SCCIE WORKING PAPER #05-5
Santa Cruz Center for International Economics
http://sccie.ucsc.edu/

Santa Cruz Center for International Economics

(University of California, Santa Cruz)

Year 2005 *Paper* 05'05

Globalization and taste convergence: The cases of wine and beer

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Abstract

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March 2005

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JEL classification: F13, F15

Keywords: convergence, globalization, trade and taste convergence, habit formation

* We would like to thank Rob Fairlie, Doireann Fitzgerald, Ricard Gil, Ken Kletzer, Lori Kletzer and Phil McCalman for useful comments. Any errors are ours.

"THE GERMAN BEER CRISIS -- With Brewery Closures, Germany Faces Brauereisterben

Germany and beer have long been synonymous. But that is changing. With Monday's closing of two large breweries, the crisis facing the industry appears to be deepening. An aging population is partly to blame. But beer, as it turns out, just isn't cool anymore."

by Charles Hawley; SPIEGEL ONLINE 2005*, Feb. 4, 2005*

I. Introduction

Some globalization naysayers have suggested that it causes the homogenization of cultures. Pointing to McDonalds restaurants and Hollywood movies, they suggest that it is impossible to compete against large sunk costs and potentially larger brand values. However, the majority of industries do not exhibit the economies of scale necessary for this alleged nemesis of globalization to arise. The low-concentration industries should illustrate the economist's case for globalization, including increased product varieties for the consumer and efficient resource allocation.

However, little attention has been paid to understanding the changes in cultural consumption patterns for low-concentration industries. These products and services constitute the majority of economic output, and it is therefore essential to analyze these industries to learn about the overall impact of economic integration upon consumption patterns.

Beer and wine provide a unique product-level case study for analyzing the effect of economic integration upon products from two industries that do not have large sunk costs or a few dominant brands. The consumption of beer and wine are examined because their consumption is often attributed to different countries and cultures. For example, tour books describe France as a destination for wine drinkers and Germany as a place for beer enthusiasts. Beer and wine are also similar products that act as substitutes. There are beer

and wine shops, societies, websites, travel guides, and T-shirt stores. More pragmatically, beer and wine are useful for a study of tastes because the volumes consumed are easily measured.

In addition to an empirical study of international consumption patterns of beer and wine, this paper contains a theoretical model consistent with the empirical results. This model builds upon two foundations from the literature: the study of habit formation, and the study of culture and trade.

Habit formation has been used frequently in two different ways. The first deals with the possibility that individual's current preferences depend on past consumption patterns, as in Pollak (1970). The second involves "Keeping up with the Joneses" patterns of behavior. As was noted by Duesenberry (1949), keeping up with the Joneses implies that consumers are willing to sacrifice saving in order to protect their living standards, inducing downward rigidity in the adjustments of consumption to bad shocks. Variants of habit formation have been used frequently in macroeconomics and finance, but rarely in modeling micro patterns of consumption.[1] Our model applies a Pollak (1970) variant of habit formation, in an overlapping generation model where children's habits are impacted by parents' drinking patterns. This modeling choice is associated with the observation that, as the bulk of the consumption of alcohol starts late relative to other food items, parental consumption habits forms a benchmark impacting future consumption patterns.

Our presumption is that patterns of alcohol consumption are impacted by parents' preferences, shaping the attitudes and habits of their children. A convenient way of modeling such an environment is in an overlapping generational structure, where the conventional

[1] The macro applications include patterns of savings, saving and growth, and the equity premium puzzle. See Browning and Lusardi (1996), Carroll et. al. (2000), and Constantinides (1990).

constant elasticity of substitution (CES) framework is extended by allowing for habit formation.[2] Globalization impacts the opportunity set by introducing foreign varieties and modifying relative prices. Habit formation tends to slow the adjustment to the new equilibrium, an equilibrium that shifts the consumption patterns away from autarky.

This paper also relates to the existing literature on culture and trade. One such article is by Janeba (2004), who builds cultural identity into a Ricardian-style model. In this model, the utility from consuming one of two cultural goods increases with the share of other consumers that also consumed your cultural good. Francois and Ypersele (2002) consider the context under which the protection of a cultural good could be Pareto improving. In a two-stage investment model, Hollywood has the first mover advantage over local films. In their model, protection is a Pareto improvement: it lowers Hollywood's fixed investment, allowing local film producers to become profitable. Suranovic and Winthrop (2003) allowed for the presence of "cultural externality," where consumers of a product receive utility from others' consumption of a domestic good. They showed that such an externality mitigates the gains from international trade. Our model does not take a position on cultural externalities in the context of alcohol, as the salient features of wine and beer consumption can be accounted for in a model that focuses on habit formation. Yet, it can be extended to account for any cultural features associated with the joy of sharing your drinking preferences with the Joneses.

Overall, the trade and culture literature that we know of is concerned with the dominance of Hollywood movies and other high fixed cost industries. In sharp contrast , the case of wine and beer considered in this paper is not a big country-little country interaction. This paper will begin with an analysis of beer and wine consumption data across 38 countries

[2] The CES framework is developed in Dixit and Stiglitz (1977), Krugman (1979, 1980), and Krugman and Helpman (1985).

from 1963-2000. During the thirty-eight year time period, we find strong convergence of relative wine consumption across countries. Furthermore, while latitude and grape production do fairly well at explaining the 1963 consumption patterns, these endowment effects are much less significant in 2000. We will illustrate that culture continues to matter in the case of Latin America. Finally, we will offer a model of habit formation that is consistent with the empirical results.

II. Data

The data were produced by *Commissie Gedisteilleerd* (Commission for Distilled Spirits) in the Netherlands. The consumption of beer and wine are measured in liters per capita. We focus on the share of wine consumption in total beer and wine consumption. The thirty-eight countries with complete time series, 1963-2000 are listed in Table 1.

III. Results

III.A. Evidence of Convergence

To begin we look for evidence of taste convergence. In Figure 1, the wine shares from all of the 38 countries are plotted for the years 1963-2000. Convergence of the 38-country panel is immediately obvious. One characteristic of the data is that countries whose consumption is wine-intensive in 1963 become relatively more beer-intensive as time goes on. More specifically, the maximum wine share in 1963 is 96.3% (Portugal) and the maximum wine share in 2000 is 64.5% (Italy). At the other end of the spectrum, one beer-intensive country, Mexico, consumes less than 1 percent wine during the entire forty-year sample. In fact, the Mexican wine share actually drops from 0.8% to 0.4% over the time period.

However, beyond the Mexican exception, the beer-intensive countries are also becoming more wine intensive, with the minimum wine share from 1.7% (Japan) in 1963 to 3.7% (Brazil) in 2000.

Figure 2 is a graph containing the sample standard deviation of the wine consumption shares across the 38 countries for every year in the sample. It illustrates the strong sigma convergence in the panel data. The sample standard deviation of the wine shares is 0.312 in 1963, and almost halves to 0.167 in 2000. When the sample standard deviations are regressed against a time trend, the annual decline in standard deviation is found to be 0.004. This coefficient is significant with a p-value of 0.000.

III.B. Convergence Clubs?

Because the extent of integration varies across countries, convergence should be faster among certain groups of countries than others. Table 2 contains the basic convergence statistics of the entire group of countries alongside sixteen subsets of countries. The actual countries in each of these groups are provided in the data appendix. Of the sixteen country groups, five groups do not display sigma convergence: German Legal Origin, Scandinavian Legal Origin, NAFTA, US-Canada, and Benelux countries. These failures in sigma convergence do not undermine our hypothesis for two reasons. First, these groups appear to have converged substantially prior to 1963, since these groups have five of the six lowest country group variances in 1963. Second, these beer-intensive consuming groups are increasing their wine shares significantly over the four-decade period. This observation suggests that, although there might be a slight increase in variance across those countries, the group as a whole is converging toward a global equilibrium.

In terms of groups that appear to be "already converged", the following groups had under half the variance of the entire sample in 1963: German Legal Origin, Scandinavian Legal Origin, NAFTA, US-Canada, Benelux, and Australia-New Zealand. These groups are very small, with five or fewer countries in each. They are also geographically and culturally linked.

Other country groups converged rapidly - they reduced their variance faster than the entire sample, suggesting that strong within group convergence occurred between 1963 and 2000. Those groups were: British Legal Origin, Socialist Legal Origin, Treaty of Rome Europe, Euro countries, OECD countries in 1961, and Developed Countries. Each of these groups of countries has a history of institutions that promote integration within the group, such as British Colonialism, COMECON, the European community, or the OECD.

Somewhat cynically, an alternative explanation for cross group variances is country size dispersion, calculated for a group j containing i countries using the formula below:

$$\text{Size Dispersion} = \sqrt{\sum_{i \in j} \left(\frac{GDP_i}{\sum_{i \in j} GDP_i} \right)^2}$$

The correlation coefficient between a group's size dispersion and its sample standard deviation is lower than -0.70 in both years, suggesting that the unweighted variance of wine shares is negatively related to size dispersion. However, it is also worth noting that changes in size dispersion are not significantly correlated with changes in sample standard deviation, probably because the changes in size dispersion are small.

Turning the focus away from σ-convergence toward the wine shares themselves, the average wine share for the entire sample fell from 34.3% in 1963 to 24.6% in 2000. The most wine-intensive consumers throughout the forty-year sample are those of French Legal

Origin, and members of the Euro. The high consumption in these groups is associated with the high degree of wine consumption in European romance language countries.

Developing countries were the second highest wine consumption group in 1963. However, in 2000, their consumption fell to the eleventh highest level of wine consumption. This is not very surprising because a liter of beer is, on average, less expensive than a liter of wine. Furthermore, the income elasticity in the U.S. market is higher for wine than beer.[3]

There is also clear evidence of economic integration in Table 2. One measure of the degree of economic integration is openness, measured as the sum of all exports and imports divided by GDP. The GDP-weighted average of openness of the entire sample of countries increased from 0.249 in 1963 to 0.463 in 2000. In all cases, country group level openness increased over the sample period.

III.C. Predictors of the 1963 distribution – Grape Production and Latitude

Although a common intuition could be that cultures dictated wine consumption, the 1963 distribution appears to have reflected the ability of a country to produce grapes. For 1963, high wine shares are positively correlated with per capita grape production in Figure 3. The impact of globalization has been to decrease this correlation, since grape production is far less important in Figure 4. In terms of correlation coefficients, the correlation between wine shares and grape production is 0.90 in 1963, while the comparable correlation in 2000 is 0.64.

Similarly, the latitude of a country's capital is also a crucial factor in determining 1963 wine consumption in Figure 5. In fact, each of the 14 countries with wine shares over 50% in 1963 has a latitude index between 0.31 and 0.51. Similar to the grape production case, the relationship between latitude and wine shares is less significant for the year 2000 in Figure 6.

[3] See Azzam *et al.* 2004.

In this case, the apex of the quadratic fit falls from a wine share of 50% in 1963 to 30% in 2000. While the consumers in many of the high intensity wine countries decrease their relative consumption of wine over time, consumers from many of the high latitude index countries increase their relative consumption of wine.

III.D. Is this a Cultural Matter?

The starting point for considering the role of culture in the wine and beer panel data is to return to the common perception that the French drink wine, while the Germans drink beer. The latitudes of Paris and Berlin, or the 1963 grape production can explain this phenomenon. However, anyone that has crossed the border between Germany and France, also knows that it is a cultural matter. The German *Bauhaus* is a world away from the French *chateau*. Nonetheless, there is clear evidence of convergence in relative wine consumption between Germany and France over the past forty years in Figure 7. The relative wine consumption in France falls from 77.7% to 60.7% while in Germany it rises from 11.9% to 15.6%. This convergence also provides evidence of habit formation: despite the fact that neighboring countries have had jumps in economic integration, the responses of consumption are slowed by cultural patterns.

An additional cultural note comes from Latin America. There are six Latin American countries in the data set: Argentina, Brazil, Chile, Mexico, Peru, and Uruguay. One might think that the effect of Spanish and Portuguese occupation would be that Latin American countries would be wine consumers. However, in Figure 8, Mexico, Peru, and Brazil all have minimal wine consumption by the year 2000. The three other countries Argentina, Chile, and Uruguay drink a significant amount of wine.

This result can be explained by latitude, or grape production. However, it can also be explained by culture. Latin American countries gained independence in the early 1800's while Spanish resources were distracted by the Napoleonic wars. Since that time, the number of Europeans living in these countries has changed notably. In Argentina, Chile and Uruguay, the share of population that is considered of European descent is 85% or higher.[4] However, the share of European descendants is much smaller in the beer drinking countries. In Brazil the European descendants make up 55% of the population, while in Mexico and Peru the equivalent share is below 15%. We will not pursue the reasons for this disparity in European descendants; we simply want to note that European descendants may provide a cultural explanation for high wine consumption. However, it may not be a matter of coincidence that European descendents live in countries with the latitudes and grape production that increase wine consumption.

Both the French-German example and the Latin American example highlight the fact that international cultures reflect the resources available. The examples also suggest that economic integration between countries with different resources will increase the cultural diversity of consumption.

III.E. Evidence of Habit Formation

Although many of the above results may seem consistent with a neoclassical model of trade, the evidence supports a model of habit formation. The clearest example of habit formation comes from the original six European countries that signed the Treaty of Rome in 1957. Europe's internal market experienced two formal episodes of trade liberalization. First,

[4] This data is from the Lonely Planet Online WorldGuide, http://www.lonelyplanet.com/destinations/, access date 1/10/05.

in the late 1960's, tariffs and quotas were removed. Second, in 1993, the Single Market Act was completed, removing much of the regulation that limited free trade. Nonetheless, in Figure 9, you can see that there is no immediate impact of either episode upon the wine share for any of the six countries. The smoothness of adjustment in Europe suggests that the neoclassical model cannot explain the dynamics of economic integration and consumption. Furthermore, Mexico is not converging despite the creation of NAFTA in 1994. Although Mexico had a 20% import tariff on wine that was phased out until 2003, the wine share remains under 0.5% in 2002.[5]

IV. A Model

Our presumption is that wine and beer tastes are shaped by habits, income, endowment and prices. Habits are, by definition, backward looking, and may be shaped by parents impacting their children's lifestyles. We capture these considerations applying an overlapping generational structure, where deviations from past habits are costly. Globalization is viewed as the dismantling of trade barriers, allowing the introduction of new varieties. We illustrate the model by tracing the dynamics of adjustment to the introduction of a new variety.

We start with the base specification: the utility associated with consumption at time t is assumed to be:

$$(1) \qquad Y_t + a\left[\sum_{i=1}^{k}\left(X_{i,t} - \lambda[X_{i,t} - X_{i,t-1}]^2\right)^{\gamma}\right]^{\delta/\gamma}; \; 0 < \delta; \gamma < 1 \quad ,0 \le \lambda,$$

where Y_t denotes the outside homogenous good; X_i is the consumption at time t of variety i, a is a constant. The term λ reflects the impact of habits on the utility from $X_{i,t}$. Deviation from

[5] The data are not complete for the years 2001-2002, however, we do have data for Mexico.

the habitual consumption, $X_{i,t-1}$, reduces the utility from consuming $X_{i,t}$ by a quadratic term, $\lambda[X_{i,t} - X_{i,t-1}]^2$. To simplify the dynamics, we consider an overlapping generation interpretation of (1), where consumption of goods X, $\{X_{i,t}\}_{i=1,n}$, is in the second period of life. Habits are determined by the parents' consumption, summarized by $\{X_{i,t-1}\}_{i=1,n}$.

The first order condition determining the consumption level of variety j is:

(2)
$$p_{j,t} = a\delta(1-2\lambda[X_{j,t} - X_{j,t-1}])\left[\sum_{i=1}^{k}\left(X_{i,t} - \lambda[X_{i,t} - X_{i,t-1}]^2\right)^{\gamma}\right]^{\frac{\delta}{\gamma}-1}\left(X_{i,t} - \lambda[X_{i,t} - X_{i,t-1}]^2\right)^{\gamma-1}$$

A long run equilibrium corresponding to a given price vector is reached when the consumption of each variety is stable overtime. The dynamics of the system can be grasped by studying a simple case. Suppose that starting from a long-run equilibrium with n-1 verities, the price of each is *p*, a new variety is introduced, priced at p_n. This may correspond to the introduction of a product, or opening the market to foreign imports. The dynamic adjustment, assuming large n, is portrayed by the following first order condition:

(3)
$$p_n = a\delta(1-2\lambda[X_{n,t} - X_{n,t-1}])\left[\begin{array}{l}(n-1)\left(X_r\right)^{\gamma} + \\ \left(X_{n,t} - \lambda[X_{n,t} - X_{n,t-1}]^2\right)^{\gamma}\end{array}\right]^{\frac{\delta}{\gamma}-1}\left(X_{n,t} - \lambda[X_{n,t} - X_{n,t-1}]^2\right)^{\gamma-1}$$

where X_r is the consumption level of the representative variety, corresponding to the n – 1 old varieties.[6] Hence, the long run equilibrium level of the new variety is determined by

$$(4) \qquad p_n = a\delta\left[(n-1)(X_r)^{\gamma} + (X_n)^{\gamma}\right]^{\frac{\delta}{\gamma}-1}(X_n)^{\gamma-1}.$$

Applying (3) we infer that, in the vicinity of the long run equilibrium, where $X_{n,t} \cong X_{n,t-1}$:

$$(5) \qquad \frac{dX_{n,t}}{dX_{n,t-1}}|_{LR} = \frac{2\lambda}{2\lambda + (\gamma-\delta)\dfrac{(X_n)^{\gamma-1}}{(n-1)(X_r)^{\gamma} + (X_n)^{\gamma}} + (1-\gamma)(X_n)^{-1}}$$

The dynamics of the system are summarized by the following claim:

Claim 1:

The system will converge to a stable long run equilibrium if $\frac{dX_{n,t}}{dX_{n,t-1}}|_{LR} < 1$.

A sufficient stability condition is $\delta < \gamma$. This is equivalent to the assumption that the elasticity of substitution within the sector [i.e., between varieties, $1/(1-\gamma)$] is larger than the overall price elasticity determining the substitutability of the sector with the outside good [$1/(1-\delta)$].

[6] To simplify, we assume that n is large enough so we can ignore the changes in the consumption patterns of the old variety.

The claim follows from (5). This equation determines also the speed of adjustment, implying that the adjustment is slower the greater is the importance of habitual consumption. The dynamics of adjustment are summarized by Figure 10, tracing the dependence of present consumption ($X_{n,t}$) as a function of the past consumption ($X_{n,t-1}$). The slope of the line increases with the habit formation coefficient (λ), implying slower convergence.

A more comprehensive version of our model recognizes that wine and beer are imperfect substitutes. Let us denote by $W_{k,t}$ the consumption of wine k at time t; similarly, $B_{i,t}$ is the consumption of beer i at time t. The utility at time t is the outcome of CES aggregation across wine and beer, plus the outside good, allowing for habit formation:

$$(6)\quad Y_t + a\left[\theta_b\left(\mathrm{B}_t\right)^{\delta} + (1-\theta_b)\left(\Omega_t\right)^{\delta}\right]^{\phi/\delta};\quad \text{where}\quad \mathrm{B}_t = \left[\sum_{i=1}^{m}\left(B_{i,t} - \lambda[B_{i,t} - B_{i,t-1}]^2\right)^{\gamma}\right]^{1/\gamma};$$

$$\Omega_t = \left[\sum_{k=1}^{v}\left(W_{k,t} - \lambda[W_{k,t} - W_{k,t-1}]^2\right)^{\gamma}\right]^{1/\gamma}$$

$0 < \phi < \delta < \gamma < 1;\quad 0 < \theta_b < 1.$

It can be verified that the dynamics of adjustment are similar to the ones depicted in Figure 1, where the convergence speed is determined by the strength of habit formation (λ). Our model can be extended to account for neighborhood and network effects. Specifically, as drinking is frequently a social activity, affinity of tastes may impact the utility associated with social drinking. Such an extension may explain the patterns of countries characterized by social and taste fragmentation, as may be the case in several Latin-American countries. It may also explain the absence of convergence in Brazil, Peru and Mexico.

V. Conclusion

The French drink wine, while Germans drink beer. This common perception becomes increasingly inaccurate as time goes on. Over the past forty years, the "wine drinking" countries are drinking more beer and the "beer drinking" countries are drinking more wine. Using data on 38 countries from 1963-2000, there is clear convergence in the consumption of wine relative to beer between 1963 and 2000. Convergence occurs even more quickly within groups of countries that have a higher degree of integration. Although the relative consumption of wine can be explained well in 1963 by grape production and latitude, these variables are much less significant in 2000. Despite these "scientific" explanations for the consumption of wine, there is also a cultural angle to wine consumption. While the relative wine consumption of France and Germany is converging, several Latin American countries fail to converge. The number of European descendants in Latin American countries can explain large differences in relative wine consumption. These results are consistent with a model of habit formation in which children derive utility from consuming products similar to their parents.

Data Appendix

The countries included in specific country groups are:[7]
British Legal Origin: Australia, Canada, Cyprus, Ireland, New Zealand, South Africa, United Kingdom, United States.
French Legal Origin: Algeria, Argentina, Belgium, Brazil, Chile, France, Greece, Italy, Luxembourg, Mexico, Morocco, Netherlands, Peru, Portugal, Spain, Tunisia, Turkey, Uruguay.
Socialist Legal Origin: Hungary, Poland, Romania.
German Legal Origin: Austria, Germany, Japan, Switzerland.
Scandinavian Legal Origin: Denmark, Finland, Iceland, Norway, Sweden.
Treaty of Rome Europe: Belgium, France, Germany, Italy, Luxembourg, Netherlands.
Euro Countries: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain.
NAFTA: Canada, Mexico, United States.
US-Canada: Canada, United States.
Benelux: Belgium, Luxembourg, Netherlands.
European continent: Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Romania, Spain, Sweden, Switzerland, United Kingdom.
Latin America: Argentina, Brazil, Chile, Cuba, Mexico, Peru, Uruguay.
Australia-New Zealand: Australia, New Zealand.
OECD countries in 1961: Austria, Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States.
Developed Countries: Australia, Austria, Belgium, Canada, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States.
Developing Countries: Algeria, Argentina, Brazil, Chile, Hungary, Mexico, Morocco, Peru, Poland, Romania, South Africa, Tunisia, Turkey, Uruguay.

Real GDP and Openness values are from the Penn World Tables by Heston *et al* (2002)

Per capita grape production is measured using annual production data from FAOstat. The population figures in *World Drink Trends* were used to create per capita values.

Latitude data is provided by La Porta *et al* (1999). The latitude index is calculated as: Abs(latitude of capital)/90.

[7] The legal origin classifications are from La Porta et al (1999)

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Table 1. Countries included in the study

Algeria	Finland	Mexico	Spain
Argentina	France	Morocco	Sweden
Australia	Germany	Netherlands	Switzerland
Austria	Greece	New Zealand	Tunisia
Belgium	Hungary	Norway	Turkey
Brazil	Iceland	Peru	United Kingdom
Canada	Ireland	Poland	United States
Chile	Italy	Portugal	Uruguay
Cyprus	Japan	Romania	
Denmark	Luxembourg	South Africa	

Table 2. The Convergence of tastes within country groups

1963 Data Country Group	Number of Countries	Mean Wine Share	SD Wine Share	Trade Flows/ Output	Size (GDP) Dispersion
All Countries	38	0.345	0.326	0.249	0.385
British Legal Origin	8	0.167	0.243	0.179	0.731
French Legal Origin	18	0.524	0.341	0.298	0.349
Socialist Legal Or.	3	0.425	0.263	0.396	0.671
German Legal Origin	4	0.170	0.134	0.296	0.631
Scandinavian Legal Or.	5	0.074	0.032	0.506	0.532
Treaty of Rome Europe	6	0.369	0.385	0.369	0.518
Euro Countries	12	0.429	0.393	0.356	0.432
NAFTA	3	0.034	0.024	0.118	0.875
US-Canada	2	0.047	0.015	0.113	0.927
Benelux	3	0.129	0.108	0.906	0.705
European continent	21	0.318	0.316	0.381	0.350
Latin America	6	0.425	0.397	0.202	0.508
Australia-New Zealand	2	0.036	0.020	0.333	0.828
OECD countries, 1961	20	0.314	0.347	0.245	0.488
Developed	24	0.273	0.336	0.245	0.444
Developing	14	0.467	0.277	0.271	0.349

2000 Data Country Group	Number of Countries	Mean Wine Share	SD Wine Share	Trade Flows/ Output	Size (GDP) Dispersion
All Countries	38	0.246	0.167	0.463	0.388
British Legal Origin	8	0.143	0.051	0.368	0.756
French Legal Origin	18	0.311	0.208	0.589	0.332
Socialist Legal Or.	3	0.255	0.090	0.809	0.679
German Legal Origin	4	0.213	0.161	0.417	0.679
Scandinavian Legal Or.	5	0.197	0.033	0.816	0.506
Treaty of Rome Europe	6	0.359	0.224	0.718	0.520
Euro Countries	12	0.321	0.186	0.730	0.423
NAFTA	3	0.073	0.061	0.339	0.850
US-Canada	2	0.107	0.020	0.312	0.921
Benelux	3	0.248	0.123	1.493	0.704
European continent	21	0.274	0.153	0.721	0.347
Latin America	6	0.270	0.273	0.387	0.561
Australia-New Zealand	2	0.179	0.010	0.490	0.881
OECD countries, 1961	20	0.264	0.173	0.497	0.516
Developed	24	0.252	0.161	0.456	0.460
Developing	14	0.236	0.183	0.492	0.385

Figure 1. International convergence in wine shares [the bold curve is the sample mean]

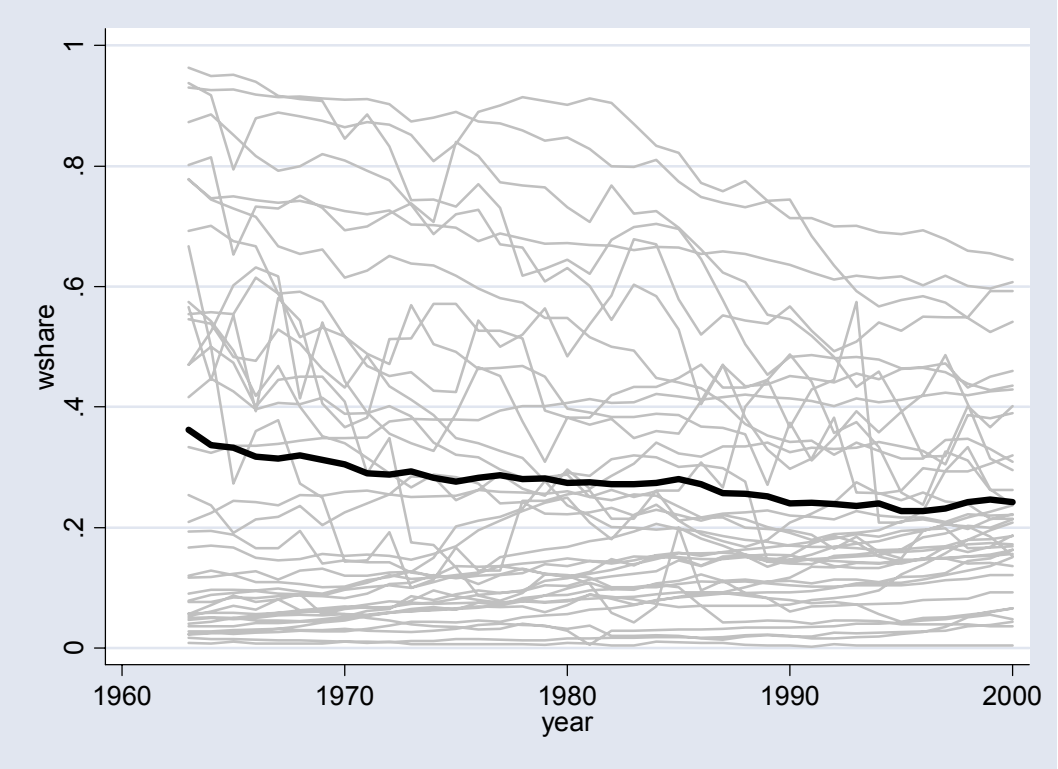

Figure 2. Sigma convergence in wine shares

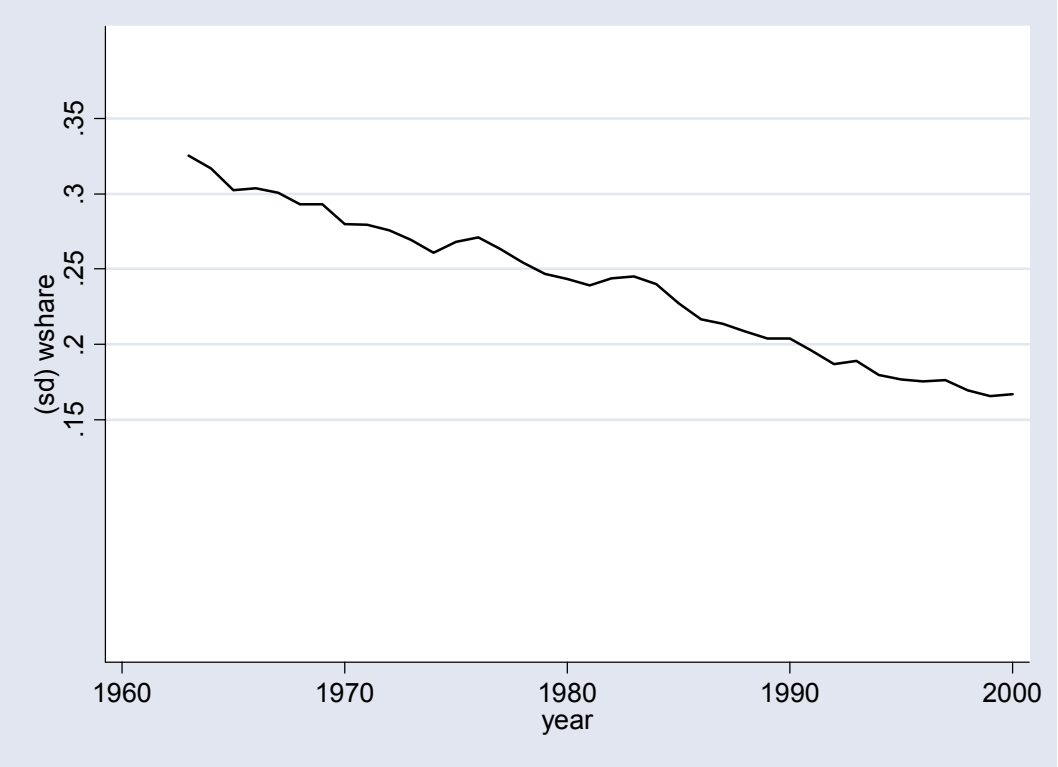

Figure 3. Wine shares and per capita grape production in 1963

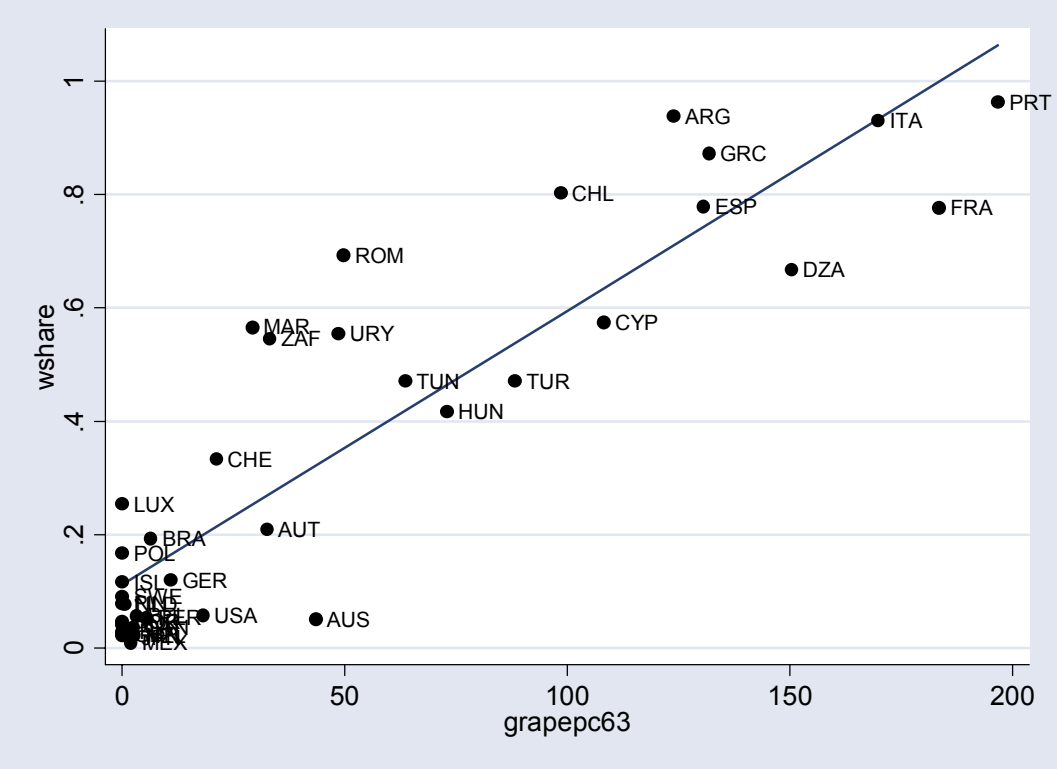

Figure 4. Wine shares and per capita grape production in 2000

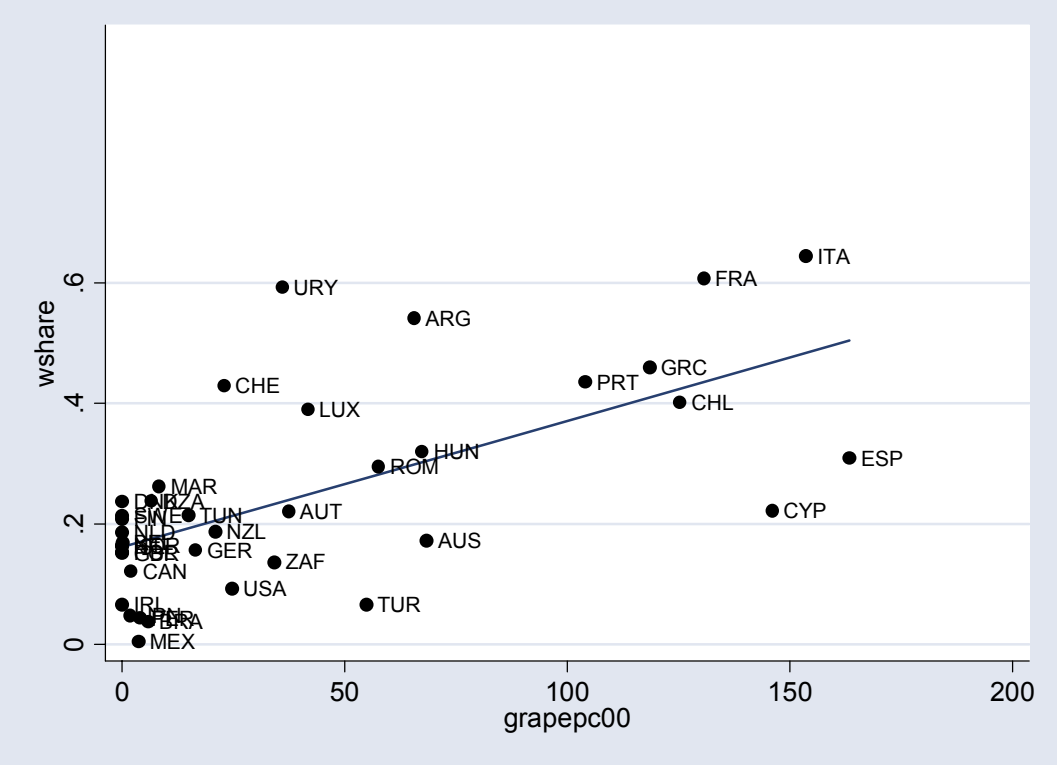

Figure 5. Latitude and wine shares in 1963

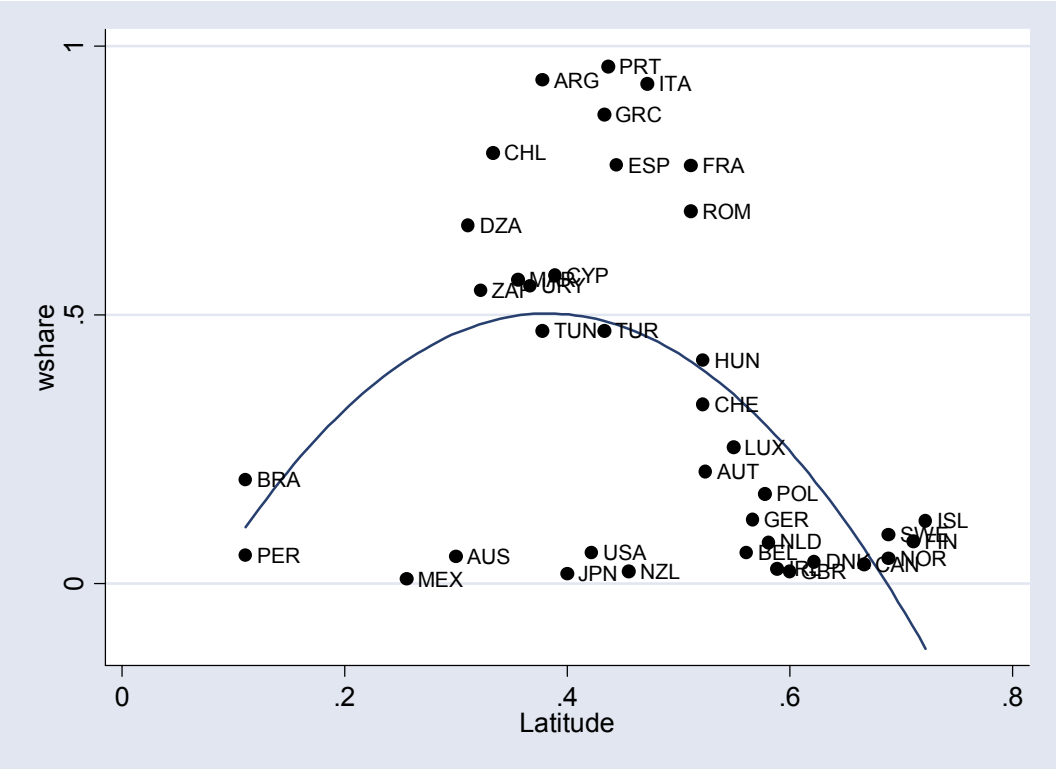

Figure 6. Latitude and wine shares in 2000

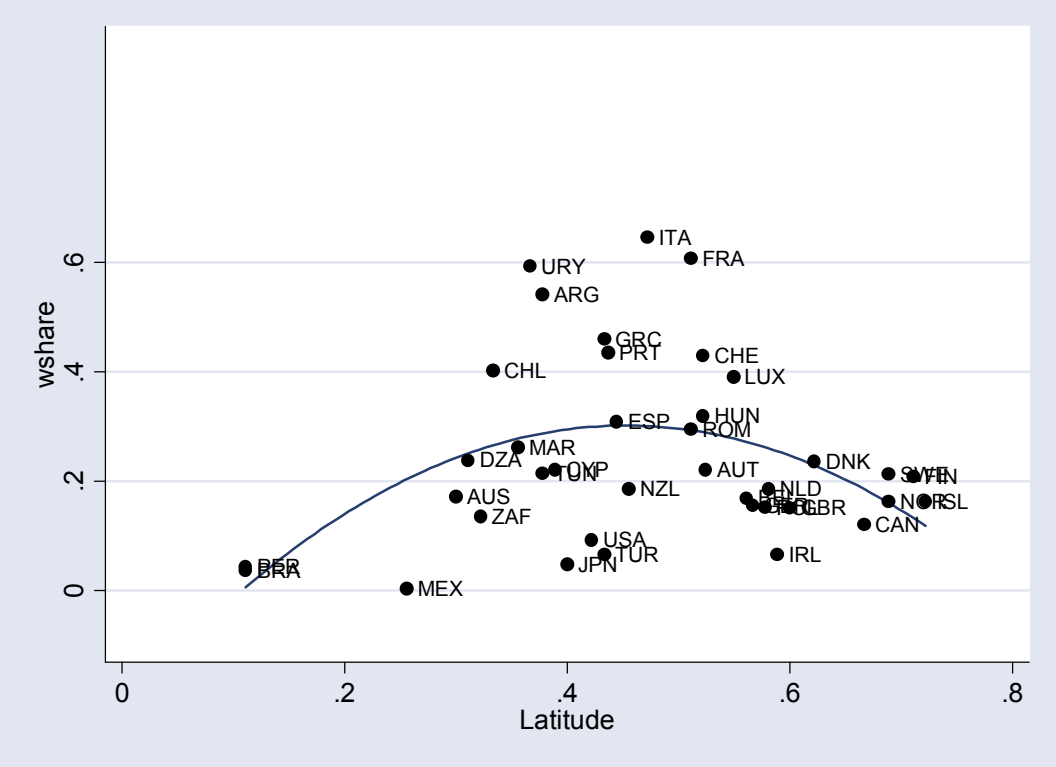

Figure 7: The convergence of France and Germany

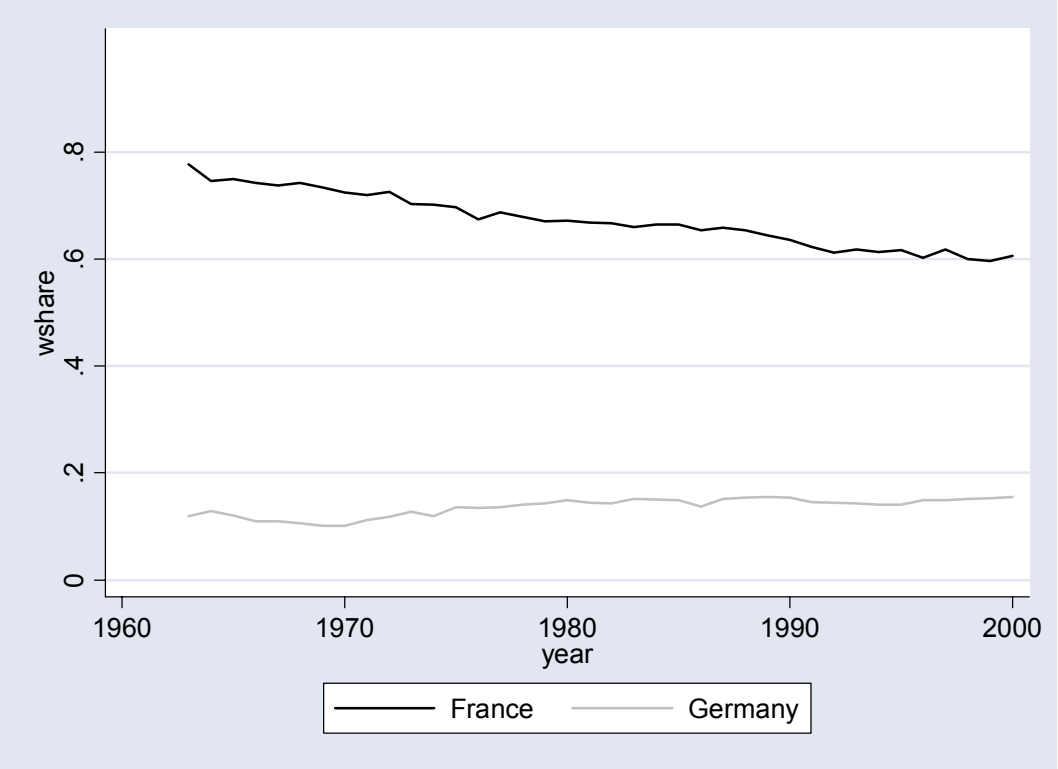

Figure 8: Latin America - A lesson about culture and colonialism?

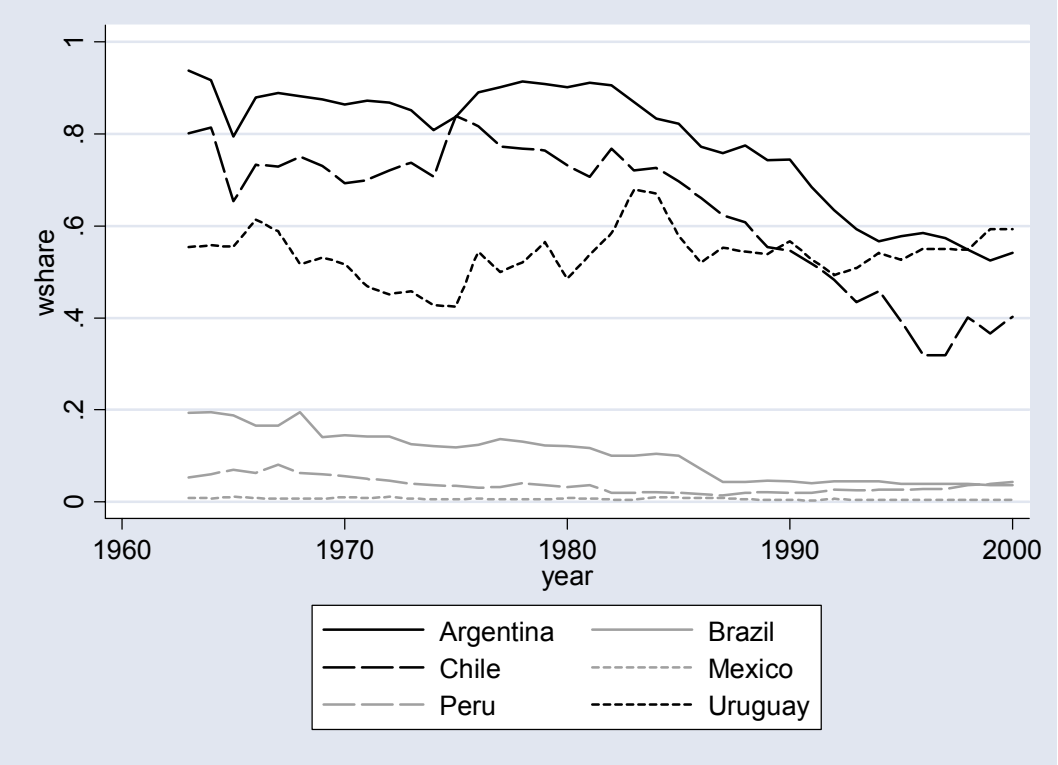

Figure 9: Europe - Evidence of habit formation

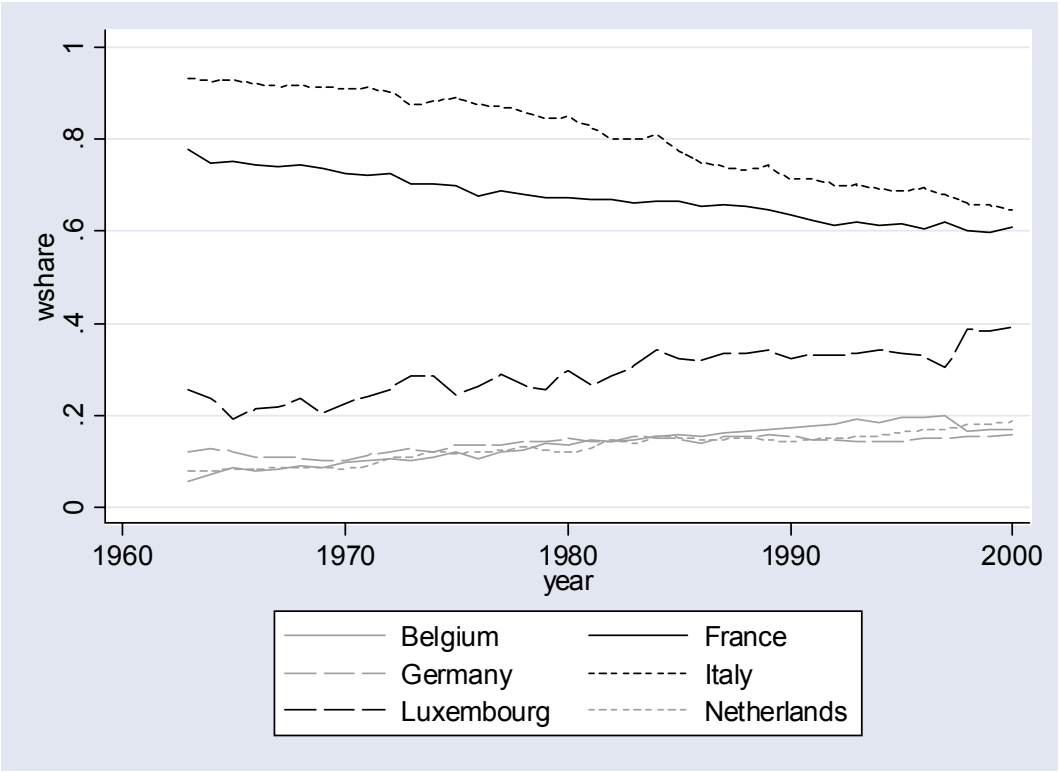

Figure 10: Adjustment to a new variety
The figure reports the simulation corresponding to
$n = 15;\ \delta = 0.5;\ \gamma = 0.6;\ A = 0.1;\ p_n = p = 0.1$