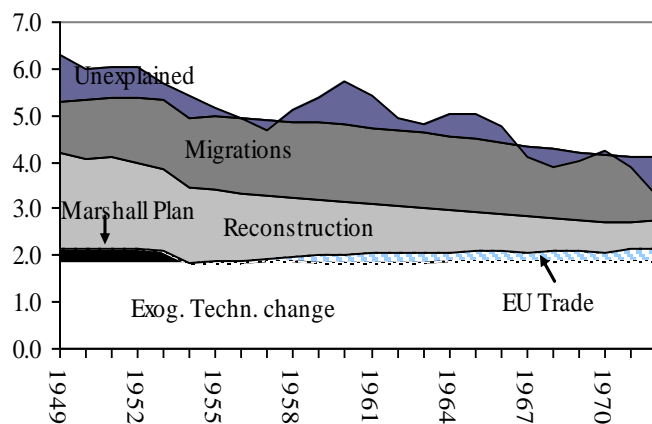
Germany



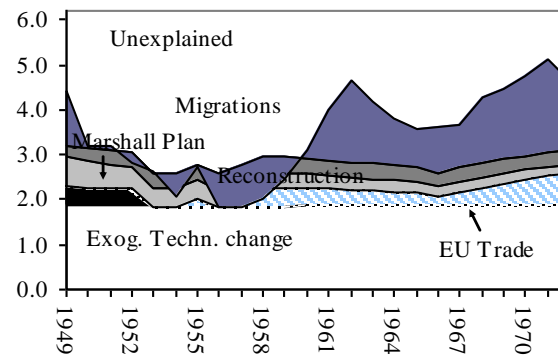
France



Italy



Belgium



Results (countries)

- ✦ In the beginning of our sample period, the contribution of the reconstruction process ranges from almost three percentage points of additional growth for Germany to no more than half a percentage point for Belgium.
- ✦ The importance of structural change depends crucially on the initial level of agricultural labor. For Italy and France, with over 35% of their labor in agriculture in 1950, the contribution of structural change is close to one and a half percentage points of additional growth during the Golden Age.
- ✦ The large economies in our sample –Germany, France, and Italy– experienced no more than one fourth of a percentage point of additional growth per year as a result of the Marshall Aid. The smaller economies, that received larger transfers, Marshall Aid accounts for slightly more than half a percentage point per year of additional growth while it was in place.
- ✦ The intra-European trade is more important for Belgium and the Netherlands. As early as the mid-sixties intra-European trade contributes to almost two fifths of a percentage point of additional growth for these two countries with its importance reaching almost two thirds of a percentage point by the end of our sample period